

2013

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Recommended Citation

Richard A. Posner, "Behavioral Finance Before Kahneman," 44 Loyola University Chicago Law Journal 1341 (2013).

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Behavioral Finance before Kahneman

*Richard A. Posner**

Although the psychologist Daniel Kahneman has had a profound effect on economics, including the field of applied economics usually called “law and economics” (the application of economics to law), I don’t think he’s responsible for the fundamental insights into the psychology of financial markets. We owe those insights to economists, such as Frank Knight, John Maynard Keynes, Robert Shiller, and Andrei Shleifer. This is worth emphasizing lest it be thought that economists have just awakened to the complexities of human psychology and consequent limitations of the model of man as a rational maximizer of his satisfactions. The model was long criticized as presenting an unduly pessimistic picture of man as selfish, self-interested, Darwinian. The criticism was moral. The criticism that the model is unrealistic in neglecting psychology is different and is the criticism that I focus on in this brief paper on “behavioral finance,” a term for analyzing financial behavior with due awareness of the psychological dimension of such behavior.¹ The other contributors to this Conference focus on the application of behavioral finance to specific legal doctrine. I do not.

It is important to distinguish between what I’ll call the micro and macro levels of finance as analyzed from a psychological perspective. By the micro level I mean the day-to-day behavior of the unsophisticated investor, who corresponds to the average consumer in nonfinancial product and service markets and whose lack of sophistication makes him prone to blunders and a prey to sharpies.² At that level, “investors follow the advice of financial gurus, fail to diversify, actively trade stocks and churn their portfolios, sell winning

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1. The ideas in this paper are drawn largely from my book *THE CRISIS OF CAPITALIST DEMOCRACY* (2010), especially Part 2, and from my book on economic analysis cited in the next footnote.

2. The two paragraphs that follow are drawn from *RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW* § 15.5 (8th ed. 2011), but I do not indent the paragraphs or place quotation around them because I have rearranged and altered the paragraphs, though the gist is unchanged.

stocks and hold on to losing stocks thereby increasing their tax liabilities, buy and sell actively and expensively managed mutual funds, follow stock price patterns and other popular models.”³ All this has long been known. But the behavioral finance literature finds that these behaviors are systematic rather than random. Investors are more reluctant to sell losing than winning stocks (“loss aversion”). For the same reason they demand a higher premium for owning stocks relative to bonds (because stocks have more downside risk than bonds and loss aversion implies that downside risk weighs more heavily in the investor’s decision than upside risk) than risk aversion would warrant, given the possibility of reducing risk by means of diversification. And because people have difficulty with probabilities and tend therefore not to understand that “runs” are consistent with chance, they see patterns where they do not exist and therefore give greater weight to stocks’ short-run performance—and to the short-run performance of money managers—than is warranted.

Proponents of efficient-market theory, which posits rationality, would while acknowledging pockets of irrational behavior by investors argue that they are eliminated by arbitrage, that is, by spotting a misvaluation of a stock or other financial instrument and, by trading, eliminating the misvaluation. In fact these pockets are, and have to be, pervasive: “because information is costly, prices cannot perfectly reflect the information that is available, since if it did, those who spent resources to obtain it would receive no compensation.”⁴ Suppose that because of a mistaken fondness for stock *X* over very similar stock *Y*, the price of *X* rises relative to that of *Y* even though the expected returns to the two stocks are the same. By selling *X* short and buying *Y*, an arbitrageur makes a more or less guaranteed profit, since if the two stocks are indeed close substitutes, a continued rise in the market price of *X* is likely to be accompanied by a rise in the market value of *Y*, so that the arbitrageur will make up in profits on *Y* what he will lose if, contrary to his expectation, the price of *X* does not fall. If it does fall, his short selling will be profitable, and he is unlikely to incur a commensurate loss on *Y*, since *Y* was undervalued relative to *X* when it sold for less (since the stocks are so similar). The existence of the close substitute for *X*, namely *Y*, is what enables the arbitrageur to hedge, for without that substitute his selling *X* short would be very risky, since he cannot be certain that it is overvalued; more precisely, he cannot be certain that

3. See ANDREI SHLEIFER, *INEFFICIENT MARKETS: AN INTRODUCTION TO BEHAVIORAL FINANCE* 10 (2000).

4. Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 405 (1980).

the market will “wake up” and realize that it is overvalued.

But arbitrage cannot be depended on to eliminate these mistakes and irrationalities because the arbitrageur often cannot hedge, and when he cannot hedge arbitrage is extremely risky. He cannot hedge if there are no good substitute securities for those he thinks overvalued or undervalued. And even if there are, the market may not wake up in time for the hedge to work. If the price of *X* keeps rising after the arbitrageur has sold it short and bought *Y*, but *Y* does not rise at the same time, he may suffer staggering losses before the two stock prices finally converge. Since arbitrage is incomplete, investor irrationalities persist and cause systematic deviations between stock price and fundamental value.

Irrational investor behavior is also promoted by mutual funds, brokers, and other securities professionals who see profit opportunities in exploiting that behavior.

But behavioral finance is not limited to noting the presence of irrationality in financial markets. Its broader aim is to be realistic about how the people in those markets are apt to behave.⁵ So consider people who trade stocks, as distinct from people who buy and hold them for the long term. Traders are not primarily interested in the future corporate earnings of the companies whose stock they’re trading; they’re primarily interested in whether other traders think the stocks are likely to rise or fall in value; and those other traders likewise are interested in what still other traders think. A trader who thinks that many other traders consider a stock undervalued has a good reason to buy it whatever he may think the company’s future earnings likely to be. Hence “momentum trading”—buying when others are buying, selling when others are selling. This is derided as “herd behavior,” which may seem irrational, but is not, and not only among the (other) animals. (If you are an antelope, and you see the other antelopes suddenly start to stampede, you are well advised to join them because they may well be fleeing from a lion or other predator.) Momentum trading is rational herd behavior when it is based on a rational conjecture about the behavior of other traders, though it will sometimes reflect also or instead the human tendency to see patterns where there aren’t any (possibly because pattern spotting is an evolved human trait of great value in most situations). But momentum trading is also dangerous for the economy as a whole—it can give rise to asset-price bubbles. A bubble is a disequilibrium event involving a steep increase in price that

5. The discussion in this paragraph and the following two paragraphs is adapted from POSNER, *supra* note 2, § 15.6.

persists for a significant time, cannot be explained by fundamentals, and, after peaking, quickly gives way to a steep fall in price. The bursting of a bubble can bring on a general economic crisis, as we learned in 2008.

And here is another example of what seems but is not irrational behavior in securities markets, though it has a psychological component: Suppose the consensus of stock analysts is that the stock of some company is undervalued. You're a stock analyst and you disagree; you think it's overvalued. Will you recommend to your customers that they sell the stock? Probably not, unless you're either extremely confident that you're right or extremely bold. (Temperament differs across people, and temperament influences action—especially under uncertainty, where “objective” data cannot guide decision reliably. More on uncertainty shortly.) For if you're wrong, you'll stand out and be criticized. If despite your doubts you advise buying the stock, and you are wrong, you are part of the herd—where everybody is wrong, no one is to blame. Hence (depending on your probability estimate), the decision that maximizes your expected income may be to go with the herd despite your disbelief in the herd's wisdom.

More than rational calculation is involved in herd behavior. Human beings are social animals and tend therefore to be conformists. Social animals are uncomfortable if they are at odds with the other members of their social group. They don't want to be rejected by their peers, to be ostracized because they are “different.” The element of rational calculation in conformity is realization that the cost of an error is lower the more people who make the error. If you are right when everyone else is wrong, you will be resented; if you are wrong when everyone else is right you'll be ridiculed. In either case you risk ostracism by going against the flow. If instead you are right when everyone else is right and wrong when everyone else is wrong, you do not stand out and so do not risk being ostracized.

People don't like being called Cassandras, prophets of doom, naysayers, or even short sellers. They don't like the trader who pricks the stock bubble. “Pessimist” has a negative connotation, “optimist” a positive one—especially in the American culture, with its admiration of the “can do” mentality, the hearty handshake, the huckster.

It's been observed that stock prices tend to dip at the end of each quarter—a pattern that can't be explained by changes in forecasted corporate earnings or for that matter by momentum trading. What is involved—a characteristic pattern in a market in which psychological factors play a significant role—is exploitation. The end of the quarter (or the year, which is the end of a quarter) is the usual time when a

portfolio manager's performance is reviewed by his clients or superiors. If his portfolio contains a number of stocks that have fallen in value during the quarter he will have some explaining to do; and rather than have to do that he may decide to sell those losers before his quarterly review. Uncertainty plays a role here because if portfolio managers were good stock pickers, a manager wouldn't have many losers to have to try to explain away. But there are few good stock pickers.

Speaking of uncertainty brings me to the macro level of behavioral finance, where uncertainty—more precisely the psychological effect of uncertainty—plays a key role in understanding financial behavior.

In 1920, Frank Knight and John Maynard Keynes independently discovered or invented a pregnant distinction between “risk” and “uncertainty.” In ordinary speech either word can include the other. The distinction the two economists proposed was between an uncertain future event to which a quantitative probability of occurring can be attached (such as a 50 percent chance that it will rain tomorrow) (“risk”) and an uncertain future event to which no such probability can be attached (such as tomorrow I will be killed in a terrorist attack, or ten years from now my wife will ask for a divorce) (“uncertainty”). The former concept, risk, is more congenial to economic analysis than the latter, uncertainty, because it enables (often in conjunction with information about risk aversion or risk preference) the costs and benefits of uncertain future events to be estimated, and optimal behavior in regard to those events to be selected. If one knows the cost of a precaution that will avert an accident, the cost to a victim of the accident if the accident occurs, and the probability that the accident will occur unless the precaution is taken, one can calculate the efficient course of action—whether to take the precaution or not.

Uncertainty is intractable to cost-benefit analysis. The “rational” response to uncertainty—the optimal response of a rational utility maximizer—cannot be calculated. Yet it is obvious that uncertainty is a pervasive feature of the human environment and influences human action. Keynes, who was both an experienced speculator in the stock market and a foremost analyst of the worldwide depression of the 1930s, emphasized the effect of uncertainty both in stock markets and in business cycles. Take the second first. Suppose, as with the stock market crash of October 1929 or the credit collapse of September 2008, there is a large, sudden, steep, unexpected, but unquestionably negative event the impact of which is felt throughout the economy. No one knows how grave or how protracted the impact will be, how sudden the descent, how quick or slow the recovery; it is a situation of uncertainty. One response to uncertainty that is common to most economic actors,

whether producers or consumers, is to freeze. The impulse is natural. Not knowing how bad the economic environment has become, one is hardly minded to make loans or investments, hire more workers, borrow more money, or increase personal consumption expenditures, as those steps, unless miraculously taken by all or most people and firms all at once, will reduce (though by an unmeasurable percentage—because we are in the domain of uncertainty) the welfare of the person or firm that invests or produces or consumes. By freezing, one tries to preserve the status quo in the hope that time will bring information, enabling the correct response to be determined. It is a matter of looking before one leaps.

Freezing may be sensible, but it is not a product of calculation. What actuates freezing is fear, specifically fear of the unknown. If you know exactly how fast and how far the economy, or the part of the economy that critically affects you, will plummet, you may be angry and depressed, but you will not be paralyzed, because you will know what's happening and determine a course of action accordingly. If you don't know what to do, you might as well do nothing until you learn more.

Keynes is again the guide in explaining the kind of behavior that can give rise to bubbles. I have already touched on this, noting that the price of stocks traded on an exchange is a function of the buy and sell decisions of a large number of traders, but that while some of these traders just buy when they have cash to invest and sell when they need cash for consumption or to pay debts, others speculate, buying when they think the price of a stock (or of most stocks) will rise and selling when they think the opposite will happen. Since prices are driven by the decisions of the bulk of the traders, one trader's guess about whether price will rise or fall is a guess about the behavior of the other traders, whose behavior in turn is a function of their expectations of whether other traders (such as yourself) will buy or sell the stock or stocks in question. (So you will have to try to figure out not only how they will react to your trades, but how their reactions will be shaped by their guesses as to how you will react to their reactions to your trades.) Sometimes there will have been an external event the consequences of which are so predictable that all the traders will react the same way, but when that happens it is very difficult to make any money because it will be difficult to find anyone on the other side of a buy or sell order. Thus most speculative trading will occur under uncertainty.

This explains the bubble phenomenon that erupts from time to time in stock markets, as in the dot-com bubble of the late 1990s, and in other markets as well, such as the housing market in the early 2000s. A bubble occurs when prices rise steeply for a protracted, unbroken

period. Many traders decide to sell, and pocket their winnings, fearing the price is indeed a bubble and wanting to get out of the market before the bubble bursts. But there will be plenty of buyers, including many who also think the rising price is a bubble phenomenon, because they don't know when the bubble will burst and hope it still has far to expand before that happens. Psychology enters here because of the human tendency to extrapolate—to infer a trend from recent experience—a tendency that is especially likely to operate in a situation of uncertainty because there is then nothing else to go on. If the price trend is upward, there is a feeling, irrational as it is, that it will continue trending upward, at least for a time. Finally enough traders become fearful for a sell off to occur, and a downward spiral to succeed the upward spiral that was the bubble.

Neither the fear that can intensify the freeze response to negative uncertainty, nor the extrapolation tendency that exacerbates uncertainty, is a rational response to uncertainty. But the actual response cannot be understood without bringing those psychological influences into play.

Of course there will be smart traders who realize that a recent rise in the price of stocks (or houses, or other assets) may be a bubble phenomenon. They may sell short in the hope of cashing in when the bubble bursts. But as I noted earlier short selling often is costly, as well as risky. The short seller who borrows shares of stock in order to be able to honor his agreement to sell them will incur interest costs for an extended period, waiting for the price to drop so that he can buy cheap the shares he's agreed to sell and return the borrowed shares. So short selling is not a sure bubble pricker—if it were, there would be no asset bubbles.

