MARKET VOLATILITY

A PSYCHOLOGICAL PERSPECTIVE

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During the last few decades it has become clear to all that we know far less about the behavior of financial markets and about fundamental asset valuation than it was thought earlier. In retrospect, the period amounted to a humbling experience, both in terms of discredited theory and practical challenge.

Perhaps the most striking development was strong and unexplained financial market volatility. Stock market investors suffered agony (e.g., the 1987 crash in the U.S.) and pain (in Japan). Bond market investors faced high and volatile real interest rates. Currency traders lived through the rise and fall of the U.S. dollar. Finally, real estate markets went through a world-wide boom and bust. All these events were unexpected. Even today, they leave many intelligent people in disbelief.

In academic finance, dearly held notions of market efficiency, a positive risk-return tradeoff, and dividend discount models were put into question. Could the volatility in stock returns be rationalized by later movements in dividends and interest rates? It seemed not (Shiller, 1989). The magnitude of the return premium of equity over bonds became another much investigated puzzle (Mehra and Prescott, 1985). It also appeared that, in the cross-section, stock returns were surprisingly predictable, but not by beta as the capital asset pricing model would have it. Instead, new empirical evidence suggested seasonal patterns, reliable differences between small and large firms, and short- and long-term mean reversion. The predicted returns were often negative, in flagrant contradiction to standard equilibrium theory.

Where do these surprising developments leave us? Surely, with more respect for the old view that prices and values are not always one-and-the-same thing. Stock market experts (chartists as well as security analysts in the tradition of Graham and Dodd) emphasize investor psychology, market imperfections, and the limits of rational arbitrage. Perhaps, through careful analysis, some investors are capable to pin down the intrinsic values to which prices tend in the long run. In the near term, however, such calculations are often disappointing. The Keynesian metaphor of the stock market as a beauty contest is worth remembering, particularly, the sobering insight that "it needs more intelligence to defeat the forces of time and our ignorance of the future than to beat the gun". At times, the market simply takes on a life of its own. Money managers understand that they ignore crowd sentiment only at the peril of their own jobs!

The Rational Paradigm

In stark contrast to the beliefs of finance practitioners, mainstream academic finance continues to be built upon the economic delusion that both people and markets are perfect. This approach attaches little importance to the institutional framework. It also snubs the human factor. All financial behavior is reduced to the normative concepts of rationality that define homo economicus, i.e., expected utility maximization, risk-aversion, rational expectations, and Bayesian updating.

As it happens, the rational paradigm fails in two major ways. First, as mentioned, its *predictions* of market behavior prove unsatisfactory. In a recent interview with *The Economist* (April 23, 1994), the Nobel prize-winning Chicago economist Merton Miller admits this shortcoming with unusual and astonishing candor. Miller states "that the blending of psychology and economics ... is becoming popular ... because conventional economics has failed to explain how asset prices are set." A second important failure of the rational paradigm is that the *assumptions* are also descriptively false. For instance, risk-taking is at least as much a function of situational factors as it is driven by personality characteristics. Or, contrary to the rational principle of "decision frame invariance", alternative descriptions of an identical problem frequently give rise to

different preferences.

A New Psychological Approach

I am convinced that, if finance theory is to maintain its relevance in the future, it will have to pay more attention to *how investors truly behave*. Asset pricing theory needs a major rebuilding effort. In particular, we must explain (1) why prices move so much and (2) why investors trade so much. The behavioral approach that I recommend directs attention to the psychology of actual decision processes. The principal research question becomes: What do people do? (As opposed to: What would rational people want to do?)

A simple way to think about investment decision-making is as a series of present value calculations. Which projects are worthwhile and which ones are not? Everything depends on the expected future cash flows, the required investment, and the opportunity cost of capital. Of course, it may be very difficult to get an accurate estimate of, say, the net operating income of a retail company two to five years from now. So the more fundamental questions are: How are intuitive forecasts made? And what is the objective quality of these judgments?

I suggest that to obtain answers we turn to motivation research and cognitive psychology. Herbert Simon (1957), another Nobel prize winner, launched the concept of *bounded rationality*. This approach looks upon people as reasonable beings but it accepts the limitations of human intelligence. The theory is one of flawed rationality, rather than irrationality. Decision makers are frequently incapable of finding the answers that are truly optimal in a normative sense. They may be satisfied with the achievement of limited target goals and stop searching for improvement.

Mental heuristics play a big role in the decision process. They are intuitive mechanisms for coping with complexity. Generally, heuristics are useful shortcuts that produce the desired outcome. Sometimes, however, they lead to foreseeable errors in judgment. Few people are aware of these biases. In a series of classic papers (reprinted in Kahneman et al., 1982), Amos Tversky and Daniel Kahneman have analyzed three major rules-of-thumb: (1) representativeness, (2) availability, and (3) anchoring-and-adjustment.

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Judgment by *representativeness* occurs when people assess the chances of an event by the similarity of the event to a well-known stereotype. Representativeness has several consequences, e.g., the discovery of patterns in random walk data, or a failure to appreciate the phenomenon of regression-to-the-mean. Many stock market investors naively extrapolate past earnings and price patterns (De Bondt, 1993). In other words, they overreact. Even analysts' forecasts of corporate earnings show a systematic tendency to be too extreme, i.e., either too high or too low. Judgment by *availability* takes place whenever a probability is judged by vividness and by the ease with which an event is brought to mind, i.e., retrieved from memory. For example, many automobile drivers are more inclined to wear their seatbelts after witnessing a serious road accident. The *anchoring-and-adjustment* heuristic is used when people start from an initial value and adjust it to yield a final inference. Adjustments from the starting value tend to be insufficient so that different anchors produce different conclusions. A good example is the "first-impression-syndrome". After meeting someone for the first time (say, at a dinner party), we may be slow to adjust our opinion at a later date — even if the context completely changes (say, to a job interview). Thus as job seekers are well-aware, "you don't get a second chance to make a first impression!"

I have described some of the nonreflective strategies that people use in intuitive judgment. However, judgment and decision-making further depend on a rich repertoire of knowledge structures, i.e., people's familiarity with objects, issues, events, and their characteristic relationships. For instance, by-and-large, company hiring practices reflect the belief that good students become productive employees. This intuitive theory may well be correct (although I cannot offer evidence). In other instance, the beliefs are demonstrably false. Consider, e.g., voodoo superstition or all the extra caution that people take on Friday the 13th. Rightly or wrongly, people are *active* interpreters of new information; that is, they constantly go

beyond the available raw data (Heuristics may be seen as taking part in the selection of knowledge structures).

Cognitive schemas and intuitive theories are widely shared. Precisely because our own perceptions and actions are influenced by what others say and do, we are social animals. A critical point is that, with time, many ideas go in and out of fashion. During the 1950s most men wore hats. Few do so today. During the 1960s government social programs were popular but, in the 1980s, they have lost much political support. Of course, changing fashions play an equally important role in financial markets!

The Psychology of the Stock Market

Financial research shows that, when it comes to the stock market, it does not pay to follow changes in investor sentiment. Traders who fall into this trap tend to buy at market tops and to sell at market lowpoints! On the other hand, investment performance may improve with good forecasts of novel cognitive frames that are about to "catch on". Examples of institutional investors becoming obsessed with a specific sector or industry abound. E.g., in response to such enthusiasm, initial public offerings of equity often occur in industry waves. The reader should be warned, however, that sentiment forecasts are very difficult to produce.

Herding and belief perseverance are consistent with several stylised empirical facts of security pricing, e.g., (1) the inverse link between 3- to 5-year past and subsequent stock returns (or, the inverse link with past price-to-book value ratios), and (2) the anomalous "slow" reaction of prices to past earnings surprises. Whereas the first fact agrees with prolonged disparities between price and value, the second confirms that popular labels for company XYZ as either "a growth firm" or as part of "a mature industry" may take months or years to wear off (De Bondt and Thaler, 1985). Herding may be attributable to pressures originating from the fiduciary nature of portfolio management. By law and business custom certain standards of prudent behavior are to be maintained. These standards promote conventional thinking. Managers may prefer tactical moves that make them look good, i.e., the purchase of current favorites, or a niche strategy that offers a recognizable investment style. In addition, the psychological theory of regret predicts that individuals often "choose not to choose". When thorny decisions are to be taken, the natural draw to follow consensus opinion may be a convenient mechanism to shift responsibility for the outcome.

In conclusion, building on evidence from psychology, I have suggested that systematic valuation errors are likely in financial markets. In inefficient markets, the skill with which assets are acquired, managed, and disposed is responsible for a major part of total return. In other words, *the quality of judgment and decision-making is critical.* Money managers and other finance professionals have long been forced to live with this elementary truth. I believe it would benefit academic finance research to also more closely investigate the strengths and weaknesses of human intelligence.

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Curriculum Vitae

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