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Title: An Introduction to Behavioral  
Finance: Why Bad Decisions Happen  
to Good People

Speaker(s): G. Scott Clemons, CFA

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## **An Introduction to Behavioral Finance: Why Bad Decisions Happen to Good People**

G. Scott Clemons, CFA

When I first talked to Mitch and Mark about what to talk about this week, in keeping with the theme, Embracing Change, I had intended to talk about the change that was taking place. What was going on in the economy and financial market is what I do professionally. But the more I thought about it, the more I thought a far more interesting topic would be to talk about how people respond to that change, both as professional advisors and also as individuals. So the topic of this has changed a little bit, but I think you'll find it interesting and maybe even more interesting.

A lot of what I'm going to talk about is drawn on my own practice. I head up a high net worth management practice in New York. I'm more on the investment side than the insurance side, but I think a lot of the observations are the same. How people react to decisions involving money and finance.

Today is Thursday. Four days from today the Alfred Nobel Foundation will award its 2009 Prize in Economics. The Prize in 2002 was awarded to a Princeton professor, one of my old professors from many years ago by the name of Daniel Kahneman. And the award that year was distinguished by the fact that Daniel Kahneman as he accepted this Nobel Prize for Economics, is not an economist. Never taught a single course in economics and by his own claim never took a single course in economics. A very curious state of affairs for someone receiving the highest honor imaginable for an economist.

What Daniel won the prize for was the application of behavioral psychology, and that is his area of study, to decision-making in finance and economics. His work has given rise to a field called behavioral finance or behavioral economics. Has anyone heard of that field at all? A few people, good. It's becoming a little bit more widely known, but 20 years ago it was not even on the radar screen at all.

The basic observation of behavioral finance is rooted in how people make decisions with less-than-perfect information and under time constraints. And we live in a world in which the problem is not less-than-complete information. It's over-complete information. It's one of the curses of the electronic age. We are bombarded with Bloomberg, ILECs, CNN.com, Jim Cramer jumping up and down like a mad man on television, Maria Bartiromo. There is no end to the stream, the tsunami, of information that comes at us as professionals. And, by the way, we live in a world in which it comes at our clients just as quickly.

And picking up on a conversation that Tim was talking about just before lunch, we are never untethered from it. How many of you have one of these devilish devices? You all do. How many of you are checking it right now instead of listening to me? A few of you, there's one honest man in the back of the room.

There is so much more information available to us now than there was a year ago, three, five, 10 years ago, that making sense of it all really impacts the way we make decisions in everything, but particularly in finance and economics.

I can't help but replicate, with permission of course, one of my favorite cartoons from *the New Yorker* where the urbane couple is standing at a cocktail party and one says to the other: "One question, if this is the information age, how come nobody knows anything?" I feel like that all the time. I'm sure you do. Our clients do as well.

How do we make sense of this deluge of information? Over time, we've developed shortcuts for doing so. There are time-honored and well-honed tools of the trade. There are rules of thumb. There are mental shortcuts. Anytime you hear someone say or you find yourself saying, "everybody knows that" or "chances are" or "it's clear that," be sensitive to the fact that there is some mental shortcut that's taking place, subconsciously even. But there is some way that you are using to cut through all of that information to make a decision with less than perfect information and under time constraints.

Working on Wall Street is great for a student of language, because there are so many great and colorful phrases that get thrown around and you've heard these. Some are rather pedantic: "Buy low, sell high." One of my favorites is this one: "Even dead cats bounce." Does that sound familiar? Do you know that one? The idea is that if you throw a cat off of a 10-story building it will bounce when it hits the ground, but it's still a dead cat. Wall Street is very colorful. Some I couldn't write down and show an urbane audience like you.

These are rules of thumb that traders on Wall Street use to live by. There're ways of cutting through all of that deluge of information. A fancy 10-dollar word for these shortcuts is heuristics. It comes from the Greek word *heurisko*, which literally means to find or to discover. Heuristic again is the fancy psychological term for a shortcut, a mental tool to cut through all of the information and come to a decision very quickly without a perfect set of information.

I'm going to talk about, over the next 45 minutes or so, four common heuristics in investment decision-making (you can broaden those out to financial decision-making in general): representativeness, anchoring, overconfidence, mental accounting. Then I want to look, as I close, at a very specific form of mental accounting called prospect theory. It actually is for prospect theory that Daniel Kahneman won the Nobel Prize in Economics seven years ago.

Along the way, this is going to be a little participatory, so I'm going to ask you to help me as we read through, as we think about some of these heuristics, with a couple of little word games. I'm not going to embarrass anyone, but I'm going to ask you to stay a little bit alert after lunch and actually help identify some of these heuristics in the way you think yourselves.

So let's look first at representativeness which is the assumption that if things look alike, they are alike, or if they are alike in some parts, they are probably alike in every part. This is a heuristic, a behavioral bias that enables us to sort things into categories or to label them based on, here's that phrase again, less-than-complete information.

As I go through these heuristics, understand I'm not saying people who fall prey to them are weak thinkers or somehow dumb, they're not. This is a hardwired behavioral characteristic and it goes back into, if you've ever read on cognitive science, the lizard brain part of our cognitive ability. It's subconscious. There's almost nothing that you can do about it. And you can appreciate how a heuristic like this representativeness was a very useful thing for our cavemen ancestors. The roar of a lion, without even seeing it, to our caveman ancestor would have been representative of something that was dangerous. That's what enabled the species to survive. So I'm not saying these are bad, I'm just saying they are. But they can be very misleading and very dangerous when they are applied to modern decision-making.

So, let me give you an example. Our first example I'll ask you to think about. Elizabeth, made up name, is shy, studious and very concerned with social issues. While a student at Berkeley she majored in English literature and environmental studies. Given this information, which of the three following cases is most probable. A, Elizabeth is a librarian; B, Elizabeth is a librarian and an active member of the Sierra Club; or C, Elizabeth works in the banking industry. Elizabeth is a figment of my imagination. This is all you know about Elizabeth, so therefore there is no right answer. But there is a best answer.

How many people think that A is the most likely answer? Elizabeth is most likely a librarian, a few people. How about B, Elizabeth is a librarian and active in the Sierra Club? How many of you think Elizabeth wears a gray-flannel suit to work? A few people, good. A good mix. B is actually the worst answer. Did you say B, Mitch? Thank you for your honesty. B is the worst answer simply because B is a compound probability. There are two variables here. So almost no matter what those probabilities are, A is more probable than B because B has two moving parts, A only has one. The best answer, however, is actually C. Well done. The reason C is the most probable answer actually has nothing to do with what I told you. C is the most probable answer simply because whereas there are only 100,000 librarians in the United States of America, there are 800,000 bankers. Read the question again very carefully. The question doesn't say what is the probability that a librarian is shy and studious? The question is what is Elizabeth's most likely profession?

Now unless you work for the Bureau of Labor Statistics, I had information that you didn't have and that's a little unfair. So let me give you one more example.

By now you know I'm setting out to trick you with every question I'm going to ask today. If one were to toss a fair coin six times in a row, which of these series of heads and tails is more likely? So A is I think pretty straightforward, the obvious, tails, tails, tails, heads, tails, heads. B is alternating heads and tails. C is six heads in a row. So which of these series is more likely?

How many people think that A is a more likely series? How about B? How about C? You're out on a limb there. You're the only one who raised your hand for C. But Mark knows the answer to this. Again, read the question. What seems to be most, and here's that phrase, representative of what you know to be a random process, right, fair coin, seems to be either A or B. What are the odds of one coin flip? 50/50. What are the odds of the second coin flip? They're independently statistical events. All three of those series have an equal probability, because the coin doesn't know what it came up last time.

This is just an example of how you, once again, find yourself being fooled by a representation of what seems to be, what you know to be a random process.

Representativeness appears quite frequently in the investment world and where I've run into it most frequently in my practice is the confusion of a good company with a good stock. A well-managed, well-respected, market-leading company with great products and great brand name and grant management, etc., seems to be exactly what we as investors want to own. It seems to be, here's the word again, representative of what a good investment should be. And indeed some of those companies actually do make good investments in the same way our friend Elizabeth might very well be a librarian and a member of the Sierra Club, it just doesn't necessarily follow directly.

The shortcut, however, can turn out to be quite dangerous for two reasons. One, the perception of quality doesn't always correspond with reality. And we've seen that again and again in the investment world. I used to use an example when I gave this presentation years ago of Enron. Here was a company that was on the cover of magazines. Management won leadership of the year awards. The perception and reality turned out to be very different. Maybe a little less scandalously, maybe equally scandalously, come up with your own example of a more modern era over the past year, year and a half, AIG. Why not? Leading brand name, great company, from an investment standpoint hasn't turned out too well for the stockholders.

The other problem that investors can make is the confusion of a quality product with a quality investment. And before someone says, "Oh, but my Apple iPod is the best thing since sliced bread." So is mine, but just because the product is good, doesn't necessarily mean the company is good, even though it certainly seems representative of that very thing.

Don't take my word for it subjectively. Objectively you could measure it. S&P, Standard & Poor's, does a quality gauge of each company in the index. They gauge for sustainability of dividends, sustainability of earnings, quality of profit margins. It's a multifactor model. And they give ratings. What I've done here is look back over about 15 years of the performance of A-plus-rated companies. The highest quality companies in the S&P 500. In some years, like 1990 to 1991, and again in 2000, that worked very well. So it does work in some years. In some years it doesn't. That's precisely the point. What appears to be representative of a good investment because of quality, doesn't necessarily bear out in reality.

Another danger inherent in this bias is the temptation to equate past success with future success. It's sort of like, if you think about the fact that at the end of the day today after the second session, as hot and humid as it is outside, the bar will open and that first bottle of beer or glass of Sauvignon Blanc will taste fantastic, the second one a little less so. We're tempted by past success to equate that to future success, even though our lawyers remind us, and if you look at the bottom of every prospectus you ever see, past results are no guarantee of future success. It certainly feels that way sometimes.

So another little example to look at and if you can read this pretend you can't read the Bloomberg chart. Just looking at that price line though, does that on the surface look like a good

stock or bad stock? The fact is you don't know, you don't have enough information to know obviously. But remember what we're looking for here is decisions under time constraints. I want an answer right now, and also less than perfect information. That looks like a good stock. That's look like the kind of stock that would have been very enjoyable to own. That would have been a nice ride. You could have talked about that to your friends down at the golf course or at the next TOT meeting. It would have been a good stock to own, and it would have felt really good all the way up until about a year ago, because that stock is Lehman Brothers.

How about this one? Good stock or bad stock? A little hard to get excited about that, it had a nice little rise here, but it's kind of plateaued if anything with a downward trend. It's a little hard to brag about that at the next TOT meeting. That stock happens to be Berkshire Hathaway. That's Warren Buffet's holding company and one of the best compounding stocks in the market over the past several decades.

One final example, looking back at the last cycle, the tail end of the dot com boom where we found this confusion of quality perception in reality to be rampant in the market. These are the - top 10 performing stocks in the S&P 500 for the three-year period from 1997 to 1999, the tail end of the dot com bubble. Look at this price performance. It just brings a tear to the eye to think about the wealth creation that took place over that three-year period. Equal rated average of those 10 stocks: 3,604 percent over a three-year period.

What would bring even more of a tear to the eye if, having observed that performance in late 1999, you said I want me some of that. Because look what happened to these same 10 stocks over the subsequent three years. Some of them, JDS Uniphase, remember them, that's an old name, 95 percent, on average, lost half of your money. This is not to cast any dispersion on these individual stocks or lay any claim to an investment thesis behind them. It's simply to illustrate another way in which that heuristic of representativeness can lead you astray if you allow that bias to shortcut further due diligence in either your own thinking or the thinking of your clients.

A second heuristic is called anchoring. It's the tendency to base one's estimates or beliefs on a known starting point and then to adjust off of that starting point, even if the starting point or the anchor isn't as reliable as you think it is. It's a shortcut that allows us to make estimates and guesses based on at least one thing we know for sure, but how sure do we really know that one thing?

Again an example and this came out of a psychology class, actually that Daniel Kahneman taught. Here I will ask you to play along at home again. I'm sorry to make you do math after lunch. Take the last three digits of your social security number and add 400. Insert that number that you came up with, and I'm guessing those are as many different numbers as there are people in this room, into the blank in this paragraph.

The Huns, under Attila, invaded Europe and penetrated deep into what is now France where they were defeated and forced to return eastward. These events occur before or after the number you came up with. My social security ends in 815 so I'd add 400 and that would be 1215.

Now see what I'm doing here. I'm creating a patently absurd anchor. Does anyone here actually believe your social security number has anything to do with Attila the Hun? Because, if you do, I have no way to help you there. That's a different seminar altogether. This is a patently absurd anchor. Think about that though. Higher or lower. And once you come up with that, then take a guess. In what year did Attila's defeat occur? It's possible someone here actually knows the answer to that, and I'll give it to you. Again, what we're trying to do is look at how do you make decisions with less than perfect information and under time constraints with a perfectly, in this case, false anchor?

When this question was presented to a classroom of Princeton students, ostensibly brighter than your average group of people, this was the outcome of that. Depending on where the anchor was, in other words, depending on what was in that blank right there, it affected the answer. The higher the answer was, my social security number plus 400 would be 1215, look at the correlation between where the anchor was and where the mean answer was. In other words, this patently false anchor had an impact on a guess when a classroom knew perfectly well that the anchor and the guess had absolutely nothing to do with each other. That's the power of this heuristic. The date is actually 415 AD for those of you taking notes.

One more quick example. Class was also given this. Estimate, within five seconds, the product of multiplying the following set of numbers. One times two times three times four. What is it? That's a solvable figure. There is a way to figure out what that is. But the point is not to figure it out, the point is to make a guess with a very short time constraint. The other half of the class was given the following equation. Now when you're shown both of them, obviously you know the answer. One is identical to the answer to the other.

The half of the class that only saw the first equation had a mean guess, an average guess of 512. The class that saw the second equation, do you think their answer was higher or lower on average? Why higher? Because we read from left to right. So the heuristic is this. The half of the class looked at this and said one times two times three is six times 24 times. Guess. So they had an anchor and then they adjusted up, but not enough. The second part of the class said nine times eight times, said wow that's a big number. Time's up, guess. And they came up with 2250.

So once again because we read from left to right we see that the anchoring has a real impact on what our guess is when we have a constraint of time. The right answer by the way is 362,880. So not only do we anchor on the wrong thing, we wildly underestimate or overestimate depending on the framing.

Anchoring, in the investment world, shows up most often in the tendency of investors to hone in on a specific stock price to determine success or failure of an investment. And this is fair because there has to be a way to gauge this. But most performance is based on year-to-date. How's the stock done this year? How's the portfolio done this year? Or it might be how far off the 52-week high? Or how far off the 52-week low? Or, how far up from where I bought it? There's an anchor in every one of those things. Again, there has to be an anchor. It's not bad. Just understand that by virtue of the anchor you choose, the framing of that may very well influence the outcome.

Anchors can actually work against you in a very tangible way as well. All of these we see in client portfolios all the time. Doubling up on a position just to lower the basis. The stock goes from 30 to 15, you say to yourself, well, if I liked it at 30, I'll love it at 15. I'll double up without doing the added due diligence to make sure that that's still a good decision at 15. A mistake we see quite all the time. We hear clients say, "As soon as I get back to that 52-week high, then I'm going to sell the stock and take a victory lap." As if the stock knows you own it. As if the stock is out to get you or something like that. You think through these things and they become patently absurd pretty quickly.

And perhaps the most insidious anchor that we've seen particularly in an environment like this, is waiting to breakeven. I bought the stock at 30. The bear market hit me. I'm down to 10. As soon as it gets back up to 30 well, by God then I'm going to sell it. Again as if the stock knows you own it.

I've got news for you. If you're waiting to breakeven on those shares of AIG, you bought in the summer of 2007, take your Geritol because you're going to have to live a long time for that to happen.

A third heuristic: overconfidence. In a nutshell this behavioral bias simply tells you what your mother always told you: "You ain't as smart as you think you are." Even though we all like to think that we are smart and we are in our way, it's just that as human beings we systematically have too much faith in our own judgments. And, having made that judgment, we naturally look for confirming evidence as opposed to contrary evidence of the decision that we already made.

In the words of those great American philosophers, Paul Simon and Art Garfunkel, in the song "The Boxer": "Still a man hears what he wants to hear and disregards the rest." Couldn't put it better myself.

Another example. Think this through. Two pieces of railroad track, metal iron railroad track, each one mile long, placed end-to-end and attached to the ground at the far extremes. Suppose it's in Hawaii and it gets hot and each of those two pieces of track expand by exactly one inch forcing the track to rise in the middle where they meet. How high will the track be in the middle? Again this is a simple mathematical equation. It's solvable but I'm not going to ask you to solve it. What I'm going to ask you to do is to think about a high and low estimate, apply the heuristic such that you are 90 percent sure and that's pretty sure, that whatever the correct answer is lies within that range. In other words, I want you to be 90 percent confident, very confident of a high and low. Understand the setup?

Now the low end of that is not interesting, the high end is interesting. So think it through and answer. How many of you think that in the middle right here the track rises one foot or less? How about five feet or less? Anybody as high as 10 feet? A couple of people. Those of you who didn't raise your hand, what's the higher number that you think is the answer? The answer is almost 30 feet. Through a one-inch expansion in that track. I'm really sorry to do this to you in Hawaii and after lunch, throw the Pythagorean Theorem at you. But basically this is what you learned in high school geometry.  $A^2 + B^2 = C^2$ . There's your rail track, it's expanded by one mile

plus one inch now. You're solving for  $B^2$ . The answer is 29.7 feet. That one inch has a mighty big impact.

What I did though was not ask you for the right number. If you had the time to actually work this out, you could have done it, you could have come up with the right number. The problem is given the deluge of information that we're confronted with, we don't have that time. We have to come up with our best guess. And the overconfidence heuristic basically says that our best guess is sometimes nowhere near good enough because we are overconfident in our own ability to make those judgments.

Overconfidence in investing is probably the most dangerous behavioral bias of all and I'm sure you see it in your practices as well. It can lead to quick and ill-informed decisions which can be very costly. It would be nice to be able to make a well-informed investment decision on the basis of just one or two pieces of information, but it can't be done. It is done, however, every day, every minute of every day. And that's what makes a market at the end of the day.

Overconfidence can lead to very poor diversification as an investor "just knows" this is the year the market is going to go up. Or, this is the year the markets are going to go down. Or, now is the time for small cap stocks. Or, I know the dollar is overvalued. Or, I know gold is going to go to \$1,500 an ounce. That overconfidence can lead to very poor diversification. Overconfidence can also lead to imprudent exposure to individual securities. It goes a long way toward explaining why many employees have not only their careers wrapped up, but a lot of their 401(k)s wrapped up in stock in their own company. And even if the company is good, going back to the representativeness bias, it can be a really bad day the day you find out the company isn't as good as you thought it was.

And if you think those days can't happen, talk to anyone who used to work at Enron, at Delphi, at WorldCom, Bear Stearns, Lehman Brothers, AIG, CitiGroup, Fannie Mae, Freddie Mac. Someone stop me please. There are plenty of examples of overconfidence leading to an overconcentration which makes a bad day a sort of game-ending day, in the sense of investing for retirement.

One final heuristic: mental accounting. I could have spent this entire hour just talking about this bias, because I think it's one of the most fascinating. Mental accounting is the tendency to put mental labels on different types of money, depending on where it came from or what we intend to do it or where we keep it. And with every other heuristic, it's not a good thing or a bad thing, it's just a thing to be aware of as you see it influence your thinking.

And we all do this. The English language captures the way we think about money in different terms. There is earned money, found money, play money, plastic money (that's credit cards), all these different kinds of things, and we could even add to this list, that lead us to think qualitatively and, in some cases, quantitatively differently about money. And this can be a good thing. At the end of the day, you don't want to confuse the nest egg money with rainy day or the play money. There's a benefit to this. But mental accounting can be your worst enemy as well as this next example illustrates. And this is something I'm sure every one of you sees in your practice.

We're all told, or used to be told, it's prudent to keep a certain amount of emergency cash on hand. Three months, six months, whatever the equation is, of spending. So, this fictional Mr. and Mrs. Phillips have set aside that \$10,000 in cash. It's sitting in a bank account earning 2 percent or significantly south of that today. This is an admittedly old example. At the same time, they have outstanding credit card debt of \$8,000 on which they're paying 16 percent. I'm oversimplifying this. There are potential reasons, beyond just the difference interest rates for this to exist, but economically, logically, the right thing to do is for Mr. and Mrs. Phillips to take that money out of the bank, pay off the credit card debt and enjoy that 14 percent difference between the two.

You're on your way to a concert, for which you purchased a \$100 ticket. On your way to the concert, you discover you've lost the tickets. No big problem, tickets are still available at the box office and for the same price. Do you buy another ticket and go to the concert or not? No right answer to this, it's a matter of personal preference. Most people to this will say, "Oh, no." Or they'll say, "Yes," but they hate to say yes. They hate the idea of having to pay for that ticket again.

Think about another scenario. You're going to the same concert, but this time you reserve a ticket, you haven't bought it yet, and on the way to the concert you discover you've lost \$100 bill but still have enough cash to purchase the ticket upon arriving at the box office. Do you buy the ticket and go to the concert? Most people will say of course, what does one have to do with the other? These are identical scenarios. In both cases, you had and then lost \$100 and are confronted with the option of spending another \$100 to go. This is mental accounting at work, because what's happened in the first scenario is you have mentally created an account called concert ticket. And you've debited that account \$100. And, in the first scenario, you're being asked to debit it again \$100. And if you do it, you know you will sit there at that concert for the entire time thinking to yourself, I paid \$200 for this ticket and the guy sitting next to me only paid \$100. It will eat at you all night long. Whereas, somehow, in this second case, it's unfortunate you've lost \$100, but you're not going to sit there thinking you paid \$200 for a ticket. Same scenario, but mental accounting. The labels that we place on money has an impact on the way we subjectively think about that money.

As I already noted, mental accounting can be your friend, particularly in a retirement savings, particularly where the mental labels of retirement money can be turned into real labels. Tax advantage things like IRAs or 529's or SEPs, etc. This is a way of making the money, if you will, less fungible. Fungible with a penalty attached to it. It's a way of taking a mental label and turning it into a real label that is beneficial. But mental accounting can also lead to some contrary decisions as well. It can lead to undervaluing money. People routinely undervalue plastic money. It's easier to use a credit card than it is to use cash. That's why in Las Vegas you get very shiny chips because they're just plastic. You undervalue them. It's easier to spend plastic money than it is to spend real money.

Tax refunds seem like found money. Technically they are found money. The government found it in your pocket and took it from you as an interest-free loan and got around to giving it back to you six or eight months later.

It's interesting. My consumer analyst says to me that rapidly December is not the most important month for profitability for retail companies in the United States of America. It's increasingly becoming January. The reason is that, as more and more people give gift cards for the holidays, it's easy for you the recipient of that plastic gift card to go into the store in January and pay full price for something, that you would have never paid full price for if it were your own money or if it were real money or if it weren't plastic money. So the plastic money of that gift card is increasingly important for retail profitability models.

It could also lead to overvaluing money. We see this in our practice all the time. We see people treating inheritances or legacy stock positions differently than they would than if the money were "theirs." Grandma leaves you shares of 3M or IBM and even though it's your money now, you overvalue it because, "well, grandma wouldn't want me to sell it," or "that stock never did grandma wrong."

This is one that I just find fascinating. Investors know that investing for retirement is important, but that can lead to an asset allocation that's too conservative because they overvalue that. There was a young person in our practice in New York who wasn't terribly financially sophisticated but was sophisticated enough to know that she needed to begin contributing to her 401(k). She came to me about a year or two later and said here's what I've done with my 401(k). I know that this retirement money is really, really important so I've got all of my 401(k) invested in short-term Treasury Bills. She's 23 years old. She knew it was important so credit for that, but she had overvalued the importance of it and was assuming a whole lot of inflation risk without realizing that she'd actually made a decision very contrary to her own intent.

I want to look at mental accounting for losses and gains. This is something that I think is really important, particularly given the fact that we've come through a period of a lot of losses. Again as you become accustomed to now, I'll illustrate it with an example. Imagine that when you walked into this room today I gave you \$1,000 and asked you to choose between two options. With option A you are guaranteed to win an additional \$500 with no risk. Our business here is done. Here's your \$1,500. Thanks for playing.

With option B you're giving the chance to flip a coin. If it's heads, I'll give you another \$1,000. Then you'll have \$2,000. If it's tails, you receive no additional money, you're left with \$1,000 you had. Would you flip a coin or not? Again, there's no right answer to this. There's no right answer, just a measure in probabilities. Most people, not all, but most people in response to this say, "Let me get this straight. You're going to give me \$1,500?" Yes. We're done. That's the easiest \$1,500 you'll ever make. "Not going to gamble for that, because if I gamble, I might lose \$500 of that, so I'm going to stick with the \$1,500. Thank you very much."

Now imagine you walked into the room and I gave you \$2,000, and I gave you two options again. Option A I simply take \$500 back. With option B you're given a chance to flip the same coin again. If it's heads you lose \$1,000, if it's tails you lose nothing, you keep the \$2,000. Now what do you do? Interestingly, most people when confronted with this different framing of an identical choice, these two things are the same, it's a guarantee of \$1,500 or a chance between \$2,000 or \$1,000, most people in this second framing say, "You're not going to have my \$500

back, flip the coin.” Most people in this option are willing to gamble to avoid that loss of \$500, rather than the first option. They don’t want to flip the coin, even though these are economically identical outcomes.

Another example, a large industrial manufacturer faced with a series of economic difficulties probably needs to close three plants and lay off 3,000 people. You’re the CEO. You’ve developed two distinct plans to address these issues. Plan A has a guarantee of saving one of the three plants and 1,000 jobs. Plan B is a little riskier, may work, may not. One-third probability of saving all three plants and all 3,000 jobs. You’ll become CEO of the year. But a two-third probability of utterly failing at the cost of saving no plants and no jobs. What do you do? Most people here say this has a probability of making me look like an absolute idiot. If I can certainly save one of the third plants and 1,000 jobs, I’ll go with plan A because at least there I know what the outcome is going to be.

Same scenario, same setup. As a matter of the fact the same plants. I’ve just framed them differently. Plan A will certainly result in the loss of two of the three plants and 2,000 jobs. Whereas, plan B has a two-thirds probability of losing them all but a one-third probability of losing nothing. This is identical to what I just gave you. All I’ve done is re-frame a loss as a gain and, somehow, in this one, the way this is framed with a certainty of loss versus a probability, most respondents here with go with plan B. They’ll say I’m willing to take some risk to avoid the loss in favor of the certainty of a loss in plan A.

It was precisely for this observation that there is a behavioral difference in how we think about losses and gains, that Daniel Kahneman won that Nobel Prize in 2002 and he did it for something called prospect theory. Bear with me as go through this. Kahneman observed that making money, think of being at the tables in Las Vegas if you will, making money creates pleasure. Whereas, losing money creates pain. Now I know what you’re thinking, if Daniel Kahneman won a Nobel Prize for that, then where’s my Nobel Prize as well. Well Danny got to go to Stockholm for a few other observations related to this that were enlightening about human nature. The first of which is that winning the first \$500 feels pretty good. Interestingly though, winning the next \$500 whereas it’s certainly pleasurable, somehow isn’t twice as pleasurable as winning the first \$500. And, then, \$500 after that again a little less pleasurable. So there’s a diminishing return that begins to creep in.

And he made the same observation on the downside. A lot of these observations by the way came out of controlled studies of exactly the kind of word games that we’ve been playing very quickly here. Once again there’s a diminishing return, the line begins to flatten out here. So observation number one is that there is a diminishing return with both the pleasure and the pain associated with the getting and the losing of the money.

The other observation that Kahneman made is that there is more pain associated with losing \$500 than there is pleasure associated with gaining \$500. That the box of pain times loss is bigger than the box of gain times pleasure. This is precisely why in those words games when I phrased or framed something in a gain, you really wanted to hold onto it. But if I frame the same outcome in terms of a loss, you are willing to gamble so as to avoid that kind of pain. It’s called a gambler’s fallacy. Las Vegas is built on this graph essentially.

Somebody sitting at a blackjack table or craps table who is losing money will not get up. Because as soon as they get up, they recognize that loss and it hurts. Whereas as long as they're still sitting there, there's a possibility that that loss will turn into a gain and they'll never have to feel that pain.

In the investment arena, prospect theory says that investors tend to place each security they hold into a separate mental account and judge success or failure on that basis rather than a holistic portfolio-wide basis. Again, I know in my own practice where we're managing portfolios for clients and there will be 25 or 30 securities in a portfolio, when they come in and they want to talk about the portfolio, what stock do they want to talk about? The one that's down the most. They place that in its own category. "Tell me why that dog's still in my portfolio." They never want to talk about the best performer. They don't want to talk about the overall portfolio. They want to talk about that mental account for the one stock that's really keeping him up at night.

Prospect theory says we're inclined to sell our winners too soon because by selling the winner, you lock in that gain, and it's something you can be very proud of. We all have clients or friends or brothers-in-law who tell us about the time they bought Microsoft at \$7 and rode it to \$70. Everybody will remember that. They don't remember the others. The only way you get to do that is to sell your winners. And prospect theory says the overwhelming temptation is to sell them too soon.

Conversely, it says we hold onto our losers too long. Again, precisely for the gambler's fallacy. I'm going to hold AIG until it breaks even. I'm going to hold it. I'm going to continue gambling until that pain of that loss goes away. That's the decision to gamble when confronted with losses.

At the same time, prospect theory says that the opportunity of continued losses again and again may weigh on an investor to such a degree that at some point they want to throw in the towel and say enough. And, inevitably, they do that at precisely the wrong time. The reason that they do that is because the prospect of one big loss is better than a lot of little losses because of that diminishing return, that diminishing pain associated with a loss. Again, the entire credit card industry is built on that premise. If you have one credit card bill a month, even if it's a big scary bill. It's one pain point. Whereas, if you had to spend cash every time you made any purchase, a lot of those little losses of cash in exchange for goods would add up and be more and more painful.

Inevitably you've all seen the challenge of market and timing a graph like this. You've probably shared it with your clients. We share it with ours simply to illustrate the danger of giving in to that behavioral bias and realizing those losses of selling in March of this year at the bottom of the market. This is a very simple analysis. If you had invested \$1 in the S&P 500 in 1927 and just held onto it, by the end of 2008 it would have been \$51.15. It's not adjusted for inflation or anything like that, just simple nominal study. Even with these two big scary bear markets in the middle of it. If, however, you had given into the temptation of selling out, of being overconfident knowing the market was going to go down, and only missed 10 days out of that 80-year period, the 10 best days. If you had been out of the market 0.03 percent of the time, instead of having \$51.15, you'd have \$16.97. Two-thirds of the return over that 80-year period came in 10 trading

days. And woe be unto you if, as an investor, you were out for those 10 trading days. Because, if you were, the whole concept of investment theory and asset allocation and diversification simply didn't work.

Inevitably someone says, "Well, I wouldn't be dumb enough to be out the 10 best days. I'm here to tell you that you probably would have been. Let's look at those 10 best days. Here they are lined up from best to worst starting with March 1933, a day in which the market was up 16.6 percent. Look at what happened on the three days prior to those 10 best days. Not in every case, but in a lot of cases, there was a whole lot of pain that took place, literally three trading sessions before that big contributor to return took place. So, in a lot of cases, the overwhelming temptation for an investor is, after the pain, to say, "No more. Get me out," just in time to miss a rebound that was one of those big contributors to a very long-term track record.

Q. ...

A. It's a mirror image of this. You wind up making a whole lot of money, but the mirror image of it is that to be out on those 10 worst days you have to have the counter-intuitive ability to actually sell after a day like that. So the behavioral bias that keeps you out of the market when the market looks bad is the same one that keeps you in when it looks good. It's simply a mirror image. So, yes, you're right, you wind up retiring a billionaire pretty quickly, but the behavioral challenge to actually accomplishing that is pretty much identical.

I find it fascinating that in the past 80 years, two of those 10 best days were October 13 and October 28 of last year. Right in the midst of the financial maelstrom, two of those 10 best days in the past 80 years took place.

So how do you go about resisting these behavioral biases? I've got good news and bad news. The bad news is you can't, because they are hardwired. They are part of what it means to be human. But being aware of them is more than half the battle. If it gives you pause to think twice about a decision prior to making it, that in and of itself is more than half of the solution to the problem.

I'm preaching to the choir in saying a few of these things, but one of the ways to withstand these behavioral biases is to spend time defining success. And to do it in a market environment that's normal, whatever that means these days. I don't even know what that means. But in a period of patient reflection to sit down with clients and say to what end is all of this planning directed? Writing those things down, writing down goals, writing down the objectives of any planning helps to create sort of a constitution back to which you can refer in a period of market stress, to make sure the decisions you're making are decisions made out of thorough due diligence and thoughtfulness.

So we write a lot of things down and we actually use good, old-fashioned pen and paper, or laptops and printers, the 21<sup>st</sup> century equivalent of that. It sounds simple, but a reminder of what the investment policy or the planning policy of an account is, what the client's objectives are,

what the strategic allocation is, enforces discipline and it enforces process. As we saw in a number of examples, how a question is framed can really drive the answer to the question. Politicians know this. Pollsters know this. Used car salesmen know this. If we can reframe questions that we're asking our clients in a variety of ways and then explore how the framing may lead to different answers, that in itself is a technique for making sure that behavioral biases don't become overwhelming.

And the final advice and best advice to overcoming behavior biases is found inscribed on the doorway of the Temple of the Delphic Oracle on the slopes of Mt. Olympus in Greece. That's actually me as a very young classics student in college paying homage to Mt. Olympus. Seekers of wisdom who made the pilgrimage to this temple found inscribed over the doorway the consistent advice the Delphic Oracle gave to everyone and it was, literally, "Know thy self." You don't need me to give you the answer. Spend time thinking about thinking, thinking about how you think. And that, in and of itself, makes you a better investor, better planner, and for those of us in the capacity of offering advice to others, it helps us make better thinkers and better planners out of them as well.

That is nothing but the scantest introduction to this field. I will stop there and see if there are any questions that anyone has. I hope this presentation is up on the Web site. If it's not, I would be delighted to send you a copy of it. I've included here some further information if you want to read more about this fascinating field.

Q. If we can role play for just a second, I'm one of your clients. I say I've already seen my money go down by 30 percent, how do I know, like they say on TV, that it's going to go all the way down the zero like the Great Depression. I just can't stand it anymore. Why should I stay in? How would you logically try to address that?

A. One of the things that we do in response to questions like that is to go back and scenario out a different world. So we say to our clients last year the S&P 500 was down, let me use round numbers, 40 percent. Let's say even if you have a very capably invested portfolio you were down "only" 20 percent. That still hurts, 20 percent down. How could we have avoided that pain? Well, you could have owned no stocks for example. If you had a portfolio in 2008 that was 100 percent invested in Treasury Bills then there would have been no bear market for you. But let's go back and keep in mind the difficulty of market timing and say what if we had adopted that as an investment policy 10 years ago? What if you had set your highest objective, my client had said to me, "Scott, I don't ever want to see a year in which my portfolio loses more than (let's put a number of) 5 percent (on it)."

Go back and to 1999 or 1989 or 1979 and run it forward and look instead of the percentages at dollar figures. If you had started with \$100,000 of investments and invested only in Treasury Bills you would have never had a loss, you would have slept well at night, but what would the ending amount have been, particularly after inflation?

Now let's go back and ask ourselves the question, what if you had invested as you did, the real world. Yes, you suffered a 20, 30, 40 percent loss last year, but from what level? And sometimes going back and doing that scenario analysis in reverse helps clients understand the reality of

higher risk actually leading to higher returns, over time. And, over time, you have to underline and underscore and put in bold, because that's the key thing. It's not a perfect answer, the client can still say, "But..."

Q. With all your background, and I know FA is a tremendously credible designation, where do you think the markets are going? If you had to guess?

A. Let me answer that in two ways. The first way is the rally we've seen so far in the market this year is normal. As eye-popping as it is, it's normal. If you look back, and I'd be happy to send you this analysis, I went back and looked at every bear market going back to 1896 and looked at the average length, the average depth of a bear market. And then once the market finds its bottom, and that's kind of a big question, but once it bottoms out, what is the average rebound in the subsequent year? And what you observe is that in the same way that markets overshoot on the upside, they overshoot on the downside. The average rebound in the first year of a new bull market, from the trough of the bear for 12 months, is 47 percent. So far this year, we're up somewhere right along there, 50 to 55 percent. So this has been a normal rebound. That effectively dodges your question: What about going forward?

The answer going forward really depends on corporate earnings. And corporate earnings, in turn, depend on productivity. Productivity is the miracle that really lubricates all economic activity because only through increased productivity can wages rise, standards of living rise and corporate profits rise all at the same time. There isn't the necessary tradeoff between labor and capital when productivity is rising. The good news, right now, and something that makes me optimistic about the market even though there are certainly a lot of headwinds remaining, is that productivity is rising at an annualized rate of about 2 percent. That's nothing to write home about, but that's still pretty healthy. Unit labor costs are declining at a rate of about 1 percent per annum. It's not wages, wages are rising. Unit labor cost is somewhere to a concept that Tim mentioned just before lunch, unit labor cost is the concept of output per unit of input. As long as that's heading in the right direction, the cost, productivity is heading in the right direction, that paints a pretty good picture for corporate earnings. So far that picture looks pretty good.

Q. We talked about the rebound of the market, but I happen to be a big believer that we may be in a W situation as opposed to that classic decline then rise. My question is specifically with regard to hyperinflation. As we've entered into an unprecedented era of spending and as Tom Hegna talked about this morning, the printing of money that we hear when we walk by the Treasury building. What are your views about the long-term impact or even short-term impact of hyperinflation?

A. How many hours do you have? There are a variety of sources of inflation. One of which is hyper demand, pushing prices up. It's hard to see hyper demand developing given the economic malaise, almost worldwide, with the exception of a couple emerging markets. A second source of inflation is a wage price spiral. It's real hard for me to see a wage price spiral developing when unemployment is close to 10 percent.

The third source of inflation, which is the one Tom talked about this morning, is good, old-fashioned supply and demand. And I loved the way he framed it. It's econ 101. All else being

equal, the supply of anything increases, what happens to the value of it? It drops. Those printing presses are creating a commodity called the U.S. dollar. So the price of the dollar dropping is basically the definition of inflation. What we caution our clients on is: “You don’t have to be terribly pessimistic on inflation to still worry about it.” Inflation is the evil twin of the miracle of compound interest. We all know. We use these examples with our clients. You take a little bit of money, put it in the bank and, even at a relatively modest interest rate, over time, the miracle of compound interest is such that you wind up with a lot of money.

Inflation simply works in the opposite direction. Take a large amount of money, don’t protect it against even low rates of inflation and, over time, you wind up with a small amount of money. Even at an inflation rate of 2 percent a year, which is lower than inflation has ever sustainably been, that would be a wildly optimistic forecast if that were a forecast. Over 25 years, if you don’t do something about it, you’ll lose 40 percent of the purchasing power of a dollar at 2 percent inflation. And you saw the numbers that Tom showed you earlier today at 4 percent, 6 percent, etc. It’s kind of scary. Compounding that, of course, is at the very asset class that most investors want to flee to in a period of market volatility, is good, old-fashioned safe municipal bonds or Treasury Bonds, etc. There is no inflation protection whatsoever in those asset classes given the fact that interest rates are so low. So it doesn’t take much of an inflation spike to make that equation turn out to be negative, in terms of a real rate of return.

I think where maybe Tom and I would differ, we would not differ on the ravages that inflation that cause on a portfolio of financial assets, where we differ a little bit is it seems like he expects much higher inflation than I do. But, at the end of the day, it doesn’t matter. Even inflation that’s relatively low over time, for longer-term investors and for longer-term planning, can be a very disastrous thing for a portfolio.

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**G. Scott Clemons, CFA** joined Brown Brothers Harriman & Co. (BBH) in 1990 and has held a variety of investment roles at the firm. His career began in international equities, where he was an analyst and portfolio manager of European and Asian equities. In 2001, he transitioned into domestic equity management and research, and since then has become one of BBH’s primary writers and speakers on topics related to the financial markets and wealth management. While he continues to write and speak, Clemons now manages one of the firm’s six private wealth management offices, based in New York.

Brown Brothers Harriman & Co.  
140 Broadway  
New York, NY 10005  
Phone: 212.493.8379  
E-mail: [scott.clemons@bbh.com](mailto:scott.clemons@bbh.com)