

Thoughts about the Subprime Mortgage Crisis and Its Consequences

For a long time, economists have maintained that human behavior and the functioning of our institutions are best described by the rational economic model, which basically holds that man is self-interested, calculating, and able to perfectly weigh the costs and benefits in every decision in order to optimize the outcome.

But in the wake of a number of financial crises, from the dot-com implosion of 2000 to the subprime mortgage crisis of 2008 and the financial meltdown that followed, we were rudely awakened to the reality that psychology and irrational behavior play a much larger role in the economy's functioning than rational economists (and the rest of us) had been willing to admit.

It all started from questionable mortgage practices, augmented by collateralized debt obligations (CDOs are securities based mostly on mortgage payments). In turn, the CDO crisis accelerated the deflation of the housing market bubble, creating a reinforcing cycle of decreasing valuations. It also brought to light some questionable practices of various players in the financial services industry.

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In March 2008, JP Morgan Chase acquired Bear Stearns at two dollars per share, the low valuation resulting from the fact that Bear Stearns was under investigation for CDO-related fraud. On July 17, major banks and financial institutions that had bet heavily on CDOs and other mortgage-backed securities posted a loss of almost \$500 billion. Eventually 26 banks and financial institutions would be under investigation for questionable practices relating to their handling of CDOs.

On September 7, the government federalized Fannie Mae and Freddie Mac to avoid their bankruptcy, which would have had dire effects on financial markets. A week later, on September 14, Merrill Lynch was sold to Bank of America. The following day, Lehman Brothers filed for bankruptcy, raising fears of a liquidity crisis that could precipitate an economic meltdown. The day after that (September 16) the United States Federal Reserve lent money to the insurance giant AIG to prevent the company's collapse. On September 25, after being seized by the Federal Depositor Insurance Corporation (FDIC), Washington Mutual was forced to sell its banking subsidiaries to JP Morgan Chase, and the following day the bank's holding company and remaining subsidiary filed for Chapter 11 bankruptcy.

On Monday, September 29, Congress rejected the bailout package (formally known as the Troubled Assets Relief Program, or TARP) proposed by President Bush; resulting in a 778-point drop in the stock market. And while the government worked to build a package that would pass about a week later, Wachovia became another casualty as it entered talks with Citigroup and Wells Fargo (the latter eventually bought the bank), and the stock market reacted to the news of the bailout with a loss of 22 percent of its valuation, mak-

ing this the worst week on Wall Street since the Great Depression.

One by one, the institutional banks—all staffed by wonderful (rational) smart economists, who followed standard models, fell like so many dominoes.

If the rational economic approach is not sufficient to protect us, what are we supposed to do? What models should we use? Given our human fallibilities, quirks, and irrational tendencies, it seems to me that our models of behavior and, more important, our recommendations for new policies and practices should be based on what people actually do rather than what they are supposed to be doing under the assumption that they are completely rational.

This seemingly radical idea is, in fact, a very old idea in economics. Before Adam Smith, the grandfather of modern economics, wrote his magnum opus, *Inquiry into the Nature and Causes of the Wealth of Nations* (1776), he wrote *The Theory of Moral Sentiments* (1759), a book that is equally important but much more psychologically oriented. In *The Theory of Moral Sentiments*, Smith notes that emotions, feelings, and morality are aspects of human behavior which the economist should not ignore (or, worse, deny) but instead treat as topics worthy of investigation.

About 200 years ago, another economist, John Maurice Clark, noted similarly, “The economist may attempt to ignore psychology, but it is sheer impossibility for him to ignore human nature. . . . If the economist borrows his conception of man from the psychologist, his constructive work may have some chance of remaining purely economic in character. But if he does not, he will not thereby avoid psychology. Rather, he will force himself to make his own, and it will be bad psychology.”³¹

How did economics move from embracing human psychology to completely rejecting the possibility that human behavior could be irrational? One reason, no doubt, has to do with the fascination economists have with simple mathematical models. Another has to do with their desire to provide businesses and policy makers with simple, tractable answers. And while both of these can be good reasons to sometimes ignore irrationality, they also take us down a dangerous road.

In my mind, the goal of behavioral economics is to rekindle the economic interest in human behavior and psychology that Adam Smith wrote about. In general, researchers in behavioral economics are interested in modifying standard economics so as to take real, common, and often irrational behavior into account. We want to move the study of economics away from being grounded in naive psychology (which often fails the tests of reason, introspection, and—most important—empirical scrutiny), and return it to a more broadly encompassing study of human behavior. We think that economics would then become better suited to make recommendations that would help people with their problems in the real world: saving for retirement, educating their children, making decisions about health care, and so on.

IN WHAT FOLLOWS I want to share some of my perspectives, from a behavioral economics angle, about this strange new world to which we've all so suddenly awakened. What brought us to our present economic mess? How can we better understand what happened? How might we start thinking about our next steps, to make sure we are not going to get into such deep trouble again? The answers to the questions

below are not based on experiments with the stock market itself, because the nature of the stock market makes it very hard to conduct any direct experiments. Instead, they are based on general experimental findings in psychology, economics, and behavioral economics, offered from my personal and professional perch, and they should be taken with an appropriate amount of salt.

(1) Why did people take on mortgages that they couldn't really afford?

Politicians, economists, newscasters, and the public have placed the blame for large and risky mortgages on different parties. Some think irresponsible borrowers assumed more debt than they had reason to believe they could afford. Others think borrowers only followed the guidance of predatory lenders, who at the time were thought to be experts. It seems to me that both accounts have some truth to them, but I also think that the main culprit is the inherent difficulty of figuring out the ideal amount of mortgage someone in a particular financial situation should take on.

Here is the crux of the problem: When the housing market was hot, the bankers who gave out mortgages assumed, logically, that the customers would not want their houses to go into foreclosure. To further ensure that people would repay their loans, the mortgage contracts also included a variety of penalties and fines, in case people decided to walk out on their mortgages. On first glance this logic seemed very appealing: given all the terrible things that could happen to those unable to repay a loan (loss of their homes, wrecked credit, foreclosure fees of different sorts, legal fees, and the possibility of being sued by the lender for a deficiency), the

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banks assumed that people would try very hard not to over-borrow.

Think about it this way: Imagine that I have agreed to lend you as much money as you want and have promised you that I will break both of your legs if you fail to return the money to me. Under these conditions, wouldn't you try very hard not to borrow too much money and work hard to repay me on time? But as anyone who's ever watched a Mafia movie knows, something always goes wrong with such deals. What once seemed like a logical process often ends up depending on highly questionable assumptions. In the leg-breaking scenario, the assumption is that you can figure out the amount you can repay without risking your legs. And in the mortgage scenario, the central assumption is that people can figure out the optimal amount they can borrow without risking their homes. Of course, with a mortgage the computation is more complex, as it needs to take into account taxes, inflation, changes in property values, and more.

As in the story of Goldilocks and the three bears, there's a loan amount that is just right—it's not too small and it's not too large. But can people really compute the "just right" amount that they should borrow?

DURING THE TIME when the housing market was heating up (more or less between 1998 and 2007), I had the privilege of having an office at the research department of the Federal Reserve Bank in Boston. I would spend most of my time at MIT, but once a week I would show up at "the bank," where my job was to debate with the economists on staff and try to inject some awareness of behavioral economics into their work. One day I got into a discussion with one of the local economists—let's call him Dave—about the limits

that banks and the regulators should place on mortgages. Dave advocated eliminating all barriers from the mortgage process. He thought that all home buyers were perfectly able to make the optimal decision for their particular circumstances.

Sumi and I had moved into our new house a few months earlier. Having just gone through the mortgage process myself, I had a different perspective. When we were trying to figure out how much to spend on a house, I asked some experts I knew—including a few finance professors at MIT and some investment bankers—what seemed like two simple questions: (1) Given our financial situation, how much should we spend on a house? and (2) How much should we borrow on a 30-year mortgage?

Everyone I asked told me the same thing—that our monthly payments on a mortgage should come to no more than 38 percent of our joint monthly income, and that this amount, together with the interest rate, would dictate the maximum that we could borrow. But this did not answer the question I had asked, and when I tried to push for an answer, the experts told me that they had no way to help me figure out the ideal amount we should spend or borrow. I repeated this story to Dave but he quickly dismissed my concerns. He informed me that even though no one can figure out the optimal amount to borrow, everyone can figure out the general amount, and the small mistakes people make here and there don't really matter much.

I wasn't entirely comfortable with this blanket approach, so I decided to conduct a small study to examine how people actually determine how much to borrow. The housing market was in full bloom, and there was no problem finding people who were house hunting and willing to share their

thoughts and decision processes with me. What I found was that the average home buyer (that is, everyone I interviewed aside from Dave) really does have a hard time figuring out how much they should borrow. So, instead of figuring out the answer to the correct question (how much should we borrow?), they focus on a different question altogether, one that is not the correct question, but one that they can easily answer: how much *can* we borrow? They use a mortgage calculator, talk to an enthusiastic realtor or two, and figure the maximum payment that they can make every month, which, on average, is roughly 38 percent of their income. From there they figure the maximum mortgage that a bank will lend them, and this determines the price of a house that they end up looking for and buying.

This story of how people figure out their mortgage offers a general lesson in human decision making. When we can't figure out the right answer to the question facing us, we often figure out the answer to a slightly different question, and apply this answer to the original problem. This is how a question about the optimal amount to borrow transforms itself into one about the largest amount that a bank is willing to lend. But these are not equivalent questions at all.

Think about it. If you had to buy a new house right now, what is the ideal amount you should spend? How much of it should you take as a mortgage? If you can't figure this out on your own, and the bank and all the mortgage calculators tell you that you can borrow up to 38 percent of your salary to cover monthly payments, wouldn't you accept this amount as an implicit recommendation for how much you should be borrowing?

A FEW WEEKS after our discussion, Dave was assigned to write a paper on the wisdom of interest-only mortgages.* He was very excited about these types of mortgages and wanted to recommend that the regulators promote them as much as possible. “Look,” he tried to explain to me, “there is no argument that interest-only mortgages are more flexible than regular mortgages. The people who take them on can decide each month what they want to do with the money that otherwise, in a regular mortgage, would go toward paying the principal. They can pay down their credit card debt or pay for college tuition or medical expenses. Or, if they prefer, they can always pay down the principal of their mortgage.”

I nodded, waiting for him to unspool. “Go on,” I said.

“So at a minimum, interest-only mortgages are as good as regular mortgages. But they give people more flexibility in terms of how they want to spend their money, and by definition every time you add flexibility you help consumers because you increase their freedom to make the decisions that are right specifically for them.”

I said that it all sounded perfectly reasonable, assuming that people make perfectly reasonable decisions. Then I told him about the results of my small study, which had left me uncomfortable. “If people simply borrow the most they can,” I explained, “interest-only mortgages will not increase the fi-

*An interest-only mortgage is a loan that works as follows: over the life of the loan, the borrower is required to pay only the interest, and as a result, at the end of the loan period the balance is the same as the initial loan. For example, if you took a 10-year loan of \$300,000 at a 6.25 percent interest rate, a regular mortgage would cost you \$3,368.40 a month, whereas an interest-only mortgage for the same amount and at the same interest rate would cost you only \$1,562.50 a month. Of course, if you took the regular mortgage, you would owe nothing by the end of the 10 years and would also own your home, but if you took the interest-only mortgage, you would still owe \$300,000 (at which point you will take on a new mortgage, and so on).

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nancial flexibility of the people who use them. They will only increase the amount that people will borrow.”

Dave was not persuaded, so I tried to give him a more concrete example. “Let’s say your cousin what’s-her-name . . .”

“Didi,” he volunteered.

“Let’s say that Didi can afford a regular mortgage with a monthly payment of three thousand dollars. Now you give her the option of taking an interest-only mortgage. What will she do? She could of course get a house she can afford with the regular mortgage and simply pay less every month—using the extra money to pay her student loans. But if she’s like other people, Didi will use her maximum ability to pay as the starting point for figuring out what mortgage and house to get, and she’ll end up paying three thousand dollars a month for a much bigger, fancier home. She will not have any more flexibility, but she will be much more exposed to the housing market.”

I don’t think Dave was very impressed with my arguments. But after the subprime mortgage crisis hit, I had the opportunity to look at some data on interest-only mortgages, and it did appear that instead of providing financial flexibility, all that they achieved was to stretch borrowing and put borrowers at higher risk in a fickle housing market.

FROM MY PERSPECTIVE, one of the main failures of the mortgage market was that the bankers didn’t even consider the possibility that people cannot compute the right amount to borrow. If banks understood this, they undoubtedly would not have left it up to individuals to figure out the right amount for themselves. In the absence of such an understanding, however, the banks tempted individuals to borrow more than

they could possibly afford. Sure, the banks could threaten borrowers with the financial equivalent of breaking legs, but they didn't help borrowers do what's best for the banks—or themselves. It's no wonder that, when the housing crisis finally hit, both banks and their customers wound up with broken legs.

Now, let's say that after all is said and done, the banks finally wise up and decide to conduct empirical studies that examine how people might go about computing the ideal loan amount. Assuming their data reveal the same results as my small study (that people simply borrow to the maximum), the bankers might then realize that it is in their best interest to help borrowers make better decisions. How could they do this?

Obviously, helping borrowers figure out a realistic mortgage amount is not going to be simple, but I know we can do much better than what mortgage calculators do right now (in fact, I don't think we could do worse). So let's say the banks accept the challenge and actually develop better mortgage calculators that not only tell people the maximum they could theoretically borrow, but also help people figure out the right amount for them. If people had the benefit of such humane mortgage calculators, I suspect that they would make better decisions, take on less risk, and ultimately be less likely to lose their homes. Who knows? If such calculators had existed during the last 10 years, maybe much of the mortgage fiasco would have been avoided.

Despite my belief in the desire of borrowers to make the right decisions (and to avoid the disastrous outcomes of making wrong decisions), I must admit that even if some of the banks had created better mortgage calculators, it is possible that in the delirium of the housing market bubble, zealous

bankers and real estate brokers could still have pushed people to borrow more and more.

This is where regulators could have stepped in. After all, regulation is a very useful tool to help us fight our own worst tendencies. In the 1970s, regulators placed strict limits on mortgages. They dictated the share of income that could be used to pay a mortgage, the amount of down payment required, and the proof that borrowers had to show to document their income. Over time, these limits were dramatically and dangerously relaxed. Eventually, banks offered the infamous NINJA mortgages (“No Income, No Job or Assets”) to people who should never have taken out loans in the first place, and thus ushered in the subprime mortgage fiasco.

You see, in a perfectly rational world, it would make sense to eliminate all limits and regulators from all markets, including the mortgage market. But because we don’t live in a perfectly rational world, and because human beings don’t always naturally make the right decisions, it makes sense to limit our ability to cause damage to ourselves and others. This is the real role of regulations—they provide us with safe boundaries. They limit our ability to drink and drive; they force kids to go to school; they make pharmaceutical companies empirically test the medications they administer; they limit the ability of companies to pollute our environment; and so on. Certainly, there are many domains of life in which we can function reasonably well without regulations, or at least not cause too much damage when we are left to our own devices. But, when our ability to perform at a satisfactory level is low or nonexistent, and when our failures can hurt ourselves and others (think about driving)—this is when regulations are very handy boundaries to apply.

(2) What caused bankers to lose sight of the economy?

The financial crisis of 2008 left a lot of people feeling that the investment bankers involved were fundamentally evil human beings, and that the economic crisis resulted from their deceitfulness and greed. Certainly, people like Bernard Madoff were out to cheat their investors for personal gain. But personally, I think calculated cheating was the exception rather than the rule in this financial fiasco.

I'm not suggesting in any way that the bankers were innocent bystanders, but I do think that the story of their actions is more complicated than simply accusing them of being bad apples. As in the aftermath of the Enron case and other market failures, it is important to understand what caused the bankers to behave as they did, since this is the only way to ensure that we don't repeat these same mistakes. To that end, let's take stock of what we know about conflicts of interests—a very common foible in the modern workplace.

THE “THEORY OF RATIONAL CRIME” was, perhaps not surprisingly, born in Chicago—a city known for shady politicians, organized criminals, and rational economists. There the Nobel Prize–winning economist Gary Becker first suggested that people who committed crimes applied rational analyses of opportunities and costs. As Tim Harford describes in his book *The Logic of Life*, the birth of Becker's idea was quite mundane. Becker was late for a meeting, and legal parking was scarce, so he decided to park illegally and risk getting a ticket. Becker contemplated his own thought process and behavior in this situation and realized that in planning this crime, there was no place for morality. It was entirely a matter of expected costs and benefits. He weighed

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the chance that he would be caught and the cost of being fined against the difficulty of finding a legal spot and getting to the meeting even later. He decided to risk the parking ticket, and performed the only crime suited for an economist—a perfectly rational crime.

According to the theory of rational crime, we all should behave like Becker. This means that the average person, like your average mugger, merely makes his way through the world serving his own interests. Whether we do this by robbing people or writing books is inconsequential. What is important is how much money is at stake, the likelihood of getting caught, and the magnitude of the expected punishment. It's all about weighing our costs and benefits.

THIS RATIONAL COST-BENEFIT approach to decisions in general, and to crime in particular, may describe Gary Becker himself very accurately—but as we saw in Chapters 11 and 12, simple cost-benefit calculations do not seem to capture the real forces that drive most of us to cheat or to behave honestly. Instead, the picture that emerges from our experiments is that cheating arises from our attempts to balance two incompatible goals. On one hand, we want to look in the mirror and feel good about ourselves (ergo, “I can’t even look at myself in the mirror” is an indicator of one’s own guilt). On the other hand, we’re selfish, and we want to benefit from cheating. On the surface, these two motivations seem contradictory, but our flexible psychology allows us to act on both of them when we cheat “just by a bit”—benefiting financially from cheating while at the same time managing not to feel bad about ourselves. I think of this as an individual “fudge factor,” or a fuzzy conscience.

One way to look at the experiments described in Chapters 11 and 12 is to think about them as an examination of what happens when people wrestle with conflicting interests. When we placed participants in situations in which they were torn between wanting to behave honorably and wanting to benefit financially, they usually succumbed to temptation but only by a little bit. In that light, consider the situation facing a physician who has been involved in research with a pharmaceutical firm, and who gets profit sharing from the company's new prescription drug for, say, diabetes. In treating a patient with diabetes, the doctor can choose a standard drug that he knows will work well. But, he can also write a prescription for the new drug, in which he has a financial interest. He suspects that the standard drug is slightly better for the patient, but the new treatment would benefit his practice. If the diagnosis is very clear-cut, the physician would most likely recommend the best treatment for the patient. But if there is some uncertainty, as is the case in most medical decisions, the physician would most likely recommend the drug he helped develop, allowing himself to both feel good about his diagnosis and at the same time benefit financially from it.

Such conflicts of interests are not limited to doctors, of course; they appear in every aspect of life. Take sports, for example—if you are a fan of a particular sports team and the referee makes a close call against your team, you will most likely think of the referee as blind, idiotic, or evil. Managing to see reality from a self-serving perspective is not an exclusive moral flaw, limited only to “bad people.” It's a common human foible and is part of being human. As we discussed in Chapter 9, when we expect something, we are likely to repaint reality in the colors that we want to see. We filter information through our eyes and brains in accordance with our

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expectations and patterns—and we are very good at convincing ourselves that what we wanted to see is indeed what we saw.

SEEN THROUGH THE lens of conflict of interests, some aspects of the 2008 financial crisis become clearer. It seems to me that with few exceptions, bankers wanted to accurately estimate the risks associated with different financial products, and make good investments for themselves and for their clients. On the other hand, they also had tremendous financial incentives to view financial products such as mortgage-backed securities as fabulous innovations. Put yourself in their shoes: If you could make \$10 million simply by getting all your clients to buy mortgage-backed securities, wouldn't you soon convince yourself that such investments were truly wonderful? And if you had to buy into the story of rational markets to convince yourself that this was the case, wouldn't you become a true believer? As with sports fans, bankers' conflicts of interest gave them a reason to see the market make calls in their favor, and thanks to their ability to observe the world as they expected, they managed to see mortgage-backed securities as the best human invention since sliced bread.

On top of the basic conflict of interest, the bankers had one more force working against them—the power of fuzziness. As I described in Chapter 12, when the participants in our studies had an opportunity to cheat for tokens that were one step removed from money for a few seconds, they doubled their cheating. In the same way that the tokens in our experiments allowed our participants to bend reality, I suspect that the opaque nature of pricing mortgage-backed se-

curities, derivatives, and other complex financial products allowed bankers to see what they wanted to see, and to be dishonest to a larger degree. When it came to these complex financial tools, conflicts of interest caused the Wall Street giants to want to see them as the latest and greatest innovations of the modern world, and thanks to the inherent fuzziness of these financial instruments, they were more easily able to reshape reality in a way that was comfortable for them.

So there they were, and here we are. In a market driven by the all-too-human desire to prosper, our incredible ability to fudge reality and shape it to suit our vision got us into trouble. The stock market also utilized lots of fuzzy signifiers for money. For example, bankers often use the term “yard” to signify a billion, “stick” to mean a million, and “points” to mean hundredths of a percent—tokens on a grand scale. Together all these factors allowed the bankers’ natural ability at bending reality to flourish and led to new levels of deception.

OF COURSE, THERE’S the ultimate question: Where does all this leave us in terms of a solution? If you believe that there are good and bad people, then all you need to do is figure out how to determine who is good and who is bad and hire only the good people. But if you believe, as our results show, that most people faced with a conflict of interest can cheat, then the only solution is to eliminate conflicts of interest.

In the same way that we would never dream of creating a system in which judges get 5 percent of the settlements over which they preside, it’s also clear to me that we don’t want doctors to sell drugs they help develop, or bankers to be bi-

ased by their own incentives. Unless we create a financial system free of conflicts of interest, the sad story of the financial meltdown of 2008 and its terrible aftermath will be repeated.

How do we eliminate conflicts of interest from the markets? We can hope that the government will begin to regulate the market more effectively, but given the complexity and cost of creating and implementing such regulations, I'm personally not holding my breath until this solution is in place. My hope is that one of the banks will decide to step up to the challenge and lead the way for others by announcing a different pay structure, different incentives for its bankers, transparency, and strict rules against conflicts of interest. I also think that such actions will eventually be beneficial for the bank.

While I wait for an upstanding bank and better regulations, I plan to take a proactive step by looking more closely at my relationships with physicians, lawyers, bankers, accountants, financial advisers, and the other professionals to whom I turn to for expert advice. I can ask doctors who prescribe me drugs whether they have any financial interest in the pharmaceutical company; financial advisers whether they get paid by the management of particular funds they are recommending; and life insurance salespeople what kind of commission they are working on—and seek to establish relationships with providers who do not have conflicts of interest (or at least get a second independent opinion).

While I realize that doing so will be time-consuming and expensive, I suspect that acting on the biased opinions from a specialist with a strong conflict of interest could end up costing me more in the long run.

(3) Why didn't we plan better for the possibility of bad times?

The general phenomenon social scientists call the planning fallacy has to do with our tendency to underestimate how long we will take to finish a task (it explains why roadwork never seems to get finished and new buildings never open on time). There is a very simple way to demonstrate the planning fallacy. Ask some undergraduate students how long it will take them to finish a big task, such as their honors thesis, under the best conditions.

“Three months” is the standard reply.

Next ask them how long it would take under the *worst* conditions.

“Six months,” they routinely offer.

Then ask another group how much time they think it will really take them to finish their honors thesis under *normal* conditions, following their usual study, work, and activity schedule.

“Three months,” they usually respond.

Given the first two answers, you might expect that they would predict that finishing their honors thesis would take them closer to six months, or maybe four and a half months, but they don't. Their answer is always too optimistic no matter how unrealistic this may actually be. If you think that this kind of misjudgment occurs only with undergraduates, think back to the times you promised your spouse that you would be home from work by six p.m. You have every intention of fulfilling your promise, but invariably something goes wrong and your departure is delayed. You get a call from a client, you receive an e-mail from your boss that needs an immediate response, a coworker stops by your office to sound off

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about something, or perhaps you've been trying to print something out and the printer gets stuck. Now, if the printer got stuck for five minutes every time you tried to print, you would quickly take this into account and plan to print before you needed to depart the office. But because different things go wrong at different times, and because it's impossible to predict when any particular delay will rear its ugly head, we play the scenario of leaving the office in our minds (sending one last e-mail, printing the notes for tomorrow's meeting, packing our bag, finding our keys, and leaving for the day), without taking any of these possible interruptions or mishaps into account.

As it turns out, the planning fallacy also plays a large role in how we think about our budgets. When we think generally about what we can and cannot afford, and what we should and should not buy, we consider our monthly bills and expenses and make decisions more or less accordingly. But when things go awry and something unplanned happens—say we need a new roof for our house or a new set of tires for our car—we just don't have the cash in the bank to pay for them. Because different bad things happen at different times, we don't take many of them into account.

REGRETTABLY, THIS IS not the end of the story, because the planning fallacy joins forces with its silent partner the financial industry, and together they wreak even more havoc on our lives. It turns out that the financial industry understands that we are partially blind to these negative events, and this is exactly where the industry sticks it to us. When something goes badly and we don't make a payment on time or bounce a check, there are strong negative consequences. To illustrate,

allow me to tell you a story about my experience of being poor for a day, and what I learned in the process.

In the winter of 2006 I was out of the country for a month, and during that time my car insurance expired. When I returned and discovered this, I called my insurance agent to request a renewal of my policy. “No, no, no,” she said with surprising vehemence. “If your insurance has expired, you can’t renew it over the phone. You have to come to our office in person and take out a new policy.”

I was living in Princeton, New Jersey, at the time, and my insurance agency was about 250 miles away, in Boston. I tried to argue with the agent and even called a few other insurance agencies, but they all had the same demand. Because I had let my insurance expire, I was now categorized as a bad person in the eyes of their industry, and an agent had to see me face-to-face to approve a policy. So I took the seven-hour train trip to Boston and arrived at the insurance office in the early afternoon—ready to hand over a check, renew my insurance, and then take the train back to Princeton. You would think that the rest would be simple, but of course, it wasn’t.

The first thing I learned when I got to the insurance agency was that my insurance premium would increase substantially. Sheila, the insurance agent, informed me that in allowing my insurance to lapse, I lost all the good-driver discounts I’d collected. Now that I was a subprime human being, I was given a premium suitable for a teenager. Furthermore, the insurance company would not accept a check from me, because, in their eyes, I had shown my true, irresponsible colors.

“Will a credit card do?” I asked, in as even a tone as I could muster.

“Of course not,” Sheila said coldly. Her hands were hidden under her desk. I imagined that at any moment she might

push a button to call the police. “We can accept only cash from you.”

For some reason I had a few hundred dollars in cash on me, and there was a bank just next door. Using two ATM cards to withdraw all the cash I could, I was able take out an additional \$800 for a net sum of slightly more than a half year’s worth of insurance.

“Surely this will do?” I said, plunking down the money in front of Sheila. “I am giving you the payment for the first six months of coverage now in cash, and I’ll send you the rest tomorrow.”

Sheila paused and looked at me as if I were hard of understanding (which I guess I was). “You must pay us the premium for a year in cash,” she said very slowly, “before we can renew your insurance.” Then her face suddenly brightened. “Luckily,” she added in a more cheerful tone, “we have a solution designed for this exact problem. There is a lending company that offers short-term loans just for these cases. The application process is very quick and simple and you can be out of here in ten minutes.”

What else could I do? I asked her to sign me up for this special loan. The terms of the loan included a 20.5 percent interest rate on the loan itself plus a \$100 fee just for the privilege of enrolling. This was obviously very annoying, but I had no other option if I was to get my insurance back that day. (Of course, a few days later I paid this terrible loan off.)

On the train back to Princeton, I concluded that this had been a maddening but very enlightening experience. I learned that the moment you make a financial mistake, the chances are very high that you will be hit with all kinds of fines, bureaucratic difficulties, and additional financial obstacles. I was fortunate not to have suffered much: Sure, I’d lost a day

of work, and I had been forced to pay money for the train tickets, the fee to initiate the loan, the expensive loan itself, and the increased premium on the insurance—in advance and in cash. But what, I wondered, happens to people who can't afford to take a day off work, and who are on the verge of financial difficulty? How do they come up with the money to pay all these fees and higher premiums? If I were stretched to my limit with financial obligations, and if I had no cushion, this incident would have most likely pushed me over the financial edge, making my life much more expensive, stressful, and difficult. I would have had to take out a terribly expensive loan to pay for my car insurance, borrow more to pay that loan, start carrying a balance on my credit card, start paying fees and high interest for that privilege, and so on.

I later learned that many parts of the insurance and banking industry operate in such a way as to take advantage of people who are already at financial risk. Think, for example, about the “perk” of free checking that the banks so generously provide us. You might think that banks lose money by offering free checking, because it costs them something to manage the accounts. Actually, they make huge amounts of money on mistakes: charging very high penalties for bounced checks, overdrafts, and debit card charges that exceed the amount in our checking accounts. In essence, the banks use these penalties to subsidize the “free checking” for the people who have sufficient amounts of cash in their checking accounts and who are not as likely to bounce a check or overdraw with their debit cards. In other words, those living from paycheck to paycheck end up subsidizing the system for everyone else: the poor pay for the wealthy, and the banks make billions in the process.

Nor does the usury (I daresay, depravity) of the banks end

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there. Imagine that it is the last day of the month and you have \$20 in your checking account. Your \$2,000 salary will be automatically deposited into your bank today. You walk down the street and buy yourself a \$2.95 ice cream cone. Later you also buy yourself a copy of *Predictably Irrational* for \$27.99, and an hour later you treat yourself to a \$2.50 caffe latte. You pay for everything with a debit card, and you feel good about the day—it is payday, after all.

That night, sometime after midnight, the bank settles your account for the day. Instead of first depositing your salary and *then* charging you for the three purchases, the bank does the opposite and you are hit with overdraft fees. You would think this would be enough punishment, but the banks are even more nefarious. They use an algorithm that charges you for the most expensive item (the book) first. *Boom*—you are over your available cash and are charged a \$35 overdraft fee. The ice cream and the latte come next, each with its own \$35 overdraft fee. A split second later, your salary is deposited and you are back in the black—but \$105 poorer.

WE ALL SUFFER from the planning fallacy syndrome, and the banking and insurance institutions, realizing this, build in large penalties that kick in just when these unexpected (unexpected to us) bad things happen. And because when we sign up for these financial or insurance services we certainly don't plan to miss an insurance payment, bounce a check, skip a credit card payment, or go over our debit card limit, we often don't even look at the terms of the penalties, thinking they do not apply to us. But when "stuff happens," the banks are lying in wait and we end up paying dearly.

Given this modus operandi, is it any wonder that many of the people who took subprime mortgages (by definition those who were not doing well financially) defaulted on their credit card payments, walked out on their mortgages, and even declared bankruptcy?

There are some well-to-do people who think none of this is their problem, of course. But one of the major lessons we've learned from the 2008 economic meltdown is that our financial fortunes are all tied together more tightly than anybody realized. What started as subprime mortgage loans to people with relatively bad credit ended up sucking the wealth out of the entire economy, and bringing almost every economic activity—from car loans to retail spending—to a near-halt. Even people with hefty retirement portfolios took a big hit. In the end, the economy is a complex dynamic system, a bit like the “butterfly effect” in chaos theory where events that happen to a small group of individuals (such as subprime borrowers) can have large and frightening effects down the road for everyone else.

WHAT CAN WE, as individuals, do to overcome the challenges posed by the financial planning fallacy? First, of course, everyone needs to save more for a rainy day* and realize that rainy days are more common than we expect. For people who are already in financial distress, this is clearly not going to be easy to accomplish, nor am I naive enough to think that we can completely eliminate the problem of the financial planning fallacy. But we can guard ourselves against the bumps in the financial road by putting aside some money to

*For a helpful perspective, see M. P. Dunleavy, “Making Frugality a Habit,” *New York Times* (January 9, 2009).

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give us a cushion, and by so doing we might be able to put a dent in the planning-fallacy problem and make it less acute.

Finally, I think that punitive finance practices—including high-interest credit cards, car title loans, payday loans,* and the like—that prey upon those with the fewest resources have to be controlled. It is more appropriate, fair, and better for the economy, as a whole, if we spread the cost of financial services such as checking accounts, credit cards, and insurance among all customers rather than forcing those with fewer resources and fewer options to carry a large part of the burden. At the end of the day we have to realize that when we financially squeeze people who don't have much financial juice in them, it hurts all of us.

(4) Did the government overlook trust as an important economic asset?

In September 2008 Henry Paulson, who was then secretary of the Treasury, told American legislators and the public that unless they immediately coughed up a substantial amount of money (\$700 billion) to buy toxic securities from the banks, devastation would result. When this bailout plan was proposed, it looked as if the American public really wanted to strangle the bankers who had flushed our portfolios down the toilet. (The eventual name of the bailout package was “The Troubled Asset Relief Program,” but this did little to change the sentiment on the street.)

One nearly apoplectic friend of mine promoted the idea of “an old-fashioned, 1660-style stock market.” “Instead of tax-

*Since 1990, the number of places in the United States that give “payday” loans has grown faster than the rate at which Starbucks shops have opened.

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ing us to bail out those crooks,” he ranted, “Congress should put them in wooden stocks, with their feet and hands and heads sticking out. I bet everyone in America would give big bucks for the joy of throwing rotten tomatoes at them!”

My friend was not alone. The following excerpt from a letter by an anonymous lawmaker posted on the politically progressive Web site OpenLeft.com³² does a good job of describing the public’s pent-up rage:

I also find myself drawn to provisions (in the bailout bill) that would serve no useful purpose except to insult the industry, like requiring the CEOs, CFOs and the chair of the board of any entity that sells mortgage related securities to the Treasury Department to certify that they have completed an approved course in credit counseling. That is now required of consumers filing bankruptcy to make sure they feel properly humiliated for being head over heels in debt, although most lost control of their finances because of a serious illness in the family. That would just be petty and childish, and completely in character for me. I’m open to other ideas, and I am looking for volunteers who want to hold the sons of bitches so I can beat the crap out of them.

Rather than taking this anger seriously, and thinking carefully about how to rebuild the public’s trust in the banking system and the government, the legislators added insult to injury and contributed further to the erosion of public trust. They added a few irrelevant tax cuts to the proposed bailout package and then force-passed it. A few months later, Paulson revealed that after roughly half of the \$700 billion had

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been paid out to banks, none of the money had been spent to buy back toxic securities, nor did the Treasury Department intend to buy any in the future. He offered no reasons, no explanations, not even so much as an apology. At the end of 2008, when time for bonuses came, the banks did their share to further erode the public's trust by giving themselves millions of dollars in bonuses, and no doubt patting themselves on the backs for a job well done.

TO CAST A broader light on the role of trust in society in general, allow me to walk you through an experimental setup that we call the Trust Game. You are one of the two players, and you are paired with an anonymous participant who is your counterpart. The game is played over the Internet, so you will never know each other's identity.

To start, each of you receives \$10. You are player 1, and the first move is yours: you must decide whether to keep your money or to send it over to your counterpart. If you keep the money, both of you get to keep your \$10 and go home slightly richer. However, if you decide to send the second player your \$10, the experimenter quadruples the money you send, so that the other player now has his original \$10 plus \$40 (the \$10 that he got from you, multiplied by four). Now it's his turn to make a decision. He can choose to keep all the money for himself, which means that he would go home with \$50 and you would go home with nothing, or he can send half of the money back to you, which means that each of you would go home with \$25.

Two questions arise from this basic game: If you are player 2 and your partner has passed you his \$10 (earning you an additional \$40), would you go home with the \$50, or would

you share and share alike? And what if you are player 1? In this case you should ask yourself what you expect player 2 to do, and whether he deserves your trust or not. Would you be willing to part with your \$10 and risk the possibility that your partner may not share his money with you in turn? The answer to these questions is very simple according to rational economic theory: the second player would never give back the \$25, because doing so is not in his financial self-interest. And knowing this, the first player would never give away the original \$10 to start with.

So goes the simple, selfish, rational prediction. But think about this for a minute. If you were the second player and the first player sent you \$10 (which became \$40), would you go home with the \$50 or would you send back \$25? Would you send your \$10? I am not sure what you would do, but it turns out that people in general are more trusting and more reciprocating than standard economic theory would have us believe. Studies of many versions of the trust game have shown that a significant majority of people send their partner the \$10 and that most people reciprocate by sending \$25 back.

The Trust Game is very useful as a demonstration of the central role of trust in human behavior, but the story does not end there. A group of Swiss researchers led by a creative and inspiring economist, Ernst Fehr, used an extension of this game to examine the extent of not only trust but also revenge.³³ In the Swiss version of the game, if player 2 decides not to share the \$50 with you, you would have a chance to make one more decision. After telling you that the other player has decided to keep the \$50, the experimenter would say: "Look, I'm sorry you just lost ten dollars. Tell you what: if you want, you can use some of your own money to wreak a little revenge. For each dollar you give me out of your own

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money, I'll take two dollars from the other guy. If you give me three dollars I will take six dollars from him; if you give me seven dollars, I will take fourteen dollars from him; and so on. What do you think?"

Once more, put yourself in player 1's shoes. If player 2 betrayed your trust, would you sacrifice your own money to make him suffer?

The experiment showed that most people who had the opportunity to exact revenge on their greedy partners did so, and they punished severely. Yet this finding was not the most interesting part of the study. While the participants were thinking about the prospect of wreaking revenge, their brains were being scanned by a positron emission tomography (PET) machine. And what was the part of the brain that was involved in plotting and executing revenge? It was the striatum, a part of the brain associated with the way we experience reward. This means that a decision to punish untrustworthy partners is related in some way to a feeling of pleasure and reward. What's more, it turned out that those who had a high level of striatum activation punished others to a higher degree. All this suggests that the desire for revenge, even when it costs us something, has biological underpinnings, and that revenge is either pleasurable or somewhat similar to pleasure.

THIS ANALYSIS OF trust and the pleasure of revenge also provides a useful lens through which to view irrationality and behavioral economics more generally. At first glance revenge seems to be an undesirable human motivation: why on earth would human beings have evolved to enjoy seeking revenge on each other? Think about it this way: Imagine that you and I are living 2,000 years ago in an ancient desert land, and I

have a mango that you want. You might say to yourself: “Dan Ariely is a perfectly rational person. It took him twenty minutes to find this mango. If I steal it and hide so that Dan will need more time to find me than to go and get a new mango, he will do the correct cost-benefit analysis and set off on his way to find a new mango.” But what if you know that I am not rational, and that instead I’m a dark-souled, vengeful type who would chase you to the end of the world, and take back not only my mango but also all of your bananas? Would you still go ahead and steal my mango? My guess is that you would not. In a bizarre way, revenge can be an enforcement mechanism, supporting social cooperation and order.

This is how a human tendency that might initially look senseless, and not part of the basic definition of rationality, can, in fact, be a useful mechanism—not necessarily one that always works in our favor, but one that has some beneficial logic and function nevertheless.

NOW THAT WE understand a bit more about trust, its violation, revenge, and mangoes, how do we begin to deal with the current mistrust of the stock market? The parallel between the trust game and the subprime mortgage crisis is very clear: we trusted the bankers with our retirement funds, our savings, and our mortgages, but when it was their turn to act, they walked away with the entire \$50 (most likely, you may want to put a few zeros behind that). As a consequence, we feel betrayed and angry, and we want the institutions and bankers to pay dearly.

Beyond the feeling of revenge, this type of analysis helps us understand that trust is an essential part of the economy,

and that once trust is eroded, it is very difficult to restore. The central banks can take heroic measures to infuse money, give short-term loans to banks, increase liquidity, buy back mortgage-backed securities, and use any other trick in the book. But unless they rebuild the public's trust, these very expensive measures are unlikely to have the desired effect.

I suspect that the government's actions not only ignored the issue of trust, but they unintentionally contributed to its further erosion. For example, the bailout legislation was eventually passed not because it had been made more appealing, but because a few irrelevant tax cuts were added to it. Also, Paulson asked us to trust him when he said that \$700 billion was needed to buy toxic assets, and that he would manage this responsibility appropriately. We learned later that he didn't follow through with the former, and this failure made the latter seem unlikely. And of course, let's not forget the behavior of the bankers themselves, from minor issues such as costly office decorations (Merrill Lynch's CEO John Thain spent more than \$1 million to decorate his office), to more substantial issues such as the compensation of the CEOs at Lehman Brothers, Fannie Mae, Freddie Mac, AIG, Wachovia, Merrill Lynch, Washington Mutual, and Bear Stearns—establishing new records for CEO pay.

Imagine how different things would have looked if the banks and the government had understood the importance of trust from the get-go. Had that been the case, they would have worked harder to explain more clearly what went wrong and how the bailout would be used to clean up the mess. They would not have ignored the public's sentiment; they would have used it for guidance. They would have included some trust-building elements in the bailout legislation itself

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(for example, they could have guaranteed that every bank bailed out with taxpayers' money would have to commit to transparency, limit top managers' salaries, and eliminate conflicts of interest).

Nevertheless, all is not lost. While it is clear that the legislators do not yet understand the importance of trust, I remain hopeful that some of the banks will decide to step away from the herd and be good guys—creating trust by eliminating conflicts of interest and modeling complete transparency. They might do it because it is the moral thing to do or, more likely, because they will understand that the best way to solve the liquidity problem is to engender trust. It will certainly take a while for them to view the world this way, but at some point they will understand that unless they create a new structure to slowly regain our trust, none of us will get out of this economic mess.

(5) What is the psychological fallout from not understanding what the #\$\$%^ is going on in the markets?

At the end of 2008, consumers' confidence was at its lowest since 1967 (the year that research groups began measuring it), suggesting that the economy was also in the worst shape since 1967, and feeding on itself to further sink the economy. While there is no question that the state of the economy was indeed depressing, I suspect that there were other factors—ones not related to the underlying economic situation—that contributed to our gloomy outlook.

Henry Paulson's behavior, as described above, gave us a clear message that no one really understood what was going

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on in the financial markets and that we had no real control over the monster we had created. One question we might ask is whether the general depression that followed might have been mitigated if Paulson had been able to explain what went wrong in the first place, what his proposed measures were going to achieve, why he changed his decision to buy toxic securities, and what his plan was for the rest of the bailout money.

As it turns out, even some answers could have made a difference. All creatures (including humans) respond negatively in situations where things don't seem to make sense. When the world gives us unpredictable punishments without rhyme or reason, and when we don't have any explanation for what is happening, we become prone to something psychologists call "learned helplessness."

In 1967, two psychologists, Martin Seligman and Steve Maier, conducted a famous set of experiments using one predictable environment, one unpredictable environment, and two dogs—a control dog and an experimental dog.³⁴ (Warning: The following description may be upsetting for animal lovers.) In the control dog's room, a bell sounded from time to time. Shortly after each bell, the dog received a mild electrical shock—just enough to annoy and surprise him. Fortunately for him, the control dog also had access to a switch that turned off the shocks, and he quickly discovered the switch and learned to use it.

Next door, the experimental dog (which the scientists referred to as the "yoked" dog) received the exact same electrical shocks, but he did not hear any bells beforehand. Nor did he have a switch that allowed him to turn off the shocks. From the perspective of their physical reality, both dogs received exactly the same shocks, but the difference in

their situations was their ability to predict and control the shocks.

Once the dogs acclimated to their environment (as best they could), the researchers administered a second test. This time, both dogs were put in a “shuttle box”—a large box divided by a low fence into two compartments. From time to time a warning light came on, and a few seconds later the floor of the shuttle box emitted a mild electrical shock. If, at that point, the dog jumped from one compartment to the other, he would escape the shock. Even better, if the dog jumped over the fence to the other compartment when the warning light first came on, he avoided the shock entirely. As you might expect, the control dog quickly learned to jump over the fence as soon as the light went on. Though he was understandably a bit anxious, he seemed relatively happy.

What about the experimental “yoked” dog? You might expect that he would be equally motivated and equally able to escape the shocks in the shuttle box. But the result was both interesting and rather depressing: The yoked dog just lay in the corner of his cage, whimpering. Having learned in the first stage of the experiment that shocks happened unpredictably and inescapably, the yoked dog carried that mindset into the shuttle box. The experience during the first part of the experiment taught this dog that he didn’t understand the relationships between cause and effect. As a consequence, this poor dog later became helpless in his general approach to life, exhibiting symptoms similar to those of people suffering from chronic clinical depression, including ulcers and a general weakening of the immune system.

YOU MIGHT THINK that this experiment applies only to electrical shocks and dogs, but the principle holds true in many cases when we don't understand the causes of rewards and punishments in our environment. Imagine yourself in the economic equivalent of the yoked dog's chamber. One day you are told that the best place to invest your money is in high-tech stocks, and the next moment, without warning—*bzzz*—the Internet stock bubble explodes. Next, you are told that the best place to invest your money is housing, and again—no warning, then *bzzz*—the value of your house plummets. Then, suddenly—*bzzz*—the price of gasoline increases to an all-time high, presumably due to the war in Iraq, yet a few months later, even as the war rages on, the price of gasoline drops—*bzzz*—to a much lower price.

Next you watch as giant financial institutions that have been the backbone of the heretofore-trusted U.S. financial system fail and your investments take a hit—giant *bzzz*. For some unexplained reason some of these institutions receive a bailout—*bzzz*—using the money you earned and then paid in taxes—*bzzz*—and others do not—*bzzz*. Then the Big Three automakers find themselves on the verge of bankruptcy (not a real surprise there), but they don't receive the same generous treatment as the banks, even though they were asking for far less and had many jobs on the line. At the end of the day all these dramatically expensive bailout attempts seem like a capricious, idiosyncratic patch-up job with no reason or plan. *BZZZ*.

Does this economic shuttle box sound familiar? All this unexplained and erratic economic behavior destroyed our faith that we understood the causes and effects in our environment and turned the public into the economic equivalent of a yoked dog. As a result of getting zapped with so many

different and incomprehensible shocks every now and again, it's no wonder that consumer confidence plummeted and that depression spread.

MEANWHILE, WHAT CAN we personally do to heal from our own learned helplessness? One idea comes from the research of psychologist James Pennebaker at the University of Texas at Austin. Pennebaker's research has repeatedly shown that the active and conscious process of trying to make sense out of difficult, confusing, and even traumatic events can help individuals recover from them. In much of his work, Pennebaker asks his patients to write their reflections in a journal, finding that this helps them a great deal. This means that even when external events make no sense, we can benefit from our own attempts to make sense of our world.

Pennebaker's advice sounds very reasonable, but of course most of us do the exact opposite. We have access to news 24 hours a day on TV, radio, and the Internet—much of it consisting of quick sound bites that aim for our hearts but not our minds. Journalists have a saying: “If it bleeds, it leads,” meaning that the top news stories are always the most shocking or sensational ones. It seems to me that most newscasters are shaped by the same mold, with their grave expressions and motionless hair. They also sound as if they've all received standard training in how to come up with quick, sensational sound bites that they repeat every few minutes. Grim stories about the economy take the shape of tear-jerker stories about people who are struggling, who have lost their jobs, and who can't pay for their homes or insurance.

It is not that these stories are unimportant, not very sad, or unuseful, but they don't help us understand what is hap-

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pening all around us, or what caused the economic meltdown in the first place. And when we submit ourselves to a never-ending daily diet of depressing, emotional sound bites (thinking that we are going to learn something from watching, reading, or listening to them over and over), we risk intensifying our depression. To fight this tendency we should follow Pennebaker's advice and change the way we consume news from passive receptivity to actively thinking about the information and trying to make sense out of it.

Maybe one day journalists, or Henry Paulson, or the next chairman of the Federal Reserve, or Barack Obama, or the new leaders of other government institutions will value our well-being enough to explain to us what is going on and the rationale behind the decisions that they make. And the sooner the better because I am not sure how many more shocks we can take.

(6) Can a global market increase irrational behavior?

For at least the last decade, the globalization of markets has been promoted by many as a good thing. The belief has been that a move from multiple and semi-independent markets toward one big market increases liquidity, encourages financial innovation, and allows friction-free trade. As a consequence, today, in case you haven't noticed, there is not much difference between the Japanese, British, German, and American stock markets. We see them rise and fall almost in unison, if to varying degrees. But as we witness the effects of increased globalization, we should ask ourselves what are the benefits and the costs of having one large market. I suspect that one large market can, in fact, reduce financial innovation, be dangerous to our financial health, and ultimately fail to protect us against financial meltdowns.

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To help us think about how one large market can become inefficient, consider the following few paragraphs from *The Lost World* by Michael Crichton.³⁵ A character named Malcolm (the chaos-theory scientist played in the movie by Jeff Goldblum) goes on a pessimistic rant against cyberspace—pointing out that a world where everyone is connected could bring about the end of creativity, innovation, and evolution.

This idea that the whole world is wired together is mass death. Every biologist knows that small groups in isolation evolve fastest. You put a thousand birds on an ocean island and they'll evolve very fast. You put ten thousand on a big continent, and their evolution slows down. Now, for our own species, evolution occurs mostly through our behavior. We innovate new behavior to adapt. And everybody on earth knows that innovation only occurs in small groups. Put three people on a committee and they may get something done. Ten people, and it gets harder. Thirty people, and nothing happens. Thirty million, it becomes impossible. That's the effect of mass media—it keeps anything from happening. Mass media swamps diversity. It makes every place the same—Bangkok or Tokyo or London: there's a McDonald's on one corner, a Benetton on another, a Gap across the road. Regional differences vanish. All differences vanish. In a mass-media world, there's less of everything except the top ten books, records, movies, ideas. People worry about losing species

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diversity in the rain forest. But what about intellectual diversity—our most necessary resource? That's disappearing faster than trees. But we haven't figured that out, so now we're planning to put five billion people together in cyberspace. And it'll freeze the entire species. Everything will stop dead in its tracks. Everyone will think the same thing at the same time. Global uniformity. . . .

Obviously, Malcolm is an intense character with extreme opinions, but even if we don't think that connecting the whole world in cyberspace will bring everything to a halt, it is still interesting to consider whether the connectivity of the global financial markets could actually reduce the diversity of thinking and of financial products, and, as a consequence, decrease competition and efficiency.

Personally, I think that Malcolm's analogy is very apt. I suspect that connecting many markets under the banner of a single global one decreases diversity in financial instruments and in opinions. Moreover, the pressures for conformity are such that living within one global financial village is likely to get all those involved to accept the same general beliefs (model) of how the financial world works. From this perspective, even the rational economic theory would predict that many markets with higher competition between them would be more beneficial than a single market. Somewhat ironically, when rational economic theory has been used to promote one large global market, its supporters have emphasized the benefits of liquidity and efficiency, but they conveniently forget the immense importance of diversity of ideas, approaches, and financial instruments—which at the end of the day is likely to be a more important economic force.

Of course, globalization would be wonderful if the result were a perfect global market. But given the degree to which human beings are prone to mistakes and irrationality, it seems that any market we create is likely to be imperfect. In the end, I would much prefer to have multiple, somewhat independent markets, each perhaps less efficient—but more isolated, flexible, nimble, competitive, and more likely to evolve over time—producing more efficient and robust financial markets.

(7) What is the right amount to pay bankers?

Recently there has been a public outcry against astronomical executive salaries. The basic public sentiment is that it seems unfair that people make so much money for mismanaging our money, especially when it is so difficult to see how bankers' talents and abilities justify their compensation. Naturally, it's particularly offensive when executives receive high bonuses after disastrous performances, or, worse, when the bonuses come from taxpayers' money courtesy of government bailouts.

Not surprisingly, bankers have fought back, claiming that the high salaries are required to attract the best and brightest to crucial, high-stress, high-skill positions, and that the most talented and valuable bankers would go elsewhere if salaries were capped. It is your basic free market argument: if they can't recruit and retain the best minds in business, these minds will simply go elsewhere, leaving us with less qualified people in charge of the economy—and that, in the end, would send us all down the tube.

Rather than seeing this as an ideological debate between self-serving bankers on one side and morally outraged tax-

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payers on the other, it is more useful to ask what we really know about the relationships between very large bonuses and job performance.

To look at the question of how bonuses affect performance, Uri Gneezy, George Loewenstein, Nina Mazar, and I conducted a few experiments. In one, we gave participants an array of tasks that demanded attention, memory, concentration, and creativity. We asked them, for instance, to fit pieces of a metal puzzle into a plastic frame, to play a memory game that required reproducing a string of numbers, to throw tennis balls at a target, and a few other such tasks. We promised payments of different amounts (either low, medium, or very high bonuses) if they performed any of these tasks exceptionally well. About a third of the subjects were told they'd be given a small bonus (relative to their normal wages), another third were promised a medium-sized bonus, and the last group could earn a very high bonus.

By the way, and before you ask where you can sign up for this experiment, I should tell you that we did the study in India, where the cost of living is relatively low. By doing it there, we could pay people amounts that were substantial to them but still within our research budget. The low bonus was 50 cents, equivalent to what participants could receive for a day's work in rural India. The medium bonus was \$5, or about two weeks' pay, and the very high bonus was \$50, roughly five months' pay.

What do you think the results were? Would our participants follow the expected reward pattern with the group offered the smallest bonus performing worst, those offered the medium bonus performing better, and those offered the very high bonus performing best? When we posed this question to a group of business students, naturally they expected perfor-

mance to improve with the amount of the reward. In the business world this assumption is practically a natural law, and the logic that gets executives to command very high pay. But our experiment results revealed the opposite. As it turned out, the group offered the highest bonus did worse than the other two groups in every single task! And the people offered medium bonuses performed no better or worse than those offered low bonuses.

We replicated these results in a study at MIT, where undergraduate students were offered a chance to earn a very high bonus (\$600) or a lower one (\$60) by performing two four-minute tasks: one that called for some cognitive skill (adding numbers) and another that required only mechanical skill (tapping a keypad as fast as possible). We found that as long as the task involved only mechanical skill, bonuses worked as we usually expect: the higher the pay, the better the performance. But when the task required even rudimentary cognitive skill (as we might suppose investing and banking do), the outcome was the same as in the Indian study: a potential higher bonus led to poorer performance.

Our results led us to conclude that financial rewards are often a two-edged sword. They motivate people to work well, but when these financial rewards get very large they can become counterproductive and actually hurt performance. If our tests mimic the real world, then higher bonuses may not only cost employers more, but also hinder executives in working to the best of their abilities.

INTERESTINGLY, MONEY ISN'T the only thing that compels better (or worse) performance. We conducted a variation of

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this experiment at the University of Chicago; this time we wanted to look at a different kind of motivator: public image. We asked participants to solve anagram puzzles, sometimes privately in a cubicle and sometimes in front of others. Assuming that their motivation to do well would be higher in public, we wanted to see if being observed by others would affect their performance, and if it would improve or impair their ability. We found that though the subjects did want to perform better when they worked in front of others, they did worse.

We concluded that social pressure, like money, is also a two-edged sword. It motivates people, but having to perform in front of others raises stress too, and at some point that stress overwhelms the benefits of increased motivation.

WHEN I PRESENTED these results to a group of banking executives, they assured me that their own work and that of their employees would not follow the pattern we found in our experiments. (I suggested that with a suitable research budget and their participation, we could examine their assertion, but they were not interested.) I strongly suspect that they were too quick to discount our results. I'd be willing to bet that for the vast majority of bankers, if not for all of them, a multimillion-dollar compensation package could easily be counterproductive because of the stress involved in attaining it, because of the fear of not getting it, and because it takes their minds off the job and focuses their attention on the large bonus.

I don't want to argue that in all situations, regardless of job type or the characteristics of the person, it will be more

productive to pay less. But I do want to suggest that compensation is a complex issue involving complex economic incentives, stress, and other aspects of human psychology that we often don't understand and don't take into account. Perhaps the naively simple theory that more money equals better performance is not as practical as we thought, at least not all the time. If more money led to better performance, wouldn't we expect that those who got tens of millions in compensation would be optimal performers? Maybe even perfect? The fact that those with very high salaries and bonuses failed so miserably in the financial fiasco of 2008 should add to the evidence against a direct link between higher rewards and better performances.

IN THE WAKE of an outpouring of public anger, and within weeks of taking office, Barack Obama proposed "common-sense" guidelines for executive pay—at least for companies receiving government money. These measures called for a \$500,000 cap on executive salaries; further compensation could be only in the form of stocks, which could not be sold until the government had been repaid. No doubt this makes taxpayers feel better to some extent, but the question is, will it work?

I think not, and here's why: if we were designing the stock market from scratch and offering people \$500,000 a year plus stock incentives, I'm sure we would get lots of qualified people who would kill to run a big bank for this compensation. And they might work not only for the salary but also to perform an important civil service in maintaining the financial system on which we all depend. Unfortunately, we're not starting from scratch. Instead, we're dealing with existing

bankers who are accustomed to millions of dollars a year in salary, plus millions more in stock options and bonuses. After many years of being conditioned to these circumstances, executives have developed a multitude of reasons why they deserve to be paid so much. After all, how many people do you know who would admit to being paid much more than they're worth?

This is a problem of relativity. The bankers' view of "normal" makes a salary of \$500,000 seem both offensive and irresponsible. My guess is that the executives will not accept these conditions; if they do, they'll find other tricks to pay themselves what they think are "right" and fair wages, comparable to what they earned in the past.

If I were Obama's financial czar, I would try to get the bankers, and the system that has given them a warped sense of entitlement, to turn over a new leaf by encouraging the creation of new banks with new pay structures. These new banks would promote the idea that bankers are not greedy bastards but are ethical, upstanding people who fulfill a crucial role that is central for the functioning of the economy and the country (which, in fact, they do). The "old bankers" who feel they needed millions of dollars to do their jobs, and millions more in bonuses to do their jobs well, could try to compete in this new market. But who would want to bank with them when the alternative is a new bank with a more idealistic underpinning and a more realistic, and more transparent, salary structure?

(8) Rational economics has always been the basis for setting up policies and designing our institutions. What's wrong with that?

Neoclassical economics is built on very strong assumptions that, over time, have become “established facts.” Most famous among these are that all economic agents (consumers, companies, etc., are fully rational, and that the so-called invisible hand works to create market efficiency). To rational economists, these assumptions seem so basic, logical, and self-evident that they do not need any empirical scrutiny.

Building on these basic assumptions, rational economists make recommendations regarding the ideal way to design health insurance, retirement funds, and operating principles for financial institutions. This is, of course, the source of the basic belief in the wisdom of deregulation: if people always make the right decisions, and if the “invisible hand” and market forces always lead to efficiency, shouldn't we just let go of any regulations and allow the financial markets to operate at their full potential?

On the other hand, scientists in fields ranging from chemistry to physics to psychology are trained to be suspicious of “established facts.” In these fields, assumptions and theories are tested empirically and repeatedly. In testing them, scientists have learned over and over that many ideas accepted as true can end up being wrong; this is the natural progression of science. Accordingly, nearly all scientists have a stronger belief in data than in their own theories. If empirical observation is incompatible with a model, the model must be trashed or amended, even if it is conceptually beautiful, logically appealing, or mathematically convenient.

Unfortunately, such healthy scientific skepticism and em-

piricism have not yet taken hold in rational economics, where initial assumptions about human nature have solidified into dogma. Blind faith in human rationality and the forces of the market would not be so bad if they were limited to a few university professors and the students taking their classes. The real problem, however, is that economists have been very successful in convincing the world, including politicians, businesspeople, and everyday Joes not only that economics has something important to say about how the world around us functions (which it does), but that economics is a sufficient explanation of everything around us (which it is not). In essence, the economic dogma is that once we take rational economics into account, nothing else is needed.

I believe that relying too heavily on our capacity for rationality when we design our policies and institutions, coupled with a belief in the completeness of economics, can lead us to expose ourselves to substantial risks.

HERE'S ONE WAY of thinking about this. Imagine that you're in charge of designing highways, and you plan them under the assumption that all people drive perfectly. What would such rational road designs look like? Certainly, there would be no paved margins on the side of the road. Why would we lay concrete and asphalt on a part of the road where no one is supposed to drive on? Second, we would not have cut lines on the side of the road that make a *brrrrrr* sound when you drive over them, because all people are expected to drive perfectly straight down the middle of the lane. We would also make the width of the lanes much closer to the width of the car, eliminate all speed limits, and fill traffic lanes to 100 percent of their capacity. There is no question that this would be a more rational

way to build roads, but is this a system that you would like to drive in? Of course not.

WHEN IT COMES to designing things in our physical world, we all understand how flawed we are and design the physical world around us accordingly. We realize that we can't run very fast or far, so we invent cars and design public transportation. We understand our physical limitations, and we design steps, electric lights, heating, cooling, etc., to overcome these deficiencies. Sure, it would be nice to be able to run very fast, leap tall buildings in a single bound, see in the dark, and adjust to every temperature, but this is not how we are built. So we expend a lot of effort trying to take these limitations into account, and use technologies to overcome them.

What I find amazing is that when it comes to designing the mental and cognitive realm, we somehow assume that human beings are without bounds. We cling to the idea that we are fully rational beings, and that, like mental Supermen, we can figure out anything. Why are we so readily willing to admit to our physical limitations but are unwilling to take our cognitive limitations into account? To start with, our physical limitations stare us in the face all the time; but our cognitive limitations are not as obvious. A second reason is that we have a desire to see ourselves as perfectly capable—an impossibility in the physical domain. And perhaps a final reason why we don't see our cognitive limitations is that maybe we have all bought into standard economics a little too much.

Don't misunderstand me, I value standard economics and I think it provides important and useful insights into human

endeavors. But I also think that it is incomplete, and that accepting all economic principles on faith is ill-advised and even dangerous. If we're going to try to understand human behavior and use this knowledge to design the world around us—including institutions such as taxes, education systems, and financial markets—we need to use additional tools and other disciplines, including psychology, sociology, and philosophy. Rational economics is useful, but it offers just one type of input into our understanding of human behavior, and relying on it alone is unlikely to help us maximize our long-term welfare.

IN THE END, I do hope that the debate between standard and behavioral economics will not take the shape of an ideological battle. We would make little progress if the behavioral economists took the position that we have to throw standard economics—invisible hands, trickle-downs, and the rest of it—out with the bathwater. Likewise, it would be a shame if rational economists continue to ignore the accumulating data from research into human behavior and decision making. Instead, I think that we need to approach the big questions of society (such as how to create better educational systems, how to design tax systems, how to model retirement and health-care systems, and how to build a more robust stock market) with the dispassion of science; we should explore different hypotheses and possible mechanisms and submit them to rigorous empirical testing.

For instance, in my ideal world, before implementing any public policy—such as No Child Left Behind or a \$130 billion tax rebate or a \$700 billion bailout for Wall Street—we would first get a panel of experts from different fields to pro-

pose their best educated guess as to what approach would achieve the policy's objectives. Next, instead of implementing the idea proposed by the most vocal or prestigious person in this group, we would conduct a pilot study of the different ideas. Maybe we could take a small state like Rhode Island (or other places interested in participating in such programs) and try a few different approaches for a year or two to see which one works best; we could then confidently adopt the best plan on a large scale. As in all experiments, the volunteering municipalities would end up with some conditions providing worse outcomes than others, but on the plus side there would also be those who would achieve better outcomes, and of course the real benefit of these experiments would be the long-term adoption of better programs for the whole country.

I realize that this is not an elegant solution because conducting rigorous experiments in public policy, in business, or even in our personal lives is not simple, nor will it provide simple answers to all of our problems. But given the complexity of life and the speed at which our world is changing, I don't see any other way to truly learn the best ways to improve our human lot.

FINALLY, I'LL SAY THIS: In my mind there is no question that one of the wonders of the universe is how complex, bizarre, and ever changing human behavior is. If we can learn to embrace the Homer Simpson within us, with all our flaws and inabilities, and take these into account when we design our schools, health plans, stock markets, and everything else in our environment, I am certain that we can create a much better world. This is the real promise of behavioral economics.