

Investing in the Unknown and Unknowable

Richard Zeckhauser, *Harvard*

Abstract

From David Ricardo making a fortune buying British government bonds on the eve of the Battle of Waterloo to Warren Buffett selling insurance to the California earthquake authority, the wisest investors have earned extraordinary returns by investing in the unknown and the unknowable (UU). But they have done so on a reasoned, sensible basis. This essay explains some of the central principles that such investors employ. It starts by discussing "ignorance," a widespread situation in the real world of investing, where even the possible states of the world are not known. Traditional finance theory does not apply in UU situations.

Strategic thinking, deducing what other investors might know or not, and assessing whether they might be deterred from investing, for example due to fiduciary requirements, frequently point the way to profitability. Most big investment payouts come when money is combined with complementary skills, such as knowing how to develop real estate or new technologies. Those who lack these skills can look for "sidecar" investments that allow them to put their money alongside that of people they know to be both capable and honest. The reader is asked to consider a number of such investments.

Central concepts in decision analysis, game theory, and behavioral decision are deployed alongside real investment decisions to unearth successful investment strategies. These strategies are distilled into eight investment maxims. Learning to invest more wisely in a UU world may be the most promising way to significantly bolster your prosperity.

KEYWORDS: investing, unknown, unknowable, sidecar investment, fat-tailed distribution, Buffett, Kelly Criterion, asymmetric information

Author Notes: I thank Miriam Avins, Paul Samuelson and Nils Wernerfelt for helpful comments.

David Ricardo made a fortune buying bonds from the British government four days in advance of the Battle of Waterloo. He was not a military analyst, and even if he were, he had no basis to compute the odds of Napoleon's defeat or victory, or hard-to-identify ambiguous outcomes. Thus, he was investing in the unknown and the unknowable. Still, he knew that competition was thin, that the seller was eager, and that his windfall pounds should Napoleon lose would be worth much more than the pounds he'd lose should Napoleon win. Ricardo knew a good bet when he saw it.¹

This essay discusses how to identify good investments when the level of uncertainty is well beyond that considered in traditional models of finance. Many of the investments considered here are one-time only, implying that past data will be a poor guide. In addition, the essay will highlight investments, such as real estate development, that require complementary skills. Most readers will not have such skills, but many will know others who do. When possible, it is often wise to make investments alongside them.

Though investments are the ultimate interest, the focus of the analysis is how to deal with the unknown and unknowable, hereafter abbreviated UU. Hence, I will sometimes discuss salient problems outside of finance, such as terrorist attacks, which are also unknown and unknowable.

This essay takes no derivatives, and runs no regressions.² In short, it eschews the normal tools of my profession. It represents a blend of insights derived from reading academic works and from trying to teach their insights to others, and from lessons learned from direct and at-a-distance experiences with a number of successful investors in the UU world. To reassure my academic audience, I use footnotes where possible, though many refer to accessible internet articles in preference to journals and books. Throughout this essay, you will find speculations and maxims, as seems called for by the topic. They will be labeled in sequence.

This informal approach seems appropriate given our present understanding of the topic. Initial beliefs about this topic are highly uncertain, or as statisticians would phrase it: "Prior distributions are diffuse." Given that, the judicious use of illustrations, and prudent attempts to provide taxonomies and sort tea leaves, can substantially hone our beliefs, that is, tighten our future predictions.

¹ The financing of 36 million pounds was floated on the London Stock Exchange. Ricardo took a substantial share. His frequent correspondent Thomas Malthus took 5,000 pounds on Ricardo's recommendation, but sold out shortly before news of the Waterloo outcome was received. The evidence is clear that Ricardo, in his words, understood the "dismal forebodings" of the situation, including "its consequences, on our [England's] finances." See Sraffa (1952, Vol VI, pp. 202, 229 and surrounding material.

² Ralph Gomory's (1995) literary essay on the Unknown and Unknowable provided inspiration. Miriam Avins provided helpful comments.

Part I of this essay talks about risk, uncertainty, and ignorance, the last carrying us beyond traditional discussions. Part II looks at behavioral economics, the tendency for humans to deviate in systematic ways from rational decision, particularly when probabilities are involved, as they always are with investments. Behavioral economics pervades the UU world. Part III addresses the role of skilled mathematical types now so prevalent in finance. It imparts a general lesson: If super-talented people will be your competitors in an investment arena, perhaps it is best not to invest. Its second half discusses a dispute between math types on money management, namely how much of your money to invest when you do have an edge. Part IV details when to invest when you can make more out of an investment, but there is a better informed person on the other side of the transaction. Part V tells a Buffett tale, and draws appropriate inferences. Part VI concludes.

I. RISK, UNCERTAINTY AND IGNORANCE

Escalating challenges to effective investing. The essence of effective investment is to select assets that will fare well when future states of the world become known. When the probabilities of future states of assets are known, as the efficient markets hypothesis posits, wise investing involves solving a sophisticated optimization problem. Of course, such probabilities are often unknown, banishing us from the world of the capital asset pricing model (CAPM), and thrusting us into the world of uncertainty.³

Were the financial world predominantly one of mere uncertainty, the greatest financial successes would come to those individuals best able to assess probabilities. That skill, often claimed as the domain of Bayesian decision theory, would swamp sophisticated optimization as the promoter of substantial returns.

The real world of investing often ratchets the level of non-knowledge into still another dimension, where even the identity and nature of possible future states are not known. This is the world of ignorance. In it, there is no way that one can sensibly assign probabilities to the unknown states of the world. Just as traditional finance theory hits the wall when it encounters uncertainty, modern decision theory hits the wall when addressing the world of ignorance. I shall employ the acronym UU to refer to situations where both the identity of possible future states of the world as well as their probabilities are unknown and unknowable. Table 1 outlines the three escalating categories; entries are explained throughout the paper.

³ The classic description of uncertainty, a situation where probabilities could not be known, is due to Frank Knight (1921).

Table 1. Escalating Challenges to Effective Investing

	Knowledge of States of the World	Investment Environment	Skills Needed
Risk	Probabilities known	Distributions of returns known	Portfolio optimization
Uncertainty U	Probabilities unknown	Distributions of returns conjectured	Portfolio optimization, Decision theory
Ignorance UU	States of the world unknown	Distributions of returns conjectured, often from deductions about other's behavior. Complementary skills often rewarded along side investment	Portfolio optimization. Decision theory. Complementary skills (ideal) Strategic inference.

This essay has both dreary and positive conclusions about investing in a UU world. The first dreary conclusion is that unknowable situations are widespread and inevitable. Consider the consequences for financial markets of global warming, future terrorist activities, or the most promising future technologies. These outcomes are as unknowable today as were the 1997 Asian meltdown, the 9/11 attacks, or the NASDAQ soar and swoon at the end of the century, shortly before they were experienced.

These were all aggregate unknowables, affecting a broad swath of investors. But many unknowables are idiosyncratic or personal, affecting only individuals or handfuls of people, such as: If I build a 300-home community ten

and Buffet, who can leverage complementary skills in stock market investment, will be in a privileged position of limited competition. But that will accomplish little if they do not show courage and make big purchases where they expect high payoffs. But the lesson for regular mortals is not to imitate Warren Buffett or Bill Miller; that makes no more sense than trying to play tennis like Roger Federer. Each of them has an inimitable skill. If you lack Buffett-Miller capabilities, you will get chewed up as a bold stock picker.

Note, by the way, the generosity with which great investors with complementary skills explain their successes – Buffett in his annual reports, Miller at Harvard, and any number of venture capitalists who come to lecture to MBAs. These master investors need not worry about the competition, since few others possess the complementary skills for their types of investments. Few UU investment successes come from catching a secret, such as the whispered hint of “plastics” in the movie *The Graduate*. Mayer Amschel Rothschild had five sons who were bright, disciplined, loyal and willing to disperse. These were the complementary skills. The terrific investments in a UU world – and the Rothschild fortune – followed.

Before presenting a maxim about complementary skills, I present you with a decision problem. You have been asked to join the Business Advisory Board of a company named Tengion. Tengion was founded in 2003 to develop and commercialize a medical breakthrough: “developing new human tissues and organs ([neo-tissues](#) and [neo-organs](#)) that are derived from a patient’s own cells...[this technology] harnesses the body’s ability to regenerate, and it has the potential to allow adults and children with organ failure to have functioning organs built from their own ([autologous](#)) tissues.” <http://www.tengion.com/>

This is assuredly a UU situation, doubly so for you, since until now you had never heard the term neo-organ. A principal advantage of joining is that you would be able to invest a reasonable sum on the same basis as the firm’s insiders and venture capitalists. Would you choose to do so?

I faced this decision problem because I had worked successfully with Tengion’s president on another company many years earlier. I was delighted with the UU flavor of the situation, and chose to join and invest because I would be doing so on the same terms as sophisticated venture capital (VC) firms with track records and expertise in relevant biotech areas. This was an investment from which virtually everyone else would be excluded. In addition, it would benefit from the complementary skills of the VCs.

Sidecar investments. Such undertakings are “sidecar investments”; the investor rides along in a sidecar pulled by a powerful motorcycle. The more the investor is distinctively positioned to have confidence in the driver’s integrity and his motorcycle’s capabilities, the more attractive the investment, since its price will

be lower due to limited competition. Perhaps the premier sidecar investment ever available to the ordinary investor was Berkshire Hathaway, many decades back. One could have invested alongside Warren Buffett, and had him take a ridiculously low compensation for his services. (In recent years, he has been paid \$100,000, with no bonus or options.) But in 1960 who had heard of Warren Buffett, or knew that he would be such a spectacular and poorly compensated investor? Someone who knew Buffett and recognized his remarkable capabilities back then was in a privileged UU situation.

Maxim A: Individuals with complementary skills enjoy great positive excess returns from UU investments. Make a sidecar investment alongside them when given the opportunity.

Do you have the courage to apply this maxim? It is January 2006 and you, a Western investor, are deciding whether to invest in Gazprom, the predominantly government-owned Russian natural gas giant in January 2006. Russia is attempting to attract institutional investment from the West; the stock is sold as an ADR, and is soon to be listed on the OTC exchange; the company is fiercely profitable, and it is selling gas at a small fraction of the world price. On the upside, it is generally known that large numbers of the Russian elite are investors, and here and there it is raising its price dramatically. On the downside, Gazprom is being employed as an instrument of Russian government policy, e.g., gas is sold at a highly subsidized price to Belarus, because of its sympathetic government, yet the Ukraine is being threatened with more than a four-fold increase in price, in part because its government is hostile to Moscow. And the company is bloated and terribly managed. Finally, experiences, such as those with Yukos Oil, make it clear that the government is powerful, erratic, and ruthless.

This is clearly a situation of ignorance, or UU. The future states of the world are simply not known. Will the current government stay in power? Will it make Gazprom its flagship for garnering Western investment? If so, will it streamline its operations? Is it using foreign policy concerns as a device mainly to raise prices, a strong positive, and is it on a path to raise prices across the board? Will it complete its proposed pipelines to Europe? What questions haven't you thought of, whose answers could dramatically affect your payout? Of course, you should also determine whether Western investors have distinct disadvantages as Gazprom shareholders, such as unique taxes, secondary voting status, etc. Finally, if you determine the investment is favorable given present circumstances, you should ask how quickly Russia could change conditions against outsiders, and whether you will be alert and get out if change begins.

You could never learn about the unknowables sufficiently well to do traditional due diligence on a Gazprom investment. The principal arguments for going ahead would be that Speculation 1 and Maxim A apply. If you could comfortably determine that the Russian elite was investing on its own volition, and that foreigners would not be discriminated against, or at least not quickly, this would make a sensible sidecar investment.¹⁰

II. BEHAVIORAL ECONOMICS AND DECISION TRAPS

Behavioral decision has shaken the fields of economics and finance in recent decades. Basically, this work shows in area after area that individuals systematically deviate from making decisions in a manner that would be admired by Jimmie Savage (1954) and Howard Raiffa (1968), pioneers of the rational decision paradigm. As one illustration, such deviators could be turned into money pumps: They would pay to pick gamble B over gamble A. Then with A reframed as A', but not changed in its fundamentals, they would pay to pick A over B.

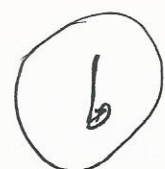
That is hardly the path to prudent investment, but alas behavioral decision has strong descriptive validity. Behavioral decision has important implications for investing in UU situations. When considering our own behavior, we must be extremely careful not to fall prey to the biases and decision traps it chronicles. Almost by definition, UU situations are those where our experience is likely to be limited, where we will not encounter situations similar to other situations that have helped us hone our intuition.

Virtually all of us fall into important decision traps when dealing with the unknowable. This section discusses two, overconfidence and recollection bias, and then gives major attention to a third, misweighting differences in probabilities and payoffs. But there are dozens of decision traps, and some will appear later in this essay. The Nobel Prize winning work of Daniel Kahneman and Amos Tversky (the latter was warmly cited, but died too soon to win),¹¹ and the delightful and insightful *Poor Charlie's Almanack*, written by Charles Munger (Warren Buffett's partner) respectively provide academic and finance-oriented discussions of such traps.

There are at least three major objections to behavioral economics: First, in competitive markets, the anomalies it describes will be arbitrated away. Second, the anomalies only appear in carefully crafted situations; they are much like optical illusions, intriguing but rarely affecting everyday vision. Third, they describe the way people do behave, but not the way they should behave. The first

¹⁰ This investment was proposed when this paper was presented at a conference sponsored by the Wharton School on January 6, 2006. The price was then 33.60. At press time nine months later it was \$47.

¹¹ See http://nobelprize.org/nobel_prizes/economics/laureates/2002/public.html.



III. MATH WHIZZES IN FINANCE AND CASH MANAGEMENT

The major fortunes in finance, I would speculate, have been made by people who are effective in dealing with the unknown and unknowable. This will probably be truer still in the future. Given the influx of educated professionals into finance, those who make their living speculating and trading in traditional markets are increasingly up against others who are tremendously bright and tremendously well-informed.²¹

By contrast, those who undertake prudent speculations in the unknown will be amply rewarded. Such speculations may include ventures into uncharted areas, where the finance professionals have yet to run their regressions, or may take completely new paths into already well-traveled regions.²² It used to be said that if your shoeshine boy gave you stock tips it was time to get out of the market. With shoeshine boys virtually gone and finance Ph.D.'s plentiful, the new wisdom might be:

When your math whiz finance Ph.D. tells you that he and his peers have been hired to work in the XYZ field, the spectacular returns in XYZ field have probably vanished forever.

Similarly, the more difficult a field is to investigate, the greater will be the unknown and unknowables associated with it, and the greater the expected profits to those who deal sensibly with them. Unknowables can't be transmuted into sensible guesses -- but one can take one's positions and array one's claims so that unknowns and unknowables are mostly allies, not nemeses. And one can train to avoid one's own behavioral decision tendencies, and to capitalize on those of others.

Assume that an investor is willing to invest where he has an edge in UU situations. How much capital should then be placed into each opportunity? ~~This~~

²¹ Paul Samuelson, who attends closely to most aspects of the finance field, attests to this challenge. He observed that the Renaissance Group, run by former Stony Brook math professor Jim Simons, is "perhaps the only long-time phenomenal performer [in traditional financial markets] on a risk-corrected basis." Private communication, June 15, 2006.

²² I saw such path blazing by my former business partner Victor Niederhoffer in the 1970s, when he ventured into commodity investing. His associates hand recorded commodity prices at 15-minute intervals. He lined up a flotilla of TRS-80 Radio Shack computers to parallel process this information. His innovative data mining, spurred by accompanying theories of how markets behave, gave him a giant advantage over major investment houses. Niederhoffer continues along unusual paths, now making a second fortune after losing his first in the collapse of the Thai baht in 1997.

<http://www.greenwichtime.com/business/scn-sa-black1jun18,0,3887361.story?page=5&coll=green-business-headlines>



focuses on efficient or near efficient markets, implying that one will not have a great edge in any investment. In contrast, the real world presents some ordinary investments, some attractive investments, and some very attractive investments. Clearly it makes sense to invest more in the more attractive investments. This leads to a maxim on investment *advantage*:

Maxim B: The greater is your expected return on an investment, that is the larger is your *advantage*, the greater the percentage of your capital you should put at risk.

Most investors understand this criterion intuitively, at least once it is pointed out. But they follow it insufficiently if at all. The investment on which they expect a 30% return gets little more funding than the one where they expect to earn 10%. Investment advantage should be as important as diversification concerns in determining how one distributes one's portfolio.

IV. INVESTING WITH SOMEONE ON THE OTHER SIDE

One of the more puzzling aspects of the financial world is the volume of transactions in international currency markets. Average daily volume is \$1.9 trillion, which is slightly more than all U.S. imports in a year. There are hedgers in these markets, to be sure, but their volume is many times dwarfed by transactions that cross with sophisticated or at least highly paid traders on both sides. Something no less magical than levitation is enabling all players to make money, or think that they are making money.

But let us turn to the micro situation, where you are trading against a single individual in what may or may not be a UU situation. If we find that people make severe mistakes in this arena even when there is merely risk or uncertainty, we should be much more concerned, at least for them, when UU may abound.

Bazerman-Samuelson example and lessons. Let us posit that you are 100% sure that an asset is worth more to you than to the person who holds it, indeed 50% more. But assume that she knows the true value to her, and that it is uniformly distributed on $[0,100]$, that is, her value is equally likely to be 0, 1, 2, ... 100. In a famous game due to Bazerman and Samuelson (1983), hereafter BS, you are to make a single bid. She will accept if she gets more than her own value. What should you bid?

When asked in the classroom, typical bids will be 50 or 60, and few will bid as low as 20. Students reason that the item will be worth 50 on average to her,

hence 75 to them. They bid to get a tidy profit. The flaw in the reasoning is that the seller will only accept if she will make a profit. Let's make you the bidder. If you offer 60, she will not sell if her value exceeds 60. This implies that her average value conditional on selling will be 30, which is the value of the average number from 0 to 60. Your expected value will be 1.5 times this amount, or 45. You will lose 15 on average, namely 60-45, when your bid is accepted. It is easy to show that any positive bid loses money in expectation. The moral of this story is that people, even people in decision analysis and finance classrooms, where these experiments have been run many times, are very poor at taking account of the decisions of people on the other side of the table.

There is also a strong tendency to draw the wrong inference from this example, once its details are explained. Many people conclude that you should never deal with someone else who knows the true value, when you know only the distribution. In fact, BS offer an extreme example, almost the equivalent of an optical illusion. You might conclude that when your information is very diffuse and the other side knows for sure, you should not trade even if you have a strong absolute advantage.

That conclusion is wrong. For example, if the seller's true value is uniform on $[1,2]$ and you offer 2, you will buy the object for sure, and its expected value will be 1.5 times $1.5 = 2.25$. The difference between this example and the one with the prior on $[0,1]$ is that here the effective information discrepancy is much smaller. To see this, think of a uniform distribution from $[100,101]$; there is virtually no discrepancy. (In fact, bidding 2 is the optimal bid for the $[1,2]$ example, but that the extreme bid is optimal also should not be generalized.)

Drawing inferences from others. The general lesson is that people are naturally very poor at drawing inferences from the fact that there is a willing seller on the other side of the market. Our instincts and early training lead us not to trust the other guy, because his interests so frequently diverge from ours. If someone is trying to convince you that his second hand car is wondrous, skepticism and valuing your own information highly helps. However, in their study of the heuristics that individuals employ to help them make decisions, Tversky and Kahneman (1974) discovered that individuals tend to extrapolate heuristics from situations where they make sense to those where they do not.

For example, we tend to distrust the other guy's information even when he is on our side. This tendency has serious drawbacks if you consider sidecar investing – free riding on the superior capability of others – as we do below. Consider two symmetrically-situated partners with identical interests who start with an identical prior distribution about some value which is described by a two-parameter distribution. They each get some information on the value. They also



have identical prior distributions on the information that each will receive. Thus, after his draw, each has a posterior mean and variance. Their goal is to take a decision whose payoff will depend on the true value. The individuals begin by submitting their best estimate, namely their means. After observing each other's means, they then simultaneously submit their new best estimate. Obviously, if one had a tight (loose) posterior his estimate would shift more (less) toward that of his partner. In theory, two things should happen: (a) The two partners should jump over each other between the first and second submission half of the time. (b) The two partners should give precisely the same estimate for the third submission.

In practice, unless the players are students of Robert Aumann²⁷ – his article “Agreeing to Disagree” (1976) inspired this example – rarely will they jump over each other. Moreover, on the third submission, they will not come close to convergence.

The moral of this story is that we are deeply inclined to trust our own information more than that of a counterpart, and are not well trained to know when this makes good sense, and when it inclines us to be a sucker. One should also be on the lookout for information disparities. Rarely are they revealed through carnival-barker behavior. For example, when a seller merely offers you an object at a price, or gets to accept or reject when you make a bid (as with BS), he will utilize information that you do not possess. You had better be alert and give full weight to its likely value, e.g., how much the object is worth on average were he to accept your bid.

In the financial world one is always playing in situations where the other fellow may have more information and you must be on your guard. But unless you have a strictly dominant action – i.e., it is superior no matter what the other guy's information -- a maximin strategy will almost always push you never to invest. After all, his information could be just such to lead you to lose large amounts of money.

Two rays of light creep into this gloomy situation: First, only rarely will his information put you at severe disadvantage. Second, it is extremely unlikely that your counterpart is playing anything close to an optimal strategy. After all, if it is so hard for you to analyze, it can hardly be easy for him.²⁸

²⁷ Robert Aumann and Thomas Schelling won the 2005 Nobel Memorial Prize in Economics for their contributions to game theory.

²⁸ Given the potential for imperfect play, it is sometimes dangerous to draw inferences from the play of others, particularly when their preferences are hard to read. The Iraqi weapons of mass destruction provide a salient example. Many people were confident that such weapons were present not because of intelligence, but because they believed Saddam Hussein could have saved himself and his regime simply by letting in inspectors, who in the instance would find nothing.

10

Absolute advantage and information asymmetry. It is helpful to break down these situations into two components. A potential buyer's absolute advantage benefits both players. It represents the usual gains from trade. In many financial situations, as we observed above, a buyer's absolute advantage stems from her complementary skills. An empty lot in A's hands may be worth much less than it would be in B's. Both gain if A trades to B, due to absolute advantage. But such an argument would not apply if A was speculating that the British pound would fall against the dollar when B was speculating that it would rise. There is no absolute advantage in such a situation, only information asymmetries.

If both parties recognize a pure asymmetric information situation, only the better informed player should participate. The appropriate drawing of inferences of "what- you-know-since-you-are-willing-to-trade" should lead to the well known no-trade equilibrium. Understanding this often leads even ordinary citizens to a shrewd strategem:

Maxim C: When information asymmetries may lead your counterpart to be concerned about trading with you, identify for her important areas where you have an absolute advantage from trading. You can also identify her absolute advantages, but she is more likely to know those already.

When you are the buyer, beware; seller-identified absolute advantages can be chimerical. For example, the seller in the bazaar is good at explaining why your special characteristics deserve a money-losing price – say it is the end of the day and he needs money to take home to his wife. The house seller who does not like the traffic noise in the morning may palter that he is moving closer to his job, suggesting absolute advantage since that is not important to you. Stores in tourist locales are always having "Going Out of Business Sales." Most swindles operate because the swindled one thinks he is in the process of getting a steal deal from someone else.

If a game theorist had written a musical comedy, it would have been *Guys and Dolls*, filled as it is with the ploys and plots of small-time gamblers. The overseer of the roving craps game is Nathan Detroit. He is seeking action, and asks Sky Masterson – whose good looks and gambling success befit his name – to bet on yesterday's cake sales at Lindy's, a famed local deli. Sky declines and recounts a story to Nathan:

On the day when I left home to make my way in the world, my daddy took me to one side. "Son," my daddy says to me, "I am sorry I am not able to bankroll you to a large start, but not having the necessary lettuce to get you rolling, instead I'm going to stake you to some very valuable advice. One of these days in your travels, a guy is going to show you a



brand-new deck of cards on which the seal is not yet broken. Then this guy is going to offer to bet you that he can make the jack of spades jump out of this brand-new deck of cards and squirt cider in your ear. But, son, do not accept this bet, because as sure as you stand there, you're going to wind up with an ear full of cider."

In the financial world at least, a key consideration in dealing with UU situations is assessing what others are likely to know or not know. You are unlikely to have mystical powers to foresee the unforeseeable, but you may be able to estimate your understanding relative to that of others. Sky's dad drew an inference from someone else's willingness to bet. Presumably Ricardo was not a military expert, but just understood that bidders would be few and that the market would overdiscount the UU risk.

Competitive knowledge, uncertainty, and ignorance. Let us assume that you are neither the unusually skilled Buffett nor the unusually clear-thinking Ricardo. You are just an ordinary investor who gets opportunities and information from time to time. Your first task is to decide into which box an investment decision would fall. We start with unknown probabilities.

Investing with Uncertainty and Potential Asymmetric Information

	Easy for Others to Estimate	Hard for Others to Estimate
Easy for You to Estimate	A. Tough markets	B. They're the Sucker
Hard for You to Estimate	C. Sky Masterson's Dad, You're the Sucker	D. Buffett's Reinsurance Sale Calif. Earthquake Auth.

The first row is welcome and relatively easy, for two reasons: (1) You probably have reasonable judgment of your knowledge relative to others, as would a major real estate developer considering deals in his home market. Thus you would have a good assessment of how likely you are to be in Box B or Box A. (2) If you are in Box B, you have the edge. Box A is the home of the typical thick financial market, where we tend to think prices are fair on average.

The second row is more interesting, and brings us to the subject matter of this paper. In Part V below, we will see Buffett sell a big hunk of reinsurance because he knew he was in box D. His premium was extremely favorable, and he

Maxim G: Discounting for ambiguity is a natural tendency that should be overcome, just as should be overeating.

Maxim H: Do not engage in the heuristic reasoning that just because you do not know the risk, others do. Think carefully, and assess whether they are likely to know more than you. When the odds are extremely favorable, sometimes it pays to gamble on the unknown, even though there is some chance that people on the other side may know more than you.

Buffett took another bold financial move in 2006, in a quite different field, namely philanthropy. He announced that he would give away 85% of his fortune or \$37.4 billion, with \$31 billion going to the Bill and Melinda Gates Foundation. Putting money with the Gates Foundation represents sidecar philanthropy. The Foundation is an extremely effective organization that focuses on health care and learning. It is soon to be led by Bill Gates, a fellow with creativity, vision and hardheadedness as strong complementary skills, skills which are as valuable in philanthropy as they are in business.

VI. CONCLUSION

This essay offers more speculations than conclusions, and provides anecdotal accounts rather than definitive data. Its theory is often tentative and implicit. But the question it seeks to answer is clear: How can one invest rationally in UU situations? The question sounds almost like an oxymoron. Yet clear thinking about UU situations, which includes prior diagnosis of their elements, and relevant practice with simulated situations, may vastly improve investment decisions where UU events are involved. If they do improve, such clear thinking will yield substantial benefits. For financial decisions at least, the benefits may be far greater than are available in run-of-the-mill contexts, since competition may be limited and prices well out of line.

How important are UU events in the great scheme of financial affairs? That itself is a UU question. But if we include only those that primarily affect individuals, the magnitude is far greater than what our news accounts would suggest. Learning to invest more wisely in a UU world may be the most promising way to significantly bolster your prosperity.