

Self is Never Neutral: Why Economic Agents Behave Irrationally

Lei Gao and Ulrich Schmidt

Modern economics understands utility from the concept of decision utility inferred from individual choice making. It explains agents' decisions or choices in turn by the paradigm of utility maximizing. From our perspective, however, this is a fatal mistake because economic agents do not always choose what they really want in order to maintain their "self-value." In fact, subjects are never neutral. When agents are not able to obtain something they want, they downplay its desirability in order to get psychological satisfaction. But when they are forced to accept what they do not want, they try to rationalize that they really did want it, again in order to save face. Although such "irrational" behavior may decrease economic utility, it gives agents psychological satisfaction and subjective comfort, thus increasing their immaterial utility. In this sense, agents remain rational when conducting such behaviors, even though they run directly contrary to neoclassical rationality concepts.

The neoclassical school is currently the dominant approach to economic issues. On many occasions, this theory can predict magnitude and sign effects. However, neoclassical economics is often criticized for placing rationalism ahead of realism and making its representative agent an unrealistic man.

In neoclassical models, the representative agent is presumed to be a perfectly rational man who behaves according to expected utility theory in order to realize his maximal utility. He is an unbiased Bayesian forecaster, always serious-minded, and never subject to psychological effects. He optimizes, but otherwise his behavior is like a black box. Simon [1983, p. 34] calls this vision of rationality the "Olympian Model. It serves, perhaps, as a model of the mind of God, but certainly not as a model of the mind of man."

Empirical financial market researchers are often annoyed by the presumption of complete rationality of agents. In fact, if market agents were perfectly rational, there would be no more trading. Aumann's [1976] "Agreement Theorem" states that rational agents cannot "agree to disagree" about the probability of a given event. Intuitively, if rational trader A has a different probability assessment than rational trader B, trader B must conclude that trader A has information B has not yet obtained, and vice versa. From this theorem it follows that two rational agents never bet against each other.

The same theory extends to a situation with many traders. A trader with a piece of special information wants to trade, but knows only traders with their own special information will take the other side of the trade. As Milgrom and Stokey's [1982] No-Speculation Theorem demonstrates, if it is common knowledge that all traders are rational and the current allocation is ex ante Pareto efficient, then new asymmetric information will not lead to trading. It is a paradox.

Behavioral finance, another approach that abandons the rationality concept, has recently emerged and has garnered an increasingly large number of adherents. It succeeds in empirically describing and predicting market and agent behavior, but fails to establish a theory. This paper spans the neo-classical approach and the behavioral approach through a new theory about agents maintaining their self-value. We believe such a theory can help create a link between rationality and behavior.

This paper is organized as follows. The theory of self-value is explained in the second section and applied to existing paradoxes in the third section. The fourth section empirically demonstrates the relationship between the disposition effect of traders and their self-value. The final section provides a summary.

Theory of Individual Self-Value

Real Economic Agents Are Not Expected Utility Maximizers

Rationality is central to today's mainstream economics. As Blaug [1993, p. 230] says: "So strong and pervasive has been the hold of the rationality postulate on modern economics that some have seriously denied that it is possible to construct an economic theory not based on utility maximisation." Among alternative no-

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tions of rationality, intentional rationality is the dominant approach (Hargreaves-Heap [1989]). Mainstream economic theory starts from a set of normatively appealing axioms about individual behavior and the assumption that all intentionally rational behavior of an economic agent is constrained optimization.

Over the past decades, however, a considerable amount of empirical evidence has demonstrated that real economic agents are not utility maximizers. They often choose suboptimally, but are nonetheless satisfied. For example, people may cease to search for alternatives when they find a choice whose utility meets their aspiration level or exceeds some previously determined threshold of what counts as satisfactory. When asked why they chose as they did, people say: "It was good enough for me," or "That's all I needed" (Byron [1998, p. 70]).

To explain such a phenomenon, Leibenstein [1966] proposes the X-efficiency theory (non-allocative inefficiency). In this theory, calculatedness (a proxy for rationality) is a variable. Individuals usually have a choice between full calculatedness and loose calculatedness. Motivation-related issues are the major causes of X-inefficiency. When individuals feel flexible, they lean toward loose calculatedness. This is often true in real life. As early as three hundred years ago, the mathematician Pascal wrote "ordinary people have the ability not to think about things they do not want to think about" (Elster [1999, p. 100]).

But when individuals feel stricter, they get self-motivated and disciplined. They approach full calculatedness. In other words, intrinsic laziness often causes individuals to be inefficient, but proper pressure will reduce this kind of X-inefficiency and boost productivity.

To explain economic agents' seemingly unreasonable satisfaction with utility, Simon [1955] adds the idea that the list of technical constraints on choice should include some properties of human beings as processors of information and problem solvers. In particular, Simon contends that the bounds of human beings' rationality include limitations on information acquiring, information processing, computational capability, organization and utilization of memory, and so on. In light of those limitations, an optimizing standard for rational action does not seem feasible. Simon [1955] proposes the "satisficing" theory, which is distinguished by its satisficing rule of rational choice. This rule only requires choosing a satisfactory outcome from among the possible outcomes, and by design reduces the informational and computational requirements of rational choice.

But mainstream economics has since absorbed most of the limitations suggested by Simon within the paradigm of constrained optimization and equilibrium. Yang [2001] discusses the Savage research program of

decision-making under incomplete information, the Wald research program of costly observation, the Radner research program of computational cost of spinning, and many others (Radner [1996]). It seems Leibenstein's [1966] and Simon's [1955] findings still fall under the heading of neoclassical economics and thus are not groundbreaking. So the puzzle remains: Why don't economic agents try to maximize their expected utility subject to all constraints and limitations, and how can they be satisfied with suboptimum choices?

The Problem in Decision Utility and the Concept of Self-Value

Self is never neutral. Modern economics understands utility within the concept of decision utility inferred from individual choice making. It explains decisions and choices by the paradigm of utility maximizing. From the perspective of this paper, however, this is a fatal mistake, because economic agents often choose things they don't really want in order to maintain their "self-value."

On the one hand, individuals are born with different physical and socioeconomic endowments, e.g., different talents and different family backgrounds. On the other hand, however, individuals all share some similar feelings: Everybody has a certain amount of self-respect and wants to be accepted by others, few people like to value others above themselves, and almost nobody believes he is of no value. Nobody can stay neutral.

In real life, people often yearn for the comforts of subjectivism. When people find they can't get something they want, they tend to downplay its desirability in order to get psychological satisfaction. This is often referred to as a "sour grapes" mentality, claiming you didn't really want what you couldn't get, and is very common among human beings. Denial is one psychological example. People don't want to show that they desire an item before they think they can get it. And when forced to accept something they don't like, they will try to show that it really was desirable to them all along, in order to save face.

This is our explanation for why economic agents often do not choose what they really want. Although such "irrational" behavior may decrease agents' economic utility, it gives them psychological satisfaction and subjective comfort, and thus increases their immaterial utility. In this sense, agents are completely rational in these behaviors even though they run directly counter to the concepts of neoclassical rationality.

A solid foundation for behavioral economics was laid by Kahneman and Tversky [1979], who proposed prospect theory. The value function that they suggest is

illustrated in Figure 1. The X-axis represents payoff. The Y-axis represents value.

We use individual self-value to explain this function. As described above, when people want something, they are reluctant to acknowledge its desirability until they believe they can get it. This is why people appear modest, or, in Kahneman and Tversky's [1979] words, "risk-averse" in gain situations. In contrast, when people are forced to accept something undesirable, they don't want to appear to be giving in. They want to appear to be fighting to the end in order to save face. This is why people appear aggressive or, in Kahneman and Tversky's [1979] words, "risk-seeking" in loss situations.

Now we see the big difference between rationality used in economics and rationalization used in psychology. Rationalization does not mean "acting rationally." It means attaching desirable motives to what we have done so that we seem to have acted rationally. In other words, people seek justification for their behavior. And rationalization, which is largely about perception, often comes post hoc. People rationalize to save their self-value, sometimes consciously, sometimes subconsciously. Rationalization can make people feel good.

The sour grapes mentality doesn't require much further explanation, so we give only some examples of this phenomenon. Consider students who face financial constraints and must remain on campus during spring break. They may claim: "I would not have gone on break even if I could have. I simply cannot stand the crowds and the heavy traffic. And I really want to use this break to learn some new stuff." Or consider people who cannot afford a car and instead must ride a bicycle. They may claim: "Riding a bike is good exercise and good for my health. I enjoy it very much."

In much the same way, we see that investors, who can sell their losing stocks at the end of the year and receive a tax benefit, instead insist on a swap. They buy new stocks with the proceeds of the sales, instead of keeping the cash, even when they may not really want the new stocks, and buying them may not even be a good business decision. Gross [1982] provides an interesting example of this. When he wants a client to close a losing transaction that he originally recommended, and invest in another position he is currently recommending, he uses his "magic selling words": "Transfer your assets."

It may also be easier for holders of losing stocks to close their positions if some sudden liquidity demand arises. Then they can say they had to sell because they needed the money for other purposes, although they may imply it was against their wishes. Thus, they feel they are saving face. This point has been verified by Torsten, Menkhoff, and Schmidt [2003] in a survey of 146 German fund managers' trading behavior.

Agents are economic people, but they are psychological people as well. Allowing for self-value, a rational agent can appear "irrational." We propose a value function in Figure 2. The X-axis represents the gain/loss payoff, which can be measured in monetary units. The Y-axis represents value, which includes both material value and immaterial value. Material value is tangible; immaterial value is intangible.

We first compare point P and point Q. The payoff is the same—zero for both points—but the values are significantly different, and it is immaterial value that causes this discrepancy. The more self-value a person has, the greater the discrepancy between the value curve with self-value and without it. In fact, if a person

FIGURE 1
Kahneman and Tversky (1979) Value Function

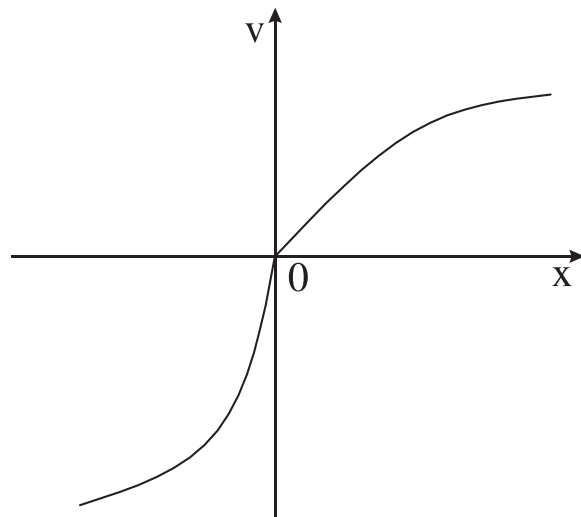
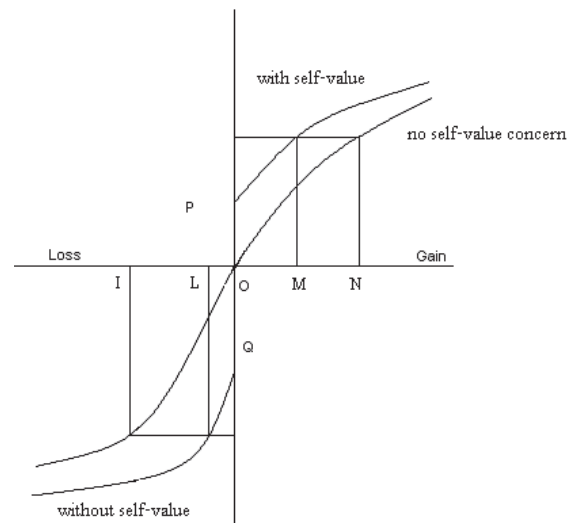


FIGURE 2
Agents' Value Functions



possesses no self-value, his value curve looks the same as the value curve that fits complete rationality.

For example, we reexamine the famous common ratio paradox (Allais and Hagen [1979]), and sketch it as follows:

Common Ratio Paradox

A:	\$3,000 Certain Gain
B:	0.20 Probability of Winning \$0 0.80 Probability of Winning \$4,000
C:	0.75 Probability of Winning \$0 0.25 Probability of Winning \$3,000
D:	0.80 Probability of Winning \$0 0.20 Probability of Winning \$4,000

Most experiment participants, as well as several of our colleagues, preferred A to B and C to D. As for why B is not preferable, our colleagues stated that if B is chosen, there is a certain percent chance of getting no money and feeling like a complete idiot. They *do* feel the zero payoffs at point Q.

But now let us turn gains into losses and study the reflection effect. The reflection effect (Tversky and Kahneman [1981]) shows that people are risk averse in gains and risk prone in losses. In our case, people chose an 80% chance of losing \$4,000 (and a 20% chance of getting a zero payoff) over a certain loss of \$3,000. This time, the zero payoff demonstrates their immaterial self-value and thus coincides with point P.

In the case of no self-value, the choice between C and D or the choice for others' interests, people may view the zero payoff at point O. When we asked our colleagues to select again for their children, this is why both B and D then became favorable. Their self-value was not concerned.

Reflection Effect

A':	\$3,000 Certain Loss
B':	0.20 Probability of Losing \$0 0.80 Probability of Losing \$4,000
C':	0.75 Probability of Losing \$0 0.25 Probability of Losing \$3,000
D':	0.80 Probability of Losing \$0 0.20 Probability of Losing \$4,000

From the perspective of this paper, any theory of optimal decision making is doomed. Decision making is always an individual discretionary matter. In fact, it is not physical or socioeconomic conditions that distinguish an individual from others. Decisions are influenced by self-value. In this sense, we argue that individuals are nothing more than a sequence of dynamic choices.

Remember, the self can never stay neutral, and this explains the framing effect in Kahneman and Tversky [1979]—the change of decision-makers' preferences as a consequence of the variation of frames, for example, through variation of the formulation of the problem. Note that some formulations let people stay on the positive side, and some formulations put people on the negative side.

Guofan Zeng, a governor in the Qing Dynasty of China, once suffered a series of military failures when he tried to suppress a peasant rebellion. He told the emperor Tongzhi that he restarted fighting after each defeat. As a result, he got promotion instead of penalty. What is the difference between continuing to fight despite constant defeats and being defeated despite constant fighting? The former gave the emperor self-value by keeping him on the positive side.

The case of Asian disease in Tversky and Kahneman [1981] is another vivid example. Reportedly, American General Douglas MacArthur claimed, "We are not retreating—we are advancing in another direction." In real life, most circumstances have such a half-full/half-empty feature. But the point is the self can never stay neutral. And sometimes, the question is how to say something, rather than what to say.

Self is always relative. Neoclassical economists insist that an agent's utility depends solely on the absolute level of personal consumption. Samuelson [1985] defines utility as "the subjective enjoyment or usefulness of a person in consuming an article or service." Mainstream economics never stipulates that people have any sense of envy. But, in fact, there can be no self without the presence of others. There is much evidence that people evaluate their utility not so much in absolute terms, but with respect to other people.

For example, according to conventional economics, human welfare should be positively correlated with economic development (Pigou [1928]). However, Blanchflower and Oswald [2000] find a surprising result for many countries: As income per capita has risen sharply over the last several decades, average happiness either hasn't changed, or has even declined over the same period. In the U.S., real per capita income rose from \$11,000 in 1946 to \$27,000 in 1991, a factor of 2.5, but the degree of average life satisfaction on a three-point scale fell during the same period from 2.4 to 2.2. This study suggests that relative income does matter for happiness, an observation first made by Easterlin [1974]. A number of self-reported happiness studies (e.g., Cummins [1998] and Diener and Suh [1997]) have also reported that people are sensitive to relative income.

Even just for consumption, interpersonal comparison plays a predominant role. Veblen's [1899] seminal work asserts that a concern for relative well-being induces people to engage in "conspicuous consumption" in order to signal wealth, because utility or happiness depends at least in part in the comparison of one's own consumption to that of others. Duesenberry [1949] and later Pollak [1976] also argue that utility depends not only on the absolute value of consumption, but on the average level of consumption within a population (this is often referred to as "keeping up with the Joneses"). Hirsch

[1976] makes a distinction between material goods and goods that confer status, which he calls “positional goods.” Empirical evidence on the importance of interpersonal comparisons can be found in Frank [1985a, 1985b], van de Stadt, Kapteyn, and van de Geer [1985], Clark and Oswald [1996], Solnick and Hemenway [1998], and Neuwark and Postlewaite [1998].

This paper proposes that the genuine utility of real economic agents depends in part on their concern for their relative positions in their peer groups. Bourdieu [1984, 1987] says that the struggle for social distinction is a fundamental dimension of all social life. There may be various reasons why people care about their relative positions. Individuals may gain psychological satisfaction from being better off than others and feel uneasy when they see others doing better. Moreover, several analyses suggest that a concern for social status can sustain different social norms (Lindbeck and Snower [1988], Holländer [1990], Bernheim [1994], Lindbeck [1997], and Lindbeck et al. [1999]). Following Veblen [1899] and Duesenberry [1949], we assume that an aspiration for a higher relative position in a peer group *as an end in itself* is fundamental to human beings.

When psychologist Abraham Maslow listed the human hierarchy of needs, basic physiological needs (such as hunger) came first, and “self-actualization,” or a sense of achievement, was last. Basic physiological needs do not show much variation across human beings, but a sense of achievement is largely relative. People need a reference point to measure their achievements. They need to know whether they are below average, average, or above average.

Psychological experiments also clearly demonstrate that people care about how well they perform in society. For example, psychologists have found that better speeds were obtained when cyclists raced against each other than when they raced against the clock. And in many American universities, there is a mandatory bell curve in grading. Students whose grades are in the bottom 5% receive an F (fail). This policy intensifies competition and adds pressure to every student.

To further illustrate, consider that upon receiving an A on an exam, most students would be happy. However, if every student received this grade regardless of performance, most people’s happiness would decrease, because they would lose the feeling of knowing they performed better than the others. On the other hand, many students might be unhappy to receive a B. But if B were actually the highest score in class, most would cheer up. Here, the concepts of envy and vanity are clearly visible. People do derive happiness from performing better than others, and there will always be competition as long as there are human beings.

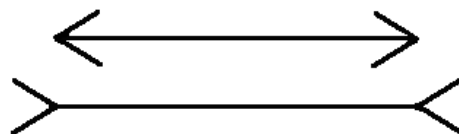
Why do so many people exhibit vanity? Again, because self is relative. Human beings care about how other people view them. This is why they often dress up nicely for social events but stay sloppy when they are at home. Vanity helps people maintain self-value and dignity. And as long as people care about their dignity, they are unlikely to behave completely rationally.

Tversky and Kahneman [1992] propose a distinct fourfold pattern of people’s risk attitudes: risk aversion for gains and risk-seeking for losses of high probability, and risk-seeking for gains and risk aversion for losses of low probability. Our explanation of such risk patterns is that people care about their relative positions in their peer group. Both gains and losses of high probability are too common to have any meaning in interpersonal comparison. But gains and losses of low probability are conspicuous. Hence, people are enthusiastic in pursuing nearly improbable gains and appear very sensitive to unlikely losses. They buy both insurance and lotteries for their spurious self-value feeling (Friedman and Savage [1948]). This also explains why people tend to be overconfident when answering questions of moderate to extreme difficulty, and underconfident when answering easy questions (Odean [1998]).

Self is always illusory. Gödel’s [1931] Incompleteness Theorem demonstrates that all logical systems of any complexity are, by definition, incomplete. Each contains more true statements than it can possibly prove, which implies that individuals are never capable of understanding themselves completely. Put simply, man does not clearly view himself with his own eyes.

In real life, most people are not able or willing to change themselves even for the realization of their hopes. They may want to have their dreams, but they are not willing to do what is necessary to make them materialize. In these circumstances, complete information of themselves is not desired. People may consciously avoid objective information of themselves or they may try to avoid realizing the importance of such information. For example, they may not wish to be informed about health problems, because that could destroy their dreams. Or, they may wish for a better job or a happier marriage, but not be willing to actually do anything concrete to obtain them.

FIGURE 3
Illusion and Transparency



To create room for such a self-biased self-estimate, individuals need vagueness. The famous Muller-Lyer illusion (see Figure 3) provides an example. The figure shows two parallel lines that are the same length. However, one appears shorter. If we add in a rectangular frame as a benchmark to facilitate comparison, we increase transparency. Consequently, people obtain a better perception of the figure (see Figure 4). In real life, however, people are often reluctant to add in such transparency.

Largely due to self-value, people are unlikely to behave rationally when they are somehow personally involved. Before examinations, for instance, people are often nervous, although they clearly know that anxiety is likely to hinder, not help, their performance. However, an outsider whose self-value is not involved can always freely provide comfort: “Don’t worry. You’ll be fine.”

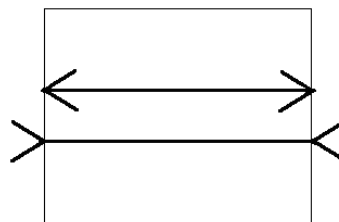
Because people cannot look at themselves objectively, they cannot know themselves completely. Remember the peculiar phenomenon pointed out in Tversky and Kahneman [1992]: People are often risk-seeking when dealing with improbable gains and risk-averse when dealing with unlikely losses. We believe another underlying reason may be that because people cannot objectively evaluate themselves, they may overestimate their importance.

Self-value can help us understand the overconfidence of many investors. The financial market literature often reports that market agents are overconfident in the sense that they have unrealistically positive self-evaluations (Greenwald [1980]). Svenson [1981] finds that people rate their abilities and their prospects higher than those of their peers. For example, when a sample of U.S. students, whose average age is twenty-two, assessed their own driving ability, 82% judged themselves to be in the top 30% of the group.

Torsten, Menkhoff, and Schmidt [2003] report that only 2.7% of 146 German funds managers see themselves as somewhat worse than their peers, and nobody believes he is clearly worse than the average. But we believe that overconfidence is just a superficial phenomenon. Agents’ self-value illusion is the essence of the matter. If people believe they personally have some value, they will be inclined to overconfidence.

Frank [1935] finds that people overestimate their ability to do well on tasks, and that these overestimates increase with the personal importance of the task. And Weinstein [1980] and Kunda [1987] both note that the illusion of self-value will cause people to expect good things to happen to them more often than to their peers. Cooper, Woo, and Dunkelberg [1988] report that 81% of 2,994 new business owners think their business has a 70% or better chance of succeeding, but only 39% think any business like theirs will be that likely to succeed. Hence, we can well believe that the illusion of self-value is the driving factor for most people to see themselves as

FIGURE 4
Illusion With Transparency



better than average, and for nearly all people to see themselves as better than others see them.

But over the long term, self-value may lead to “higher motivation, greater persistence, more effective performance, and ultimately greater success” (Taylor and Brown [1988]). For instance, during an economic downturn, people with greater self-value may be able to ignore gloomy economic forecasts. They may not be as quick to take measures (such as cutting business size) to accommodate a negative macroeconomic environment. These people may be better equipped to weather economic downturns successfully.

Applying the Theory of Self-Value to Existing Puzzles

Because it disregards the truth that agents are never neutral, the neoclassical school has increasingly encountered puzzles that it cannot explain satisfactorily. Self-value is the answer to many of these paradoxes and puzzles that run contrary to the perfect rationality concept.

Ellsberg [1961] devises a well-known paradox. Suppose there is an urn with ninety balls, of which thirty are red, and sixty are either blue or green in unknown proportion. Now consider the gambles outlined in Table 1.

Many people prefer F to G and G' to F', although it is clear there is no essential difference between these two choices (F' and G' are obtained by adding \$100 to green in F and G, respectively). As discussed above, due to self-value, people are unlikely to behave purely rationally when they are personally involved. This paradox clearly demonstrates the idea from Figure 1. People are reluctant to show the desirability of an item before they are sure they can attain it. But they feel free to make choices for friends and clients.

Let us revisit the two-stage game example in Kahneman and Tversky [1979]. During the first stage, there is a 75% probability of ending the game without earning or losing anything and a 25% probability of entering the second stage. After entering the second stage, people have a choice between an 80% probability of winning \$4,000, and a sure gain of \$3,000. The majority

Table 1. *Gamble Results*

Option	Payoffs for Drawing a Ball of Each Color (\$)		
	Red	Blue	Green
F	100	0	0
G	0	100	0
F'	100	0	100
G'	0	100	100

want the certain \$3,000. People fear that if they get nothing at this second stage, they will lose self-value.

The endowment effect (Thaler [1980]) provides another illustrative example. The endowment effect describes the overvaluation of an item due to one's possession of it. For example, when a person wants to purchase an item, he may bid low to conceal his desirability of this item. In contrast, when he sells the same item, he asks for a high price, because 1) he wishes to induce potential buyers to reveal their desirability of the item, and 2) he values it more highly because he owns it.

The status quo bias (Samuelson and Zeckhauser [1988]) is another puzzle that is clarified by knowing that people need self-value. People appear modest and conservative, and claim to want things to stay relatively the same, again because they are reluctant to acknowledge the desirability of something until they are sure that they will get it. Thus they highly value what they already have.

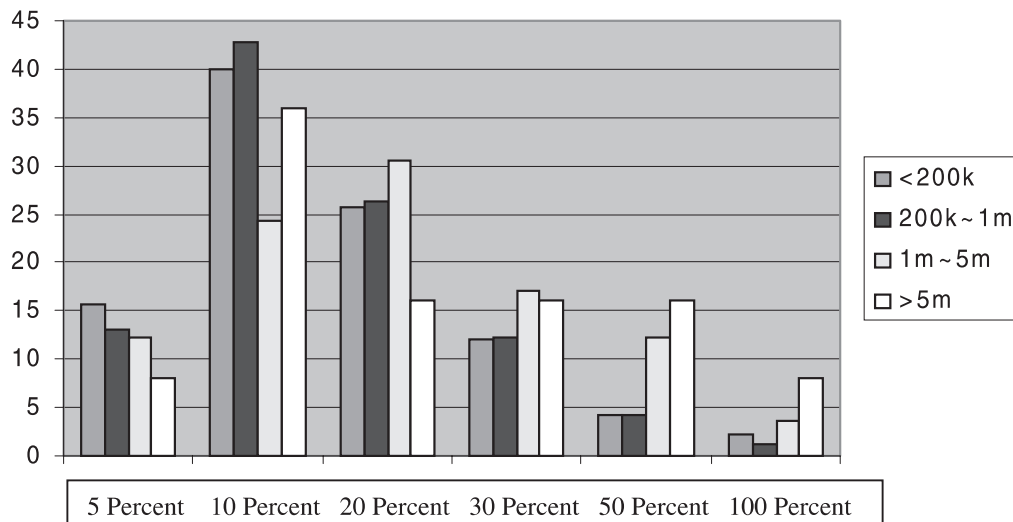
Along the same lines, we can now understand this kind of irrational behavior: People work less, not more, when wages are high and jobs are abundant. Likewise, when income is hard to get, people increase their work hours. For example, Camerer et al.

[1997] report that cabbies in New York show perverse labor supply to temporary wage fluctuations—they work fewer hours on high wage days. It may be that earning money during hard times is like the heroism of olden times. As a demonstration of self-value, it is more valuable when it is harder to obtain. Thus, it can create for agents a jump in value from P and Q because they have something to show off. Earning money in easy times has little marginal value, as showed by the function starting from point P.

Samuelson [1963] offered this profitable bet to one of his colleagues: Flip a coin, and heads would win \$200, tails would lose \$100. The colleague turned down this bet, but announced that he was willing to take a series of 100 such bets. Samuelson viewed this behavior—declining one bet but accepting many of the same bet—as a puzzle, and ascribed it to the “fallacy of large numbers,” the erroneous belief that the variance of outcomes decreases as the number of games increases.

Thaler and Benartzi [1998] later addressed the same issue, and asserted that people often display “myopic loss aversion.” They decline to play the game just one time because they do not want to reveal their desire for the potential gain. There is one popular opinion. Why should a person play one more time after he already played 99 times? Because a person would not like to play the game only once, a rational person would not agree to play one more time after he already played 99 times. If we use this recursive backwardation logic, we can see that the person would not agree to play the game at all. But this argument is flawed. The key point is that people have agreed to play 100 times. Here, playing it 100 times constitutes a binding agreement. Since people are bound by the agreement, they can hide their desirability.

FIGURE 5
Profit Taking and Trading Account Size



Note: The Pearson correlation between trading account size and percentage of owners of the respective accounts who take their profits as early as 5% is -0.969 , which is two-sided significant at the 0.05 level.

FIGURE 6
Profit Taking and Annual Income Level

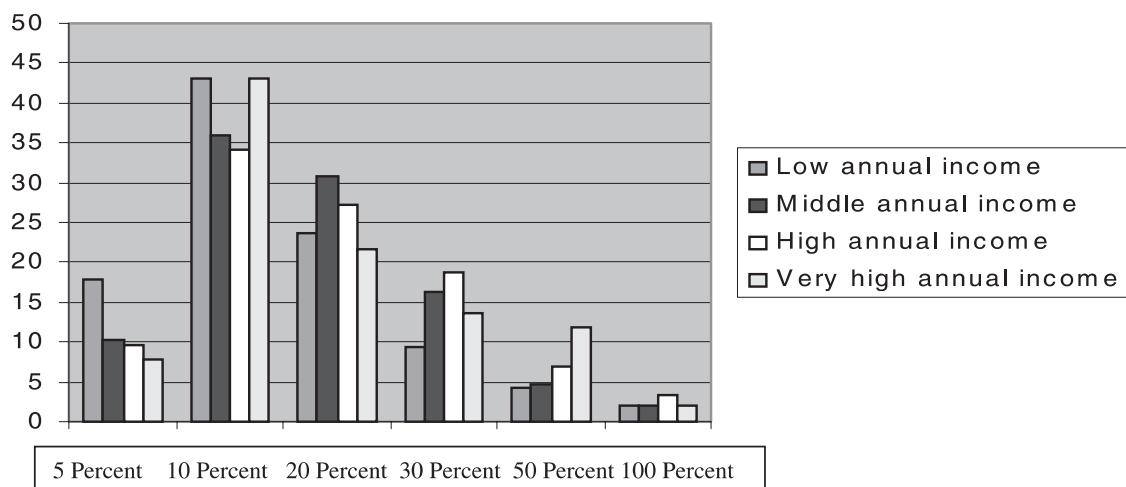


FIGURE 7
Profit Taking and Education Level

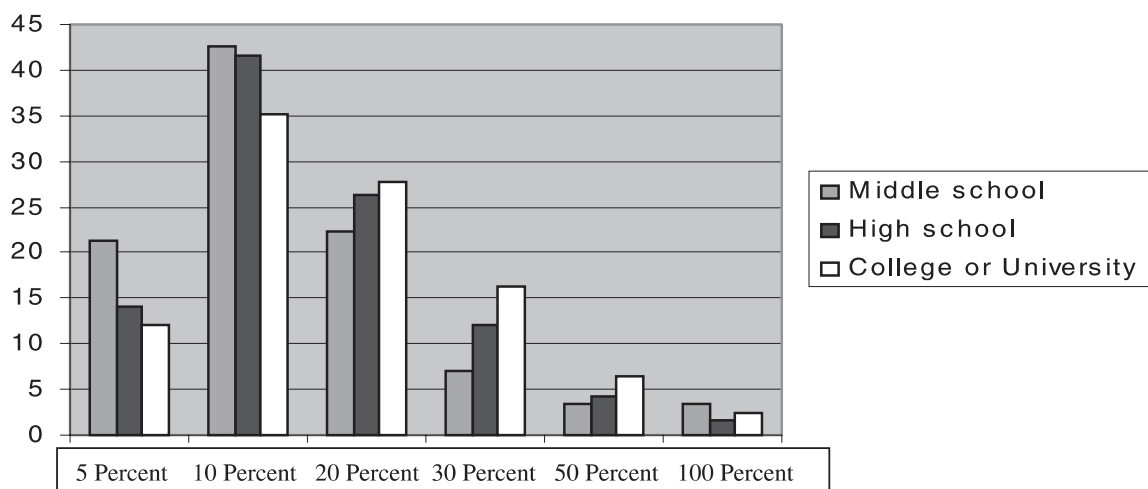


FIGURE 8
Loss Realization and Age

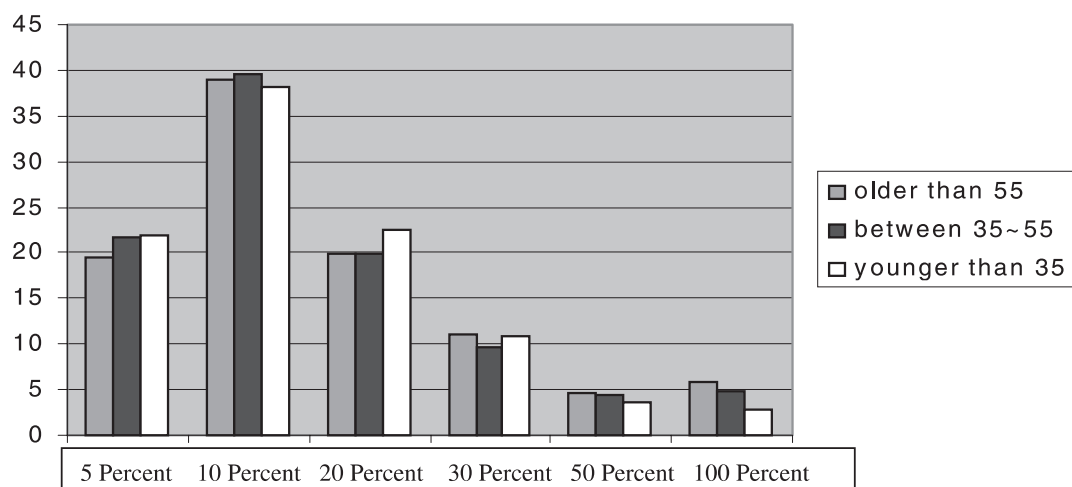
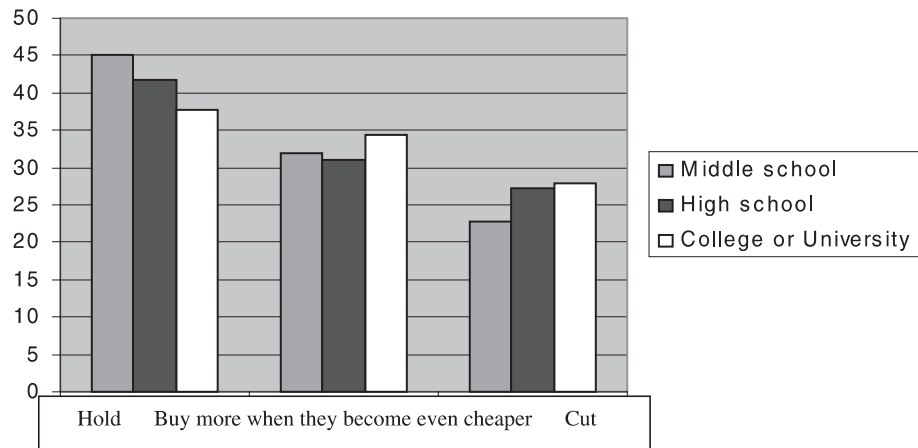


FIGURE 9
Loser Holding and Education Level



Note: The Pearson correlation between investor education level and percentage using a hold strategy is 0.999, which is two-sided significant at the 0.05 level.

FIGURE 10
Loser Holding and Age

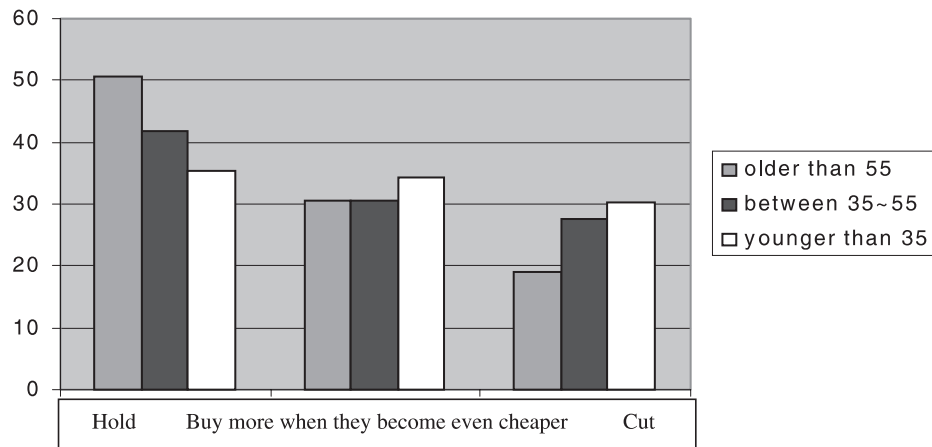
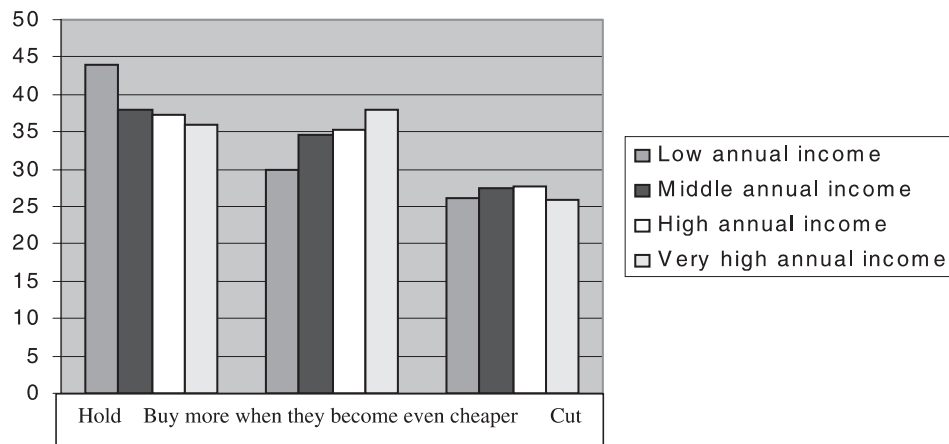


FIGURE 11
Loser Holding and Annual Income Level



Note: The Pearson correlation between level of investor annual income and percentage using a strategy of buying more when the losers become cheap is 0.961, which is two-sided significant at the 0.05 level.

The Disposition Effect and Self-Value

The value function plotted in Figure 2 can also explain why stock market traders tend to sell winners too early and ride losers too long (referred to as the “disposition effect”). Investors are reluctant to realize a loss because it proved they made the wrong decision. In contrast, motivated by a quest for pride, they tend to realize gains as soon as possible. After materializing gains, investors have something to show off. They gain not only profits, but an increase in self-value.

This article posits that “self-value” is the reason why many asset managers cannot maximize the expected return of their own money, but can do it for their clients. We investigate Chinese stock investor behavior to illustrate this point. Our data is the result of Shenzhen Stock Exchange’s survey on several thousand private Chinese stock investors [Shenzhen Stock Exchange, June 2002]. Figures 5–8 demonstrate that the disposition effect in private Chinese trader behavior is negatively correlated with trading account size, annual income, and education level. It is positively correlated with age.

Let us first take a look at how stock investors with different trading account sizes (see Figure 5 where “k” and “m” denote “a thousand of” and “a million of” Chinese Yuan, respectively), different annual incomes (see Figure 6) and different education levels (see Figure 7) differently behave when they take their profits of 5, 10, 20, 30, 50 and 100 percent. In this section, all figures’ ordinate denotes the percent of particular investors among the groups, and all statistical significances above 0.05 level are reported below the figures.

Figure 8 shows how stock investors of different ages differently behave when they realize their losses of 5, 10, 20, 30, 50 and 100 percent.

Furthermore, we examine in which way traders with different education levels (see Figure 9), ages (see Figure 10) and annual incomes (see Figure 11) deal with their big and dead losses: to hold, to buy more when they become even cheaper, or to cut?

From the perspective of this article, the smaller their trading account, the less their annual salary, the lower their education level, and the older investors are, the more they will feel a need to maintain their “self-value” through winning stocks, and the worse their dispositions are. People with small trading accounts and little annual income often lack other ways to pursue and maintain their self-value. So they tend to put a lot of stake in stock performance. In contrast, people with larger accounts and higher annual incomes have more diverse ways to pursue and maintain self-value, e.g., engaging in conspicuous consumption or executive some advanced capability or functioning, and they may not bet on the stock market as much. Another reason may be that even small

changes in stock performance could have greater impacts on people with smaller trading accounts and less income. But small changes may be of little consequence to wealthier people.

Conclusion

Neoclassical economics assumes complete rationality of agents. But subjects are never neutral. They cannot objectively evaluate themselves.

We argue that self-value is largely responsible for the anomaly of rationality. As long as market agents do not stay neutral, there will always be undervalued assets and endless trading in their eyes. Thus, the so-called long-run equilibrium in financial markets is not defined, and financial markets are always in a non-deterministic, irreversible, and open-ended process.

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