Contents

CHAPTER ONE
Neuroeconomics

BRAIN, n. An apparatus with which we think that we think.

—Ambrose Bierce[1]

"HOW COULD I HAVE BEEN SUCH AN IDIOT?" IF YOU'VE never yelled that sentence at yourself in a fury, you're not an investor. There may be nothing across the entire spectrum of human endeavor that makes so many smart people feel so stupid as investing does. That's why I've set out to explain, in terms any investor can understand, what goes on inside your brain when you make decisions about money. To get the best use out of any tool or machine, it helps to know at least a little about how it works; you will never maximize your wealth unless you can optimize your mind. Fortunately, over the past few years, scientists have made stunning discoveries about the ways the human brain evaluates rewards, sizes up risks, and calculates probabilities. With the wonders of imaging technology, we can now observe the precise neural circuitry that switches on and off in your brain when you invest.

I've been a financial journalist since 1987, and nothing I've ever learned about investing has excited me more than the spectacular findings emerging from the study of "neuroeconomics." Thanks to this newborn field—a hybrid of neuroscience, economics, and psychology—we can begin to understand what drives investing behavior not only on the theoretical or practical level, but as a basic biological function. These flashes of fundamental insight will enable you to see as never before what makes you tick as an investor.

On this ultimate quest for financial self-knowledge, I'll take you inside laboratories run by some of the world's leading neuroeconomists and describe their fascinating experiments firsthand, since I've had my own brain studied again and again by these researchers. (The scientific consensus on my cranium is simple: It's a mess in there.)

The newest findings in neuroeconomics suggest that much of what we've been told about investing is wrong. In theory, the more we learn about our investments, and the harder we work at understanding them, the more money we will make. Economists have long insisted that investors know what they want, understand the tradeoff between risk and reward, and use information logically to pursue their goals.

In practice, however, those assumptions often turn out to be dead wrong. Which side of this table sounds more like you?

IN THEORY	IN PRACTICE
You have clear and consistent financial goals.	You're not sure what your goals are. Last time you thought you knew, you had to change them.
You carefully calculate the odds of success and failure.	That stock your cousin recommended was "a sure thing"—until it stunned you both by going to zero.
You know exactly how much risk you're comfortable taking.	When the market was going up, you said you had a high tolerance for risk. When it went down, you became intolerant in a hurry.
You efficiently process all the available information to maximize your future wealth.	You owned stock in Enron and WorldCom, but you never read the fine print in their financial statements—missing the signs of trouble to come.
The smarter you are, the more money you'll make.	In 1720, Sir Isaac Newton was wiped out in a stock-market crash, blazing a trail of financial failure that geniuses have been following ever since.
The more closely you follow your investments, the more money you'll make.	People who keep up with the news about their stocks earn lower returns than those who pay almost no attention.
The more work you put into investing, the more money you'll make.	"Professional" investors, on average, do not outperform "amateurs."

You're not alone. Like dieters lurching from Pritikin to Atkins to South

Beach and ending up at least as heavy as they started, investors habitually are their own worst enemies, even when they know better.

- Everyone knows that you should buy low and sell high—and yet, all too often, we buy high and sell low.

- Everyone knows that beating the market is nearly impossible—but just about everyone thinks he can do it.

- Everyone knows that panic selling is a bad idea—but a company that announces it earned 23 cents per share instead of 24 cents can lose $5 billion of market value in a minute-and-a-half.

- Everyone knows that Wall Street strategists can't predict what the market is about to do—but investors still hang on every word from the financial pundits who prognosticate on TV.

- Everyone knows that chasing hot stocks or mutual funds is a sure way to get burned—yet millions of investors flock back to the flame every year. Many do so even though they swore, just a year or two before, never to get burned again.

One of the themes of this book is that our investing brains often drive us to do things that make no logical sense—but make perfect emotional sense. That does not make us irrational. It makes us human. Our brains were originally designed to get more of whatever would improve our odds of survival and to avoid whatever would worsen the odds. Emotional circuits deep in our brains make us instinctively crave whatever feels likely to be rewarding—and shun whatever seems liable to be risky.

To counteract these impulses from cells that originally developed tens of millions of years ago, your brain has only a thin veneer of relatively modern, analytical circuits that are often no match for the blunt emotional power of the most ancient parts of your mind. That's why knowing the right answer, and doing the right thing, are very different.

- An investor I'll call "Ed,"[2] a real estate executive in Greensboro, North Carolina, has rolled the dice on one high-tech and biotech company after another. At last count, Ed had lost more than 90% of his investment on at least four of these stocks. After Ed had lost 50% of his money, "1 swore I'd sell if they fell another 10%," he recalls. "When they still kept dropping, I

kept dropping my selling point instead of getting out. It felt like the only thing worse than losing all that money on paper would be selling and losing it for real." His accountant has reminded him that if he sells, he can write off the losses and cut his income tax bill—but Ed still can't bear to do it. "What if they go up from here?" he asks plaintively. "Then I'd feel stupid *twice*—once for buying them and once for selling them."

▪ In the 1950s,[3] a young researcher at the RAND Corporation was pondering how much of his retirement fund to allocate to stocks and how much to bonds. An expert in linear programming, he knew that "I should have computed the historical co-variances of the asset classes and drawn an efficient frontier. Instead, I visualized my grief if the stock market went way up and I wasn't in it—or if it went way down and I was completely in it. My intention was to minimize my future regret. So I split my contributions 50/50 between bonds and equities." The researcher's name was Harry M. Markowitz. Several years earlier, he had written an article called "Portfolio Selection" for the *Journal of Finance* showing exactly how to calculate the tradeoff between risk and return. In 1990, Markowitz shared the Nobel Prize in economics, largely for the mathematical breakthrough that he had been incapable of applying to his own portfolio.

▪ Jack and Anna Hurst,[4] a retired military officer and his wife who live near Atlanta, seem like very conservative investors. They have no credit card debt and keep almost all of their money in dividend-paying, blue-chip stocks. But Hurst also has what he calls a "play" account, in which he takes big gambles with small amounts of money. Betting on a few long shots in the stock market is Hurst's way of trying to fund what he calls his "lottery dreams." Those dreams are important to Hurst, because he has amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease); he's been completely paralyzed since 1989. Hurst can invest only by operating a laptop computer with a special switch that reads the electrical signals in his facial muscles. In 2004, one of his "lottery" picks was Sirius Satellite Radio, one of the most volatile stocks in America. Hurst's dreams are to buy a Winnebago customized for quadriplegics and to finance an "ALS house" where patients and their families can get special care. He is both a conservative *and* aggressive investor.

In short, the investing brain is far from the consistent, efficient, logical device that we like to pretend it is. Even Nobel Prize winners fail to behave as their own economic theories say they should. When you invest—whether

you are a professional portfolio manager overseeing billions of dollars or a regular Joe with $60,000 in a retirement account—you combine cold calculations about probabilities with instinctive reactions to the thrill of gain and the anguish of loss.

The 100 billion neurons that are packed into that three-pound clump of tissue between your ears can generate an emotional tornado when you think about money. Your investing brain does not just add and multiply and estimate and evaluate. When you win, lose, or risk money, you stir up some of the most profound emotions a human being can ever feel. "Financial decision-making is not necessarily about money," says psychologist Daniel Kahneman of Princeton University.[5] "It's also about intangible motives like avoiding regret or achieving pride." Investing requires you to make decisions using data from the past and hunches in the present about risks and rewards you will harvest in the future—filling you with feelings like hope, greed, cockiness, surprise, fear, panic, regret, and happiness. That's why I've organized this book around the succession of emotions that many people pass through on the psychological roller coaster of investing.

For most purposes in daily life, your brain is a superbly functioning machine, instantly steering you away from danger while reliably guiding you toward basic rewards like food, shelter, and love. But that same intuitively brilliant machine can lead you astray when you face the far more challenging choices that the financial markets throw at you every day. In all its messy, miraculous complexity, your brain is at its best and worst—its most profoundly human—when you make decisions about money.

And it's not as if emotion is the enemy and reason is the ally of good financial decisions. People who have suffered head injuries that prevent them from engaging the emotional circuitry in their brains can be terrible investors. Pure rationality with no feelings can be as bad for your portfolio as sheer emotion unchecked by reason. Neuroeconomics shows that you will get the best results when you harness your emotions, not when you strangle them. This book will help you strike the right balance between emotion and reason.

Most of all, this book should help you understand your investing self better than you ever have before. You may think you already know what kind of investor you are, but you are probably wrong. "If you don't know who you are," quipped the investment writer "Adam Smith" in his classic book *The Money Game*,[6] then Wall Street "is an expensive place to find out." (The people who bought Internet stocks in 1999 because they thought they had a high tolerance for risk—and then lost 95% over the next three years—know just how expensive it can be.) Over the years, I've grown convinced

that there are only three kinds of investors: those who think they are geniuses, those who think they are idiots, and those who aren't sure. As a general rule, the ones who aren't sure are the only ones who are right. If you think you're a financial genius, you're almost certainly dumber than you think—and you need to chain your brain so you can control your futile attempts to outsmart everyone else. If you think you're a financial idiot, you're probably smarter than you realize—and you need to train your brain so you can understand how to triumph as an investor.

Knowing more about who you are as an investor can make you a fortune—or save you one. That's why it's so important to learn the basic lessons that have emerged from neuroeconomics:

- a monetary loss or gain is not just a financial or psychological outcome, but a biological change that has profound physical effects on the brain and body;

- the neural activity of someone whose investments are making money is indistinguishable from that of someone who is high on cocaine or morphine;

- after two repetitions of a stimulus—like, say, a stock price that goes up one penny twice in a row—the human brain automatically, unconsciously, and uncontrollably expects a third repetition;

- once people conclude that an investment's returns are "predictable," their brains respond with alarm if that apparent pattern is broken;

- financial losses are processed in the same areas of the brain that respond to mortal danger;

- anticipating a gain, and actually receiving it, are processed in entirely different ways in the brain, helping to explain why "money does not buy happiness";

- *expecting* both good and bad events is often more intense than *experiencing* them.

We all know that it's hard to solve a problem until you truly understand what caused it. Many investors have told me over the years that their biggest frustration is their inability to learn from their mistakes. Like hamsters in a

spinning wheel, the faster they chase their financial dreams, the faster they go absolutely nowhere. The newest findings in neuroeconomics offer a real opportunity to jump off the hamster-wheel of frustration and find financial peace of mind. By enabling you to understand your investing brain better than ever before, this book should help you:

- set realistic and achievable objectives;
- earn higher returns with greater safety;
- become a calmer, more patient investor;
- use the news and tune out the noise in the market;
- measure the limits of your own expertise;
- minimize the number and severity of your mistakes;
- stop kicking yourself when you do make a mistake;
- control what you can and let go of everything else.

Again and again as I researched this book, I was struck by the overwhelming evidence that most of us do not understand our own behavior. There have been many books whose central message is "almost everything you ever thought you knew about investing is wrong." There have been very few that seek to make you a better investor by showing that everything you ever thought you knew about *yourself* is wrong. In the end, this book is about more than the inner workings of the investing brain. It is also about what it means to be human—with all our miraculous powers as well as embarrassing frailties. No matter how much or how little you may think you know about investing, there is always more to learn about the final financial frontier: yourself.