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## REGULATING IRRATIONAL EXUBERANCE AND ANXIETY IN SECURITIES MARKETS

Peter H. Huang

Investing, especially by institutions, can increasingly take advantage of artificial intelligence, nonlinear chaotic models, genetic algorithms, neural network time series forecasting, pattern recognition software, and sophisticated quantitative computer valuation models (Wilmott 2000, 2001). Thus, it seems that investing could become progressively more like the behavior described by the rational actor model of law and economics. But even for institutions, humans are ultimately responsible for investing, and they feel emotions during the investing process. Yet the rational actor model postulates that humans unemotionally maximize expected utility functions (von Neumann and Morgenstern 2004).

Behavioral economics advances an alternative to expected utility theory, namely,

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prospect theory (Guthrie 2003; Kahneman and Tversky 1979). The fact that Kahneman was the corecipient of the 2002 Nobel Prize in economic sciences is the latest example of the ascendancy of behavioral economics (Hilsenrath 2002). Behavioral economics has gained much popularity and prestige in recent years.<sup>1</sup> Recently, some legal scholars have applied behavioral economics to analyze legal rules and institutions (Jolls 1998; Jolls, Sunstein, and Thaler 1998). These legal scholars consider the policy and regulatory implications of cognitive limitations by drawing on a literature about information processing errors (Hanson and Kysar 1999; Lipman 2000). But the scope and normative implications of such legal applications remain the subject of continuing debate.<sup>2</sup>

In addition, although prospect theory provides an alternative model of choice under risk to expected utility theory, prospect theory, expected utility theory, and “virtually all current theories of choice under risk or uncertainty are cognitive and consequentialist” (Loewenstein et al. 2001, 267). But human behavior is both cognitive and emotional (Camerer and Loewenstein 2003; Camerer, Loewenstein, and Prelec, forthcoming; Loewenstein and Lerner 2003). Moreover, cognition and emotion are interrelated (Charland 1998; Hanoch 2002; Williams et al. 1997). For example, investors may be overconfident due to hubris. Yet “research from clinical, physiological, and other subfields of psychology . . . show that emotional reactions to risky situations often diverge from cognitive assessments of those risks. When such divergence occurs, emotional reactions often drive behavior” (Loewenstein et al. 2001, 267).

Behavioral finance, which is behavioral economics over time and under conditions of risk, has revolutionized academic finance (Barberis and Thaler 2003; DeBondt and Thaler 1995; Shefrin 2001; Shiller 2003). Although behavioral finance sometimes refers to such emotions as greed and fear, behavioral finance considers only emotions to explain why some investors utilize cognitive biases and heuristics (Nofsinger 2002b; Shefrin 2000). The main focus of behavioral finance is to demonstrate how investing driven by cognitive limitations explains observed anomalies in asset pricing and impacts asset pricing (Barberis, Huang, and Santos 2001; Barberis and Thaler 2003; Benartzi and Thaler 1995; Daniel, Hirshleifer, and Teoh 2002; Hirshleifer 2001; Nofsinger 2002a).

For example, many individuals (and even some financial practitioners) overreact to information as well as to what they believe others will do (Daniel, Hirshleifer, and Subrahmanyam 1998). Some behavioral finance models assume there are noise traders who are unable to differentiate between payoff-irrelevant information (noise) and payoff-relevant information, usually because of cognitive biases in processing information (Shleifer 2000). Recently, scholars have begun to consider the implications of cognitive biases for securities regulation (Choi and

Pritchard 2003; Cunningham 2002a; Hodder, Koonce, and McAnally 2001; Langevoort 2002; Prentice 2002; Thompson 1997). This chapter builds upon the legal scholarship that focuses primarily on cognitive biases and heuristics by focusing instead on emotional investing.

Most U.S. federal securities laws focus on the cognitive form and content of certain information.<sup>3</sup> In contrast, many investors respond emotionally to both the form and content of information and while investing experience a series of “successive emotional states of hope, joy, craving and euphoria” (Goldberg and von Nitzsch 1999). This is sometimes followed by anxiety and fear. It is thus not surprising that a moment of introspection reveals that people usually feel many emotions before, during, and after they invest. In fact, certain emotions might exemplify visceral factors that short-circuit or trump normal logical reasoning (Adler, Rosen, and Silverstein 1998; Elster 1999; Loewenstein 1996, 2000). For example, an investor feeling exuberant may optimistically misperceive, or even ignore completely, the risk factors associated with a particular security during the investment decision process. Similarly, an investor who feels anxious over a string of accounting scandals and instances of corporate malfeasance may pessimistically misperceive, or even ignore completely, any sound fundamentals associated with a particular security during the investment decision process. This chapter analyzes the regulatory implications of irrational exuberance and anxiety in securities markets.

People usually answer the question, What is emotion? with these synonyms: affect, feelings, or mood (Damasio 2003). Even today, the precise definition of an emotion remains contested among researchers (Evans 2001). But there is a consensus that emotions involve a number of related characteristics, namely, great intensity, instability, relative brevity, and a partial perspective (Ben-Ze'ev 2000). Before proceeding further, we should distinguish among these three related but distinct concepts: emotions, affect, and mood. Emotions describe particular states, such as fear, anger, or happiness, that are “intense, short-lived, and usually have a definite cause and clear cognitive content” (Forgas 1992). Affect refers to “a feeling state that people experience, such as happiness or sadness. It may also be viewed as a quality (e.g. goodness or badness) associated with a stimulus” (Finucane et al. 2000). Mood refers to “a feeling (such as having the blues) that is low in intensity, can last for a few minutes or several weeks, has no object or has fleeting objects, and does not have to have a specific antecedent cause or cognitive content” (Finucane, Peters, and Slovic 2003). Scholars often describe the stock market as experiencing (bipolar) mood swings (Cunningham 2001, 2002b). There is experimental evidence that happy and sad moods have large and consistent effects on estimating subjective probabilities of positive and negative events (Wright and Bower 1992).

There are (at least) two principal alternative ways to conceive of emotions. First, there is a tradition dating back to Aristotle, Socrates, and Plato that conceives of emotions as factors that disturb rational deliberation, thought, and reflection. Second, there is a more recent view informed by cognitive neuroscience that conceives of emotions as factors that complement rationality in effective decision making (Gazzaniga, Ivry, and Mangun 2002). Naturally, these different conceptions of emotions have diametrically opposed implications for whether and, if so, how the law can or should respond to emotional human behavior. The first viewpoint implies that law should be designed to protect us from our emotions,<sup>4</sup> whereas the second viewpoint implies that law should take a more *laissez-faire* attitude toward our emotions.

Asking whether emotional decision making is socially desirable is akin to asking whether self-interested decision making is socially desirable. Under certain strong conditions, including but not limited to complete markets and perfect competition, the pursuit of self-interest can lead to socially desirable results in the sense of Pareto efficient outcomes. In other situations, including but not limited to the presence of externalities or public goods and in certain strategic interactions, the pursuit of self-interest can lead to socially undesirable results in the sense of Pareto inefficient outcomes.

Existing legal doctrines provide numerous examples of both conceptions of emotions. Criminal law considers excuses based upon extreme emotional disturbance, such as the battered woman syndrome, and posttraumatic stress disorder; but it also encourages compassion, mercy, and sympathy. Tort law recognizes some but not all forms of emotional harm and suffering. Contract law recognizes the formation defense of procedural unconscionability, which can be due to distress, transactional incapacity, or unfair persuasion (Eisenberg 1982). The Federal Trade Commission promulgated a rule granting consumers a three-day “cooling-off period” during which buyers can rescind their contracts with door-to-door salespeople (16 C.F.R. § 429.1(a) (2002)). There is a similar three-day cooling-off period for home equity loans providing buyers with a limited right to rescind certain credit transactions involving their principal dwelling as a security interest (15 U.S.C. § 1635(a) (2000)). Congress imposed a seven-day waiting period on any employee waiver of rights under the Age Discrimination in Employment Act (ADEA) (29 U.S.C. § 626(f)(1)(G) (2000)). The family law statutes of many states require that couples must wait awhile after the issuance of a marriage certificate before they can marry.<sup>5</sup> Some of these states also require that a couple may not divorce until after the passage of a mandatory waiting period, which usually exceeds the mandatory pre-nuptial waiting period.<sup>6</sup>

Asking whether emotions are good or bad for decision making is analogous to

asking if heuristics are good or bad for decision making. Sometimes heuristics are good for making decisions, and at other times they are bad. Similarly, sometimes emotions are good for making decisions, whereas at other times they are not beneficial. The reason for this mixed or nuanced answer is the same in the case of both emotions and heuristics, namely, emotions and heuristics act faster than rational deliberation, but precisely because of their speed, emotions and heuristics can mislead us into systematic errors in making decisions.

This chapter focuses on emotions before or during investing and therefore complements my previous work on anticipated emotions, which are fully and correctly anticipated before or during the decision-making process (Huang, 1998, 1999, 2000, 2002, 2003; Huang and Wu 1992, 1994). A difficulty with anticipated emotions is that people may systematically make prediction errors regarding their future interim or *ex post* feelings (Blumenthal 2004; Gilbert et al. 1998, 2002; Gilbert and Wilson 2000; Loewenstein, Nagin, and Paternoster 1997; Loewenstein, O’Donoghue, and Rabin 2003; Loewenstein and Schkade 1999; Wilson 2002). Because irrational exuberance and anxiety occur before or during the process of decision making, there are no such difficulties with irrational exuberance and anxiety.

The rest of this chapter is organized as follows. Section 20.1 provides empirical and experimental evidence, a case study, and theoretical models of irrational exuberance and anxiety in securities markets. Section 20.2 contributes to the debate over mandatory securities disclosures by examining the implications of irrational exuberance and anxiety for such disclosures. Section 20.2 also develops implications of the fact that securities regulators, including but not limited to the Securities and Exchange Commission (SEC), juries, and private litigants themselves, may experience irrational exuberance and anxiety. Section 20.3 provides conclusions.

## 20.1 IRRATIONAL EXUBERANCE AND ANXIETY IN SECURITIES MARKETS

The chairman of the Federal Reserve Board in Washington, D.C., Alan Greenspan, described stock market investor behavior with the phrase “irrational exuberance” in his now-infamous December 5, 1996, speech. Those two words resonated with many commentators in the media and with the public worldwide. The publication of a book titled *Irrational Exuberance* cemented the permanence of that phrase in the popular lexicon about securities markets (Shiller 2000). What exactly, though, does irrational exuberance mean, as opposed to rational exuberance or irrational anxiety? In this chapter, the phrase “irrational exuberance” refers to exuberance that is not justified by merely cognitive processing of the available information



about securities markets. Thus, rational exuberance refers to exuberance that is warranted by merely cognitive processing of securities disclosures and risks. "Irrational anxiety" refers to anxiety that is unwarranted by merely cognitive analyses of fundamentals of securities markets. "Rational anxiety" refers to anxiety that is supported by merely cognitive assessments of the costs and benefits of securities investing.

Most people at some point during investing experience fear or hope over their investments. People often make investments motivated by fears. There is the fear of losing money.<sup>7</sup> There is the fear of not keeping up with others or being left out of a bull market (Gilovich and Medvec 1995). The fear of regret also partially explains why investors often select conventional stock choices, use full-commission brokers rather than discount brokers (the former may give useless advice but provide easy scapegoats), and hold onto losing stocks too long (Shefrin 2000, 222–24; Shefrin and Statman 1986). People often avoid purchasing such volatile securities as those of biotech or Internet companies to minimize anxiety.<sup>8</sup> On the other hand, some investors, such as day traders, might engage in risky portfolio strategies partly for the excitement. One legal scholar likens euphoric financial market transactions to gambling (Gabaldon 2001). That same legal scholar believes that laws may reduce the irrational exuberance of securities markets (Gabaldon 2000; 2001, 278–84). Arguably, certain policies of the SEC and the Federal Reserve facilitate investor enthusiasm about stocks (Hu 2000). Not only financial rewards but also excitement and general optimism often motivate the issuers of securities, original investors in initial public offerings (IPOs), and subsequent early investors.<sup>9</sup>

Irrational exuberance and anxiety raise a couple of questions, namely, how and why does irrational exuberance and anxiety persist in light of so-called learning effects and selection effects? Learning effects occur if people learn from their own personal investing experience or that of others and get better at investing over time, as they discover that relying on irrational exuberance and anxiety can yield investment returns that they subsequently realize are financially suboptimal. As with Bill Murray's character, Phil, in the movie *Groundhog Day* (Columbia Pictures Corporation 1993), noiseless feedback and stationary environments promote learning effects. But investing yields very noisy feedback because people can quite naturally (and perhaps even subconsciously) confuse their investment successes with financial insight and confuse their investment failures with bad luck. In addition, empirical evidence suggests that securities markets are highly nonstationary environments. It might seem that institutional and organizational structures can foster learning effects and thus dampen irrational exuberance and anxiety in a manner analogous to how corporate agency contexts dampen endowment effects (Arlen, Talley, and Spitzer 2002). But irrational exuberance and anxiety are not really biases to be unlearned.

Selection effects occur if securities market pressures weed out irrational exuberance and anxiety. Even when some investors continue to feel irrational exuberance and anxiety over time, perhaps the overall impact of irrational exuberance and anxiety on securities markets in the aggregate may decrease over time due to arbitrage. It might seem that arbitrage is a powerful force that selects for (more) rational investing decision making and weeds out irrational exuberance and anxiety. However, as is well known by now, there are costs and limits to arbitrage (Shleifer and Vishny 1997). Also, arbitrage is a strong engine of information transfer that travels in two directions. In other words, just as those investors who do not feel irrational exuberance and anxiety can arbitrage away the impact of those investors who do feel irrational exuberance and anxiety, the reverse is true as well. The often-cited observation that securities markets are the archetypal model of perfectly competitive markets is true but is a moot point if institutional, professional, or sophisticated investors also feel irrational exuberance and anxiety. In fact, there is anthropological, economic, ethnographic, and sociological evidence that documents how the corporate cultures of many institutional investors foster irrational exuberance and anxiety (Abolafia 1996). Recent empirical evidence finds that securities market professionals feel the same emotions as individual investors do (Lo and Repin 2002). Finally, there is anecdotal evidence that even institutional investors feel strong emotions over their investments (Lowenstein 2000).

Although securities markets are highly competitive, valuation in securities markets is an extremely subjective process. Emotional factors often influence the assessment of securities values across investors, just as emotions often affect subjective appraisals of the value of residential properties across home buyers and home owners. In fact, because securities, unlike consumer durables and real estate, are never consumed, securities markets, even more than other durable goods markets, involve subjective, often ephemeral and potentially very emotional anticipations of the future. Whereas reasonable people may agree on the past and the present (although there is reason to be skeptical of even these propositions as evidenced by the well-known fallibility of eyewitness testimony and memory), reasonable people often disagree on the future, both in terms of the set of contemplated outcomes and their various relative likelihoods. People are repeatedly caught off guard upon the realization of previously subjectively unforeseen contingencies.

It would not be surprising to note that many emotional factors have affected investor behavior even before the Securities Act of 1933 and the Securities Exchange Act of 1934 were enacted, and certainly they have done so since then. The legislative history of both acts that are the centerpiece of U.S. federal securities regulation contains numerous horror stories. Many of the cognitive psychological insights of behavioral finance were already an accepted part of the folk wisdom that formed the basis and rationale for our federal system of securities regulation. U.S. securi-



ties laws can be understood as an attempt to alter the manner in which investors make decisions by helping, or forcing, them to make better decisions. For example, the Securities Act of 1933 goes to extremely great lengths to try to structure the investment process into a hyper-rational process in which a reasonable investor, sitting in the calm of a study, reviews only the prospectus of the registration statement without being influenced unduly by pushy stockbrokers, high-pressure scare tactics, glossy ads, promotional materials, or anything else. The puffery defense attempts to minimize the distortions that puffery can cause by placing investors on legal notice that they should ignore it, assuming that they can do so. The quiet period, the prohibitions against “conditioning” securities markets by engaging in so-called gun jumping during the period before the filing of a registration statement with the SEC (Securities and Exchange Commission 1971), and the mandatory disclosures required of a securities registration statement are all designed to improve investor decision making by limiting the influence of distortions on the rational investment process.

In light of not only the persistence of but also the recent growth in irrational exuberance and anxiety, existing federal securities regulations have clearly failed to sufficiently protect investors from their emotional selves or from emotional others. This chapter thus critiques our current federal securities laws on two accounts. First, U.S. federal securities laws fail to incorporate the best model of decision making, namely, one that incorporates the realities and robustness of human emotions. Second, U.S. federal securities laws fail to incorporate the best techniques for teaching investors how to improve their decision-making skills. (For example, the law should be teaching investors to make decisions based on different factors, such as more forward-looking rather than backward-looking information.)

The next section of the chapter analyzes the recent experimental and empirical evidence of, and theoretical models about, irrational exuberance and anxiety in securities markets. A recent, comprehensive synthesis of the research on how feelings influence stock pricing also suggests future directions of research, proposes richer hypotheses, and raises open questions about how investors’ feelings impact securities prices (Dowling and Lucey 2003).

### 20.1.1 Empirical Evidence

An important finding of research on the perception of risk is that “[r]isk is multi-attribute in nature. It involves such elements as feelings of control, dread, and knowledge. . . . Risk always contains an emotional or affective dimension” (Olsen 2001). Investing is clearly risky. Survey evidence indicates that such emotional factors as catastrophic potential, control, and dread figure prominently in the perception of financial risks (Holtgrave and Weber 1993); and “emotional dimensions

such as dread are important in the perceived risk of financial gambles” (Holtgrave and Weber 1993, 558). Studies demonstrate that moods induced by reading brief newspaper stories reporting on tragic or happy incidents produce large and pervasive changes in estimates on the frequency of risks, independent of whether the stories and risks are similar (Johnson and Tversky 1983). Evidence of the prevalence of affect in forming risk perceptions occurs in many diverse settings (Slovic 2000a).

Emotional investing exemplifies Damasio’s (1994) theory of the role of emotion in decision making. Damasio believes that “[t]he factual knowledge required for reasoning and decision making comes to the mind in the form of images” (96). His somatic marker hypothesis is that with experience, these images become “marked” by positive and negative feelings linked directly or indirectly to somatic or bodily states (173–75, 179–80). Damasio’s research documents clinical evidence of patients with damage to the ventromedial frontal cortices of their brains having trouble feeling emotions, associating those feelings with the anticipated consequences of their actions, and making decisions in spite of retaining their basic intelligence, memory, and capabilities for analytical reasoning and for logical thought (53–54; Damasio, Tranel, and Damasio 1990). Neurobiological and psychological research demonstrates that people recall new facts better if certain emotions are present during learning than if they are not (Damasio 1999; Lerner, forthcoming). The next section of the chapter analyzes the empirical evidence of emotional investing in experiments, by securities professionals and in response to online brokerage ads.

#### 20.1.1.1 Experimental Evidence

The fact that Smith was the corecipient of the 2002 Nobel Prize in economic sciences is the latest example of the ascendancy of experimental economics (Hilsenrath 2002). There is both an increasing appreciation for and application of empirical and experimental methodology to study legal rules and institutions (Symposium 2002). A particular laboratory experiment investigated the behavior of investors when they face what is known as global risk, namely, a risk independent of their decisions (Bosman and van Winden 2001). Political risk that is not country specific is an example of global risk. The study found that global risk significantly and substantially decreases average investment. This finding is not consistent with such theories of rational decision making in the presence of risk as expected utility theory (von Neumann and Morgenstern 2004), prospect theory (Kahneman and Tversky 1979), disappointment theory (Bell 1985), and regret theory (Loomes and Sugden 1982). But this experimental result is consistent with the notion that experienced acute emotions affect behavior (Loewenstein et al. 2001) and with psychological evidence that anxious people make pessimistic prob-

ability estimates, are biased in terms of the amounts and types of information they utilize, and are thus motivated to reduce the level of risks they face (Lerner and Keltner 2001; Raghunathan and Pham 1999; Tiedens and Linton 2001).

#### 20.1.1.2 Empirical Evidence Involving Securities Professionals

A recent study of professional derivative securities traders documents the importance of emotional responses in their decision-making processes (Lo and Repin 2002). The study measured physiological characteristics, such as body temperature, cardiovascular data, electromyographical signals, respiration rate, and skin conductance response, during actual trading sessions. The study found significant correlation between electrodermal responses and transient market events, and between changes in cardiovascular variables and market volatility. This data suggest that an important factor in the success of some derivative securities traders is their ability to utilize their emotions to make very rapid trading decisions. In addition, there is anecdotal evidence that even professional traders react emotionally to financial decisions, information, and outcomes (Lewis 1989).<sup>10</sup>

A number of empirical studies document a statistically significant effect of weather on stock market prices (Hulbert 2001). For example, local cloud cover in New York City from 1927 to 1989 was significantly correlated with low daily returns on three U.S. stock indices (the Dow Jones Industrial Average, a New York Stock Exchange (NYSE)–American Stock Exchange (AMEX) equal-weighted index, and a NYSE–AMEX value-weighted index) (Kramer and Runde 1997; Saunders 1993; Trombley 1997). In fact, there was a strong positive correlation between morning sunshine at a country's leading stock exchange and the market index stock returns that day at twenty-six stock exchanges internationally from 1982 to 1997 (Hirshleifer and Shumway 2003). In addition, seasonal variations in biorhythms and disruptions in sleep caused by changing from and to daylight saving time affect stock returns internationally (Dowling and Lucey 2002; Kamstra, Kramer, and Levi 2000). Furthermore, returns on international stock exchanges are correlated with fluctuations in the amount of daylight over the year (Kamstra, Kramer, and Levi 2003). But some people question whether this means that seasonal changes in depression cause changes in risk aversion and hence stock prices (Kelly and Meschke 2004). A different approach studies the relationship between stock returns and temperature (Cao and Wei 2002). Another study finds that, on average, morning stock returns exceed afternoon returns (Kramer 2001). All of these studies imply that the moods of individual investors or professional market makers affect stock prices (Goetzmann and Zhu 2003). In addition, there is empirical evidence that unusually high levels of geomagnetic storms (GMS) have a statistically and economically significant negative impact on world and country-

specific stock returns, even after controlling for behavioral, environmental, and well-known market seasonal factors (Krivelyova and Robotti 2003). Finally, other studies speculate that there is a lunar cycle effect in stock prices whereby stock returns are significantly higher on days near a new moon than on days near a full moon (Dichev and James 2001; Yuan, Zheng, and Zhu 2001).

#### 20.1.1.3 A Case Study of Irrational Exuberance: Online Brokerage Ads

A case study of irrational exuberance is provided by emotional online investing advertisements that present visceral and powerful images of online investors getting rich quickly. Some individuals exposed to such emotionally appealing online brokerage television commercials and billboards are likely to ignore, or be insensitive to, variations in the probability of striking it rich. Some online traders will focus instead on the outcome of becoming rich. Television commercials by online securities brokerages not only emphasized the personal control, ease, and profitability of such trading, but also were rich in emotional imagery.

Barber, Elsbach, and Odean (2001) performed a content analysis of five hundred television commercials from thirteen brokerages. They found that 28 percent of all commercials between 1990 and 2000 depicted images and messages likely to induce good or positive moods in viewers, and the percentage of such commercials more than doubled from 12.39 percent during 1990–95 to 32.98 percent during 1996–2000 (Barber, Elsbach, and Odean 2001, 16). This empirical finding is consistent with and understandable in light of recent psychological experiments demonstrating that people in moderately good or positive moods tend to be less thorough and less vigilant decision makers, are more subject to cognitive biases, and rely more on heuristics than people in moderately negative moods (Bliss, Schwarz, and Kimmelmeier 1996; Elsbach and Barr 1999; Schwarz, Bliss, and Bohner 1991). Online brokerages voluntarily ceased the broadcasting of positive emotional commercials due to changes in financial market conditions and moods.

A Discover Brokerage Direct television commercial about online trading depicted a conversation between a passenger and a stock-trading tow-truck driver, who states, "That's my home. Looks more like an island. Technically, it's a country" (Spitzer 1999). Another television commercial included a stock-trading teenager, who owned his own helicopter (J. Kahn 1999). A series of Schwab commercials featured such celebrities as former teenage Russian tennis star Anna Kournikova (J. Kahn 1999). An E\*TRADE advertisement claimed "that on-line investing is 'A cinch. A snap. A piece of cake'" (Nofsinger 2001).

A commentator noted,

The years prior to 2000 featured a collection of e-trading commercials that could be viewed as hilarious by the seasoned professional and convincing by the novice

trader. A typical commercial began by showing a teen-age boy or an elderly woman who appear to be very ordinary, and are treated as such. In the next scene, the other characters, and no doubt the viewers, are surprised to find out that this person is being thanked for bailing out a country, for example. The strong suggestion is that anyone who has a modest savings account can acquire a fortune, and be treated accordingly, if only they start trading on the Internet. For any skeptical viewers having their doubts, a resumption of the news, particularly the business news cable stations, would often turn to factual stories of the day's new IPO billionaires. (Caginalp 2001, 4)

These commercials clearly conjured up mental images of becoming rich quickly and easily. Former SEC Chairman Arthur Levitt said, "Quite frankly, some advertisements more closely resemble commercials for the lottery than anything else. When firms, again and again, tell investors that on-line investing can make them rich, it creates unrealistic expectations. . . . [M]any investors are susceptible to quixotic euphoria" (Levitt 1999). New York Attorney General Eliot Spitzer observed that an online brokerage ad "conveys a message of convenience, speed, easy wealth, and the risk of 'being left behind' in the on-line era" (Spitzer 1999).

Like much advertising, these advertisements do not provide information for viewers to process cognitively as much as they appeal to viewers' emotions (Edell and Burke 1987). These commercials were directed at evoking strong positive mental imagery and favorable emotional reactions to online investing risks. Such online brokerage ads decreased significantly after the bull market ended, further suggesting that the goals of such commercials were primarily to complement an overall mood of irrational exuberance and euphoria that prevailed then in securities markets and to stir up such emotions as hope and greed (Singhania 2001). In a January 26, 2001, report about online trading, the SEC expressed concerns that certain types of aggressive online brokerage ads may cause investors to possess unrealistic expectations over the risks and rewards of investing (Securities and Exchange Commission Office of Compliance Inspections and Examinations 2001). In that report, the SEC noted that "[a]dvertising that contains misrepresentations or omissions of material fact may violate the antifraud provisions of the federal securities laws" (14). In 2000 and 2001, the SEC and National Association of Securities Dealers (NASD) formally investigated the advertising practices of E\*TRADE Group (On-line Investor Complaint Center 2001). However, both lengthy investigations resulted in the SEC dropping its fair disclosure case and the NASD settling with E\*TRADE (CNNfn 2001; Schroeder 2001). The SEC did not publicly state the reasons for its decision to drop the case. Although there is little concern over such types of advertisements in the current anxious securities market envi-

ronment, similar advertisements may return when an exuberant securities market environment does. In addition, there may be cause for concern over advertisements that exploit investor anxiety in a bear market (Hanson and Kysar 1999; Levere 2003). Furthermore, SEC releases already express concern over the advertising of such complex financial instruments as collateralized mortgage obligations. For example,

(c)(2) Advertisements concerning collateralized mortgage obligations, advertisements concerning security futures, and advertisements and sales literature concerning registered investment companies (including mutual funds, variable contracts and unit investment trusts) that include or incorporate rankings or comparisons of the investment company with other investment companies where the ranking or comparison category is not generally published or is the creation, either directly or indirectly, of the investment company, its underwriter or an affiliate, shall be filed with the Department for review at least 10 days prior to use (or such shorter period as the Department may allow in particular circumstances) for approval and, if changed by the Association, shall be withheld from publication or circulation until any changes specified by the Association have been made or, if expressly disapproved, until the advertisement has been refiled for, and has received, Association approval. The member must provide with each filing the actual or anticipated date of first use. Any member filing any investment company advertisement or sales literature pursuant to this paragraph shall include a copy of the data, ranking or comparison on which the ranking or comparison is based. (Securities and Exchange Commission 2002)

SROs (self-regulating organizations), such as the NASD, also have approval and record-keeping rules related to complex financial instruments. Also relevant for whether and how the SEC should regulate such advertisements are Federal Trade Commission (FTC) deceptive advertising cases and the FTC's Policy Statement on Deception.<sup>11</sup> Finally, of relevance are the literature on consumer psychology in general (Hanson and Kysar 1999, 1428–1528; Jacoby 2000) and the marketing power of emotions in particular (O'Shaughnessy and O'Shaughnessy 2002).

There are many other securities areas where investing is more likely to be driven by emotional reactions to rather than cognitive processing of financial risks and information. The analysis of this chapter applies to such areas for drawing legal policy implications that differ from those based on unemotional investing. One such area is day trading (Buckman 1999; Buckman and Simon 1999; Thomas and Gregax 1999) and emotional advertisements for day trading (Arora and Reno 1999; Craig 2001). Financial scams by con artists are another such area (Cunningham 2002b, 166–78). Examples of such financial scams are so-called prime bank



programs, which promise incredible returns from investing in “prime bank” securities (Securities and Exchange Commission 2003). Another example of such a financial scam, the so-called affinity fraud, is targeted at members of identifiable groups, such as ethnic minorities and religious groups (Securities and Exchange Commission 2001).

### 20.1.2 Theoretical Models

Neoclassical economic theory already incorporates certain emotions in several ways. First, love or hate can be treated as part of an individual’s tastes or non-monetary utility in the sense of interdependent individual preferences (Becker 1996). Second, certain emotional reactions function as commitment devices in multiperson decision environments (Frank 1988; Hirshleifer 1987; Romer 2000). Third, game theory can accommodate emotions that depend on probability beliefs about strategic behavior (Geanakoplos, Pearce, and Stacchetti 1989; Kolpin 1992). Recently, several economists have urged their fellow economists to include more studies of emotions in their models (Romer 2000, 439–43; Thaler 2000). Discussions about emotions in several recent surveys of economic research illustrate this renewed interest (Camerer and Loewenstein 2003; Camerer, Loewenstein, and Prelec, forthcoming; Elster 1998). One survey, however, criticized the interpretation of emotions as psychic benefits and costs or as merely a source of preferences because such interpretations ignore how emotions affect the ability to make rational choices (Elster 1998, 73). This chapter addresses this criticism by explicitly analyzing irrational exuberance and anxiety in securities investing.

#### 20.1.2.1 Psychological Expected Utility Theory and Anticipatory Feelings

A new economic framework introduces a general psychological expected utility model that includes anticipatory feelings prior to the resolution of risk. This model extends the neoclassical expected utility model to incorporate a general class of anticipatory feelings, such as anxiety and suspense (Caplin and Leahy 2001). This model shows how anticipatory feelings can result in time inconsistency because as time passes, anticipatory feelings and preferences may change. This model has applications to anticipatory pleasure or savoring and implies a resulting preference for commitment devices to facilitate planning and overcome intertemporal inconsistency (Caplin and Leahy 2001, 72–73). Applying this model to suspense and gambling yields the empirically supported prediction that people will bet on their emotional favorites in a sporting event (Caplin and Leahy 2001, 73). This model is also rich enough to analyze preferences over illusions and the dilemma that a doctor faces about whether to give a patient (more than legally required) detailed information concerning an upcoming medically benign, but subjectively threaten-

ing diagnostic surgical procedure (Caplin and Leahy 2001, 76; Miller and Mangan 1983).<sup>12</sup> Furthermore, this model has policy implications for the provision to the public of payoff-relevant information by the Federal Reserve and other government agencies (Caplin and Leahy 2001, 76–77). Finally, this model supports recommendations for “psychologically-appropriate” formats of disseminating medical information to the general population and providing medical advice to specific patients at risk of diabetes or breast cancer (Caplin and Leahy 2001, 77; Dube, Belanger, and Trudeau 1996; Fries 1998; Kahn and Luce 2003; M. Kahn 1999; Kash et al. 1992; Klusman 1975).

Caplin and Leahy (2001) found that applying this model to focus on the portfolio decisions of anxious investors demonstrates that a security producing anxiety on the part of its owners commands a lower price and a higher required rate of return than if that security did not cause its owners to experience anxiety (68). This model also formally demonstrates that the price of a riskless security is greater than it would be in a world in which investors do not experience anxiety because riskless securities provide the benefit of anxiety reduction. This model proves that “anxiety will reduce the price of stocks and increase their return relative to the standard [unemotional] model” and that “stock ownership entails psychic costs [because stockholders have] to live with the anxiety that accompanies the holding of a risky portfolio” (1, 69). Finally, this model explains how the desire to avoid the stress and anxiety associated with retirement planning can result in people avoiding thinking about, let alone planning for, their retirement until it is too late to avoid anymore (72). Such irrational anxiety has very disturbing implications for the social desirability of recent proposals to privatize social security and retirement investment decisions.

Finally, Mehra and Sah (2002) construct a general equilibrium model that provides theoretical support for the proposition that feelings affect securities prices. This model argues that investors’ feelings have an effect on stock prices if three conditions are satisfied (870). First, investors do not realize their investment decisions are influenced by fluctuations in their moods. Second, investors’ subjective parameters, such as their judgments of the appropriate discount factor or their levels of relative risk aversion, fluctuate in response to fluctuations in their moods over time. Third, investors uniformly and widely experience the impacts of such fluctuations in their moods on their subjective parameters. This model has closed-form solutions for equilibrium stock prices (873–76). The model predicts that a 0.10 percent fluctuation in the beliefs of investors regarding the discount factor can alone generate a 3–4 percent standard deviation in stock prices (878). The model also finds a similarly important, but smaller effect on the standard deviation of stock prices due to a fluctuation in risk attitudes (881).

### 20.1.2.2 *The Risk-as-Feelings Hypothesis*

A new theory about decision making under risk, namely the risk-as-feelings hypothesis, focuses on the role of emotions that decision makers experience leading up to and including the moment of decision making (Loewenstein et al. 2001, 267). The risk-as-feelings hypothesis is based upon four well-supported premises: emotions can arise without any cognitive antecedents, there are emotional reactions to cognitive evaluations, emotions inform cognitive evaluations, and emotions play a crucial role in affecting behavior.

Emotional reactions to and cognitive evaluations of risk and information differ for two reasons. First, emotions and cognitive evaluations of risk respond in different ways to probabilities and outcomes. A fundamental difference between emotional reactions to risk and cognitive evaluations of risk is that anticipatory emotions are insensitive to changes in probability for a wide range of probability values (Sunstein 2002b). Expected utility depends linearly and symmetrically on the probabilities and utilities of outcomes. Variations in probability generate corresponding variations in expected utility, holding the utility of outcomes constant. Under prospect theory, cognitive evaluations of risk depend linearly and symmetrically on the probability weighting functions and subjective valuations of outcomes. Variations in probability generate corresponding variations in probability weighting functions, holding the subjective valuations of outcomes constant. In contrast, probability plays a relatively minor role in such anticipatory emotions as irrational exuberance and anxiety.

If potential outcomes have a lot of emotional resonance, such as (perhaps) kisses from your favorite movie star or electric shocks, then their attractiveness or unattractiveness is extremely insensitive to changes in the probability of that outcome, even if that probability drops from 99 percent to 1 percent (Rottenstreich and Hsee 2001). For positive outcomes, any departure from certainty induces fear, whereas any deviation from impossibility produces hope. For negative outcomes, any departure from certainty produces hope, whereas any deviation from impossibility induces fear.

Second, other causal factors besides probabilities and outcomes influence anticipatory emotions. The risk-as-feelings hypothesis focuses on several emotional factors as having a predictable influence on decision making. These factors include the vividness of the associations that risks evoke, the time path of the decision process, and how evolutionarily prepared individuals are for certain emotional reactions. For the purposes of understanding irrational exuberance and anxiety in securities investing, there are two such important determinants, namely, imagery and misattribution. The following section on the related affect heuristic analyzes the phenomenon of misattribution.

Another account of why anticipatory emotions display probability neglect is that anticipatory emotions are primarily due to mental images of the outcome of a decision. Such images are discrete and so are not much affected by probabilities. Thus, anticipatory emotions that arise from such images will be insensitive to changes in probability. An investor's mental image of what it will be like to participate in an IPO of stock is likely to be approximately the same whether the probability of that stock skyrocketing is 1 in 100,000 or 1 in 100 million. In contrast, an investor's mental image of what it will be like to participate in a stock IPO that skyrockets will likely be very different from that investor's mental image of what it will be like to participate in a stock IPO that has only a very modest increase.

### 20.1.2.3 *The "How-Do-I-Feel-About-It" Heuristic*

Experimental results and clinical phenomena demonstrate that emotional reactions are fairly independent of, often impervious to, and precede in time, cognitive judgments (Zajonc 1980, 1984, 2000). Evolutionary forces may explain why affect precedes cognition (Cohen and Dickens 2002; Olsen 2000). A recent study found that "affective processes play a critical role in determining choices and that these affective processes may sometimes influence choice without the decision maker's awareness" (Peters and Slovic 2000). A large body of empirical psychological research finds that affective impressions attach to images, and those affective impressions influence judgments and decisions (Finucane, Peters, and Slovic 2003).

A recent theoretical framework emphasizes the importance of an affect, or "how-do-I-feel-about-it" heuristic, in guiding decisions and judgments (Finucane, Peters, and Slovic 2003; Slovic et al. 2002; Sunstein 2003). People utilize this heuristic when they come to have an emotional, all-things-considered reaction to make judgments. People utilizing this heuristic essentially ask, "How do I feel about something?" They utilize their answer as the basis for making their judgment (Schwarz and Clore 1983).

The affect, or "how-do-I-feel-about-it" heuristic, is related to the mood-as-information hypothesis. This hypothesis argues that people's moods inform their decisions, even when the causes of those moods are unrelated to their decisions. This phenomenon is known as misattribution. It explains how and why nominally irrelevant feelings, or what the famous macroeconomist Keynes (1936) called "animal spirits," influence securities investing (see also Marchionatti 1999).

The "how-do-I-feel-about-it" heuristic explains public concerns about health and environmental risks, high punitive damage awards, and people's reactions to contested political events (Sunstein 2002a). This heuristic is related to the dual process theory that people process information via two parallel, interactive modes (Epstein 1994). The first is a rational, deliberative, and analytical system employing such rules of logic and evidence as probability theory. The second is an experi-

ential system that encodes reality in terms of images, metaphors, and narratives that are imbued with affect and feelings. There is much experimental evidence that a person's mood influences which of these two information-processing strategies is utilized (Schwarz 2002a, 2002b).

The affect infusion model (AIM) argues that the extent to which people rely on their feelings to make decisions depends on how abstract, risky, and uncertain those decisions are (Forgas 1995). Usually, people who are rational utilize high affect infusion strategies (HAIS) in highly complex decisions, such as securities investing. Emotions form a major input of decisions made via HAIS. People usually employ low affect infusion strategies (LAIS) in decisions requiring "little generative constructive processing" (Forgas 1995, 40). Thus, LAIS are more appropriate for decisions that are familiar and low in complexity than for decisions that are infrequent and high in complexity.

## 20.2 MANDATORY SECURITIES DISCLOSURES

"Mandatory disclosure is a—if not the—defining characteristic of U.S. securities regulation" (Bainbridge 2000, 1023). The Supreme Court in *SEC v. Capital Gains Research Bureau, Inc.*, 375 U.S. 180, 186 (1963), stated that the "fundamental purpose" of federal securities regulations "was to substitute a philosophy of full disclosure for the philosophy of caveat emptor." In another famous case, *SEC v. Ralston Purina Co.*, 346 U.S. 119, 124 (1953), the Supreme Court stated that the Securities Act of 1933 and its mandatory disclosure requirements were designed "to protect investors by promoting full disclosure of information thought necessary to informed investment decisions." Investor protection is clearly a fundamental goal of U.S. securities regulation. In fact, upon clicking on "What We Do" under the heading "About the SEC" on the SEC's home page on the Internet, one learns that "[t]he primary mission of the U.S. Securities and Exchange Commission (SEC) is to protect investors" (Securities and Exchange Commission 1999).

There is a long-standing debate over the purpose and effectiveness of mandatory securities disclosure (Coffee 1984; Easterbrook and Fischel 1984; Schwarcz 2004). An often-cited purpose is to improve the informational efficiency of securities prices (Gilson and Kraakman 1984; Gordon and Kornhauser 1985; Jarrell 1981; Kahan 1992).<sup>13</sup> Critics of this accuracy-enhancement efficiency justification argue that mandatory securities disclosure has not achieved this purpose (Benston 1973; Kitch 1995; Kripke 1979). Mahoney (1995a) proposes reducing the agency costs that arise between investors and promoters and between corporate managers and their shareholders as an alternative justification for mandatory securities disclosure. Both of these justifications of mandatory securities disclosures focus on the cognitive impacts of increased disclosures.

Mandatory disclosures generate not only information but also such emotions as perhaps anxiety, embarrassment, euphoria, exuberance, feeling stupid, relief, or shame. For example, mandating disclosure of the realistically very low odds of winning a lottery and the present discounted value of the after-tax prize winnings produces no benefits if such disclosures fail to reduce the number of lottery ticket buyers, but instead causes lottery players to feel dumb or foolish and reduces their pleasure from daydreaming about possible future riches. Such emotional consequences of mandatory disclosure can alter behavior. For example, the display by retailers of detailed facts about food content mandated by food labeling acts may result in the so-called Snackwell effect, named for the fat-free cookie that appears to lead to greater consumption (Shemo 1997).

Emotional reactions to securities risks imply emotional reactions to securities information, because information is in essence the negative of risk, as information involves the reduction of risk. Analogous to fear in the investment context, evaluating strategies for combating terrorism depends on how much fear involves misperception about risk, whether fear is a hedonic loss that should count as being a cost or harm under a cost-benefit analysis, and to what extent fear is contagious (Posner 2002). The fact that people feel emotions and would like to minimize anxiety also has novel implications for health and medical regulatory policy (Katz 1984, 1993; Schuck 1994; Slovic 2000b).

Questions about how much and precisely what disclosures federal securities laws should require are analogous to recent questions about how much and precisely what disclosures the federal government should issue about possible terrorist attacks. Although nonspecific disclosures provide information, they also produce anxiety, fear, and general uneasiness. There is the danger that over time people become desensitized to many nonspecific disclosures, so a more specific disclosure may fall on deaf ears. Broad and general disclosures lack the vividness of more specific and narrowly focused disclosures.

Securities disclosures function not only as information and marketing documents but also as protection from civil liability for securities fraud. Even though there is no analogous marketing role for disclosures about possible terrorist attacks, after September 11, 2001, the U.S. government has become concerned with a severe public relations penalty for nondisclosures about possible terrorist attacks that is analogous to liability for fraudulent securities nondisclosures. Another difference between securities disclosures and disclosures about potential terrorist attacks is their actual or intended audience. Some legal scholars believe and argue that the investing public is neither the actual nor intended audience for the disclosures that federal securities laws mandate (Langevoort 2002, 173–75). Instead, these commentators feel that professional analysts are the intended audience for much of the accounting and financial disclosures that federal securities regulations



mandate. Professional analysts filter that information to the investing public.<sup>14</sup> Because analysts are professionals who have repeated experience at interpreting such disclosures, they may seem less likely than inexperienced and unsophisticated individuals to feel irrational exuberance and anxiety as the result of securities disclosures.<sup>15</sup> But precisely because of their experience with other similar securities in the past, professional analysts may have more vivid reactions to securities disclosures than laypersons lacking any personal or direct knowledge of similar cases. Because of their compensation, there may also be serious conflicts of interest between professional analysts and the investing public, which means that analysts could routinely make unjustifiably optimistic or irrationally exuberant securities recommendations (Fisch and Sale 2003; Hovanesian 2002; Vickers and France 2002).

The debate over mandatory disclosure in federal securities regulation ignores the emotional benefits or costs of such disclosures, in particular, irrational exuberance and anxiety that potential and existing investors may feel due to disclosures or the absence of disclosures. Such emotional benefits or costs affect individuals in terms of increased or reduced social utility and affect issuers of securities in terms of a lower or higher cost of capital due to such emotional reactions. The heterogeneity of people's emotional reactions to mandatory securities disclosures complicates if and how securities regulations should take irrational exuberance and anxiety into account. The extent to which different people feel irrational exuberance and anxiety from securities disclosures affects the socially optimal amount of those disclosures. Even holding the content of disclosed information fixed, anxiety has implications for the form or presentation of that information.

Because irrational exuberance and anxiety depend more on the possibility than on the probability of certain outcomes, some people may overreact in their securities investments to disclosures about material events with positive, but small, probabilities of occurrence. Irrational exuberance and anxiety may also cause individuals to avoid acquiring or processing material information and to avoid thinking carefully about certain financial outcomes. Even if the apocryphal widows and orphans feel irrational exuberance and anxiety, some financial and legal scholars believe that equilibrium securities market prices may accurately reflect all relevant material information if analysts and institutional investors do not experience irrational exuberance and anxiety (Malkiel 2003; Rubinstein 2001). Even if securities professionals and institutions were to be immune from irrational exuberance and anxiety, limited arbitrage prevents them from eliminating the impact of those investors who do feel irrational exuberance and anxiety on securities prices.

On the other hand, just as disclosure of information may trigger irrational exuberance and anxiety, lack of disclosure may also trigger fear of the unknown (or a false sense of contentment from limited knowledge) and fear over imagined worst-case scenarios (or joy over imagined best-case scenarios). Lack of mandated disclosures does not mean lack of irrational exuberance and anxiety, because there are many other sources of information or noise besides mandated disclosures, including security analysts, friends, family members, colleagues, investment clubs, and Internet chat rooms (Langevoort 2002, 154–63). Thus, there is a countervailing emotional benefit from disclosure, namely, the prevention of irrational exuberance and anxiety that would result from lack of disclosure.<sup>16</sup>

The previous observation helps explain why some people react with irrational anxiety over companies' not expensing stock options utilized to compensate and provide incentives for their executives (Norris 2002; Saporito 2002). Not knowing how much those stock options actually cost a company may lead both existing and potential investors to overestimate the cost of granting such executive stock options and experience irrational anxiety from such overestimates or from just not knowing. On the other side of the emotional spectrum from irrational anxiety due to lack of disclosure is possible irrational exuberance or unjustified excitement. In the case of the bull market of the late 1990s, many investors evaluated companies in the so-called new economy based more on irrational exuberance and irrational euphoria than on fundamental analysis.

The key legal policy questions thus involve what can and should we do about irrational exuberance and anxiety (Partnoy 2000). The Brady Commission formed to examine the 1987 stock market crash advocated circuit breakers to "cushion the impact of market movements, which would otherwise damage market infrastructures" (Presidential Task Force on Market Mechanisms 1998). In 1988, U.S. securities exchanges adopted trading halts to essentially provide investors a cooling-off period if the Dow Jones Industrial Average index fell too much too fast (Cunningham 2002b, 233–46). Symmetrically, reverse circuit breakers could mandate trading halts for overall securities markets or individual securities if securities price indices or individual securities prices rise too quickly (Gabaldon 2000, 127; 2001, 283). But experimental studies find that circuit breakers are ineffectual and mandated market closures accelerate trading activity (Ackert, Church, and Jayaraman 1999). Another experiment finds that circuit breakers do not work to retard bubbles but actually somewhat exacerbate bubbles for inexperienced subjects (King et al. 1993).

Instead of using circuit breakers, the SEC can require greater firm-specific disclosures that detail how a particular firm's securities differ from the overall securities markets. Section 13(a) of the Securities Exchange Act (15 U.S.C. § 78m(a))

(2002)) provides the SEC with authority to require companies registered under the Securities Exchange Act to file such information and documents as it deems to be in the public interest. Such additional firm-specific disclosures could be provided in the form of “public reports explicitly addressing the relationship between their earnings, dividends, and prevailing stock prices and perhaps containing management commentary upon the wisdom of this relationship and how long it might be expected to be sustained” (Gabaldon 2000, 128). However, such mandatory disclosures presume that individuals can and will cognitively evaluate such disclosures as opposed to increase noise trading (Mahoney 1995b). If one believes that individuals should be holding broadly diversified portfolios instead of engaging in dubious individual stock picking, then individuals do not require firm-specific information. If one believes that irrational exuberance and anxiety dominate securities investing, then mandatory disclosure, which is the linchpin of U.S. federal securities regulation, may have unexpected emotional effects, and little or no cognitive effects, upon investing.

Answering the questions of whether, what, and how much of mandatory securities disclosures are socially desirable requires comparing the unemotional and emotional consequences of such disclosures with the unemotional and emotional consequences of voluntary securities market disclosures. An emotional cost-benefit analysis differs from the unemotional considerations raised in the past and current debate over mandatory securities disclosures. The relative size of the emotional costs and benefits of mandatory securities disclosures versus the emotional costs and benefits of voluntary securities disclosures will vary depending on the precise nature of the specific disclosures involved.

Finally, there is another set of actors in securities regulation who are subject to irrational exuberance and anxiety, namely, the securities regulators themselves, be they SEC Commissioners; SEC staff; lawyers and other professionals at SROs, such as the NYSE or the NASD; members of Congress and their staff; state attorney generals and their staff; private litigants and plaintiffs’ attorneys; issuers and their counsel; judges; or juries. Certainly, investors do not have a monopoly on feeling irrational exuberance and anxiety. A central message of this chapter is that emotions are ubiquitous and not always necessarily defects in or flaws of human decision making. Just as (securities) regulators are no less prone to cognitive biases and heuristics than investors are (Choi and Pritchard 2003), so too (securities) regulators are no less prone to irrational exuberance and anxiety than investors are prone to irrational exuberance and anxiety. Just as behavioral explanations of securities regulations complement and enrich public choice accounts (Choi and Pritchard 2003; Macey 1994; Mahoney 2001), so too for emotional regulatory stories.

It is perhaps no surprise that emotional regulating not only happens but also

systematically differs from unemotional regulating. The social desirability of emotional regulating, including but not limited to zealous advocates, passionate public servants, possibly envious or sympathetic regulators, and ideologically fanatical prosecutors, is a difficult question. But whether or not emotional regulating is socially desirable, it exists and is likely to continue. In light of the realities of emotional regulating, the SEC in general and its mandatory disclosure regime in particular might do more harm than good and yet persist due to emotional appeal, rationales, and considerations. The history of U.S. federal securities regulation from its very inception in the aftermath of the Great Depression to its most recent Sarbanes-Oxley Act of 2002 in the aftermath of Enron, Arthur Anderson, Rite Aid, Worldcom, Tyco, Adelpia, Merck, and Global Crossing is that of (possibly benign) neglect of securities markets interrupted by legislation in response to political and public pressure arising from highly visceral and public episodes of banking, corporate, or securities fraud and scandals (Grundfest 2002; Seligman 1995). Mandatory disclosure might be, at best, an impotent and, at worst, a socially harmful regulatory policy if the majority of investors experience cognitive biases and utilize heuristics in the processing of information and/or feel irrational exuberance and anxiety before and during their investing process. But the SEC’s obsession with mandatory disclosure may be due to its emotional resonance with the metaphor of a “level playing field” and the rationale of protecting investors from others and possibly themselves.

### 20.3 CONCLUSIONS

This chapter analyzed a still growing but already large body of empirical and experimental evidence of and theoretical economic and psychological models supporting the prevalence of irrational exuberance and anxiety. Because the financial and legal implications of irrational exuberance and anxiety differ significantly and systematically from those of unemotional rational investing, further empirical, psychological, experimental, and theoretical financial economic research concerning the applicability, generality, and robustness of irrational exuberance and anxiety is crucial.

An important question for legal policy is to what extent education or experience mitigates irrational exuberance and anxiety. After all, many individual and novice investors lost money by investing heavily in high-technology and Internet stocks during the 1990s, but so did many hedge funds and mutual funds managed by financially sophisticated and experienced investors (Brunnermeier and Nagel 2004). To the extent that individuals are more evolutionarily prepared for certain emotions than others, it may be neither easy nor socially desirable to alter irrational ex-

uberance and anxiety in response to securities disclosures (Cohen and Dickens 2002; Henderson and Rachlinski 2000; Loewenstein et al. 2001, 279; Olsen 2000).

Whether more paternalistic securities regulations than our current federal system of mandatory disclosure is socially desirable depends on to what extent and how others can improve upon the behavior and performance resulting from irrational exuberance and anxiety.<sup>17</sup> Indeed, if we suspect that most investing is driven by irrational exuberance and anxiety, then securities regulation should focus primarily on emotional reactions to, instead of unemotional processing of, the form and content of mandatory disclosures. If we believe that short of explicit and outright cognitive fraud judges, juries, and the SEC are not well equipped to evaluate the likely emotional reactions to securities disclosures, then perhaps the SEC should not base federal securities regulation upon a philosophy of mandatory disclosure. But experts can assist both the SEC *ex ante* and courts *ex post* in determining the likely emotional reactions to securities disclosures or marketing hype by conducting empirical surveys of actual people.

An intermediate regulatory strategy is to adopt cautiously paternalistic or asymmetrically paternalistic regulations, namely, regulations that greatly benefit people who are prone to mistakes but only slightly (or not at all) hurt people who are not prone to mistakes (Camerer et al. 2003; O'Donoghue and Rabin 1999; Thaler and Sunstein 2003). It is important here as elsewhere to not view all emotional investing as being synonymous with making investing errors. A fundamental lesson of recent economic, neurobiological, and psychological research (and hopefully, this chapter) is that emotions sometimes are superior to, sometimes reinforce, but sometimes work in the opposite direction of unemotional reasoning (Etzioni 1998). In particular, there are many varieties of emotional investing and some complement, whereas others substitute for unemotional investing. Determining how much of emotional investing is "rational" or "reasonable" is difficult, both for any particular investor and for others, such as counterparties (of derivative securities), the SEC, and SROs (such as the NASD, NYSE, and AMEX).

A recent argument proposes not protecting so-called irrational investors from themselves in order to reap the public good provided by having equilibrium securities market prices reflect the private information of those "irrational" investors (La Blanc and Rachlinski, this volume). However, under a general equilibrium analysis, the price impact and survival of irrational investors are two related, yet quite distinct and independent concepts (Blume and Easley 2001; Hirshleifer, Subrahmanyam, and Titman 2004; Kogan et al. 2004; Sandroni 2000). In other words, in a long-run equilibrium, irrational investors can have a significant impact on prices whether or not they survive. Moreover, even if irrational investors survive, they may have no price impact. In addition, such a proposal assumes the pri-

vate information of irrational investors has high signal-to-noise ratios. Although the signal-to-noise ratio for emotional investing is difficult to determine in general, there are clearly situations where the ratio is low. For example, emotional investing caused by the online brokerage ads described in this chapter is likely to have a low signal-to-noise ratio, and therefore regulating such ads is likely not to have any deleterious effect on the informational efficiency of securities prices.



## NOTES

1. Akerlof (2002, 424) argued in a revised version of the lecture he presented upon receiving the 2001 Nobel Prize in economic sciences (December 8, 2001) that macroeconomics should be behavioral and that John Maynard Keynes (1936) “was the progenitor of the modern behavioral finance view of asset markets.” Also see Loewenstein (2000) and Uchitelle (2001).

2. For a discussion of the possible scope and legal implications, see Arlen (1998); Hanson and Kysar (2000); Henderson and Rachlinski (2000); Hillman (2000); Issacharoff (1998); Mitchell (2002, 2003). For an opposing point of view, see Rachlinski (2000, 2003).

3. For example, *A. C. Frost & Co. v. Coeur D’Alene Mines Corporation*, 312 U.S. 38, 43, n. 2 (1941), states that the fundamental purpose of the Securities Act is to protect investors by mandating full disclosure of the information that is thought necessary for investors to make informed investment decisions; *Feit v. Leasco Data Processing Equipment Corp.*, 332 F. Supp. 544, 563 (E.D. N.Y. 1971) states “that without complete, accurate and intelligible information about a company, investors cannot make intelligent investment decisions with regard to its securities.”

4. “Where a majority is included in a faction, the form of popular government . . . enables it to sacrifice to its ruling passion or interest both the public good and the rights of other citizens” (Madison 1787/1999).

5. New York, for example, provides that “[a] marriage shall not be solemnized within twenty-four hours after the issuance of the marriage license” (N.Y. Dom. Rel. Law § 13-b (McKinney 1999)).

6. Connecticut, for example, requires married couples to wait ninety days after filing a complaint for dissolution or legal separation before the court may proceed (Conn. Gen. Stat. Ann. § 46b-67(a) (West 1995)).

7. The robust experimental findings that people can be very loss averse and treat out-of-pocket losses differently from opportunity costs have clear implications for the way that people actually invest.

8. It is crucial to distinguish anxiety from risk aversion. Anxiety is a dynamic notion that arises because some decision makers may prefer not to live with a feeling of uncertainty across time periods. Risk aversion is a static notion related to how curved a decision maker’s utility function over wealth is within a fixed period of time (Weber and Hsee 1998).

9. The original investors in IPOs are typically not individual investors but institutional investors. Sale (2000, 441) observes that the class of “first buyers of

the securities issued (original shareholders) . . . is usually very limited, including only institutional investors, members of Congress, and those with connections to underwriters.”

10. Lewis (1989, 15) assesses the founder and head of Salomon’s legendary bond trading Arbitrage Group by saying, “He had, I think, a profound ability to control the two emotions that commonly destroy traders—fear and greed—and it made him as noble as a man who pursues his self-interest so fiercely can be.” Also refer to Lowenstein 2000, 76–77.

11. Included in the deceptive advertising cases is *Florence Mfg. Co. v. J. C. Dowd & Co.*, 178 F. 73, 75 (C.A.2 1910), which states that “[t]he law is not made for experts but to protect the public,—that vast multitude which includes the ignorant, the unthinking and the credulous, who, in making purchases, do not stop to analyze but too often are governed by appearances and general impressions.” *Aronberg v. FTC*, 132 F.2d 165, 167 (7th Cir. 1942), states that “the buying public does not ordinarily carefully study or weigh each word in an advertisement” and that “[a]dvertisements are intended not ‘to be carefully dissected with a dictionary at hand, but rather to produce an impression upon’ prospective purchasers” (quoting *Newton Tea & Spice Co. v. United States*, 288 F. 475, 479 (6th Cir. 1923)). *Standard Oil Co. of California v. FTC*, 577 F.2d 653, 659 (9th Cir. 1978), states “that commercial messages might lead the average viewer, in his anxiety . . . to overreact even though upon careful reflection he might see for himself the limitations inherent in the advertiser’s claim.”

According to Policy Statement on Deception, 4 Trade Reg. Rep. (CCH) ¶ 13, 205 at 20, 917 (FTC Oct. 14, 1983), an advertisement is deceptive when there is “a misrepresentation, omission or other practice, that misleads the consumer acting reasonably in the circumstances, to the consumer’s detriment.” In determining if an advertisement deceives consumers, the FTC asks what does the advertisement say or imply, and does the advertisement have a reasonable basis for its claims?

12. Miller and Mangan report on a study exploring the interaction between the amount of information provided and personal coping styles of forty gynecologic patients scheduled for colposcopy.

13. See also Kitch (1995, 838–74).

14. *Dirks v. SEC*, 463 U.S. 646, 658–59, n.17 (1983), discusses the importance of market analysts who “ferret out and analyze information.” Choi (2002) discusses the benefits and harms of selective disclosures to analysts; Goshen and Parchomovsky (2001) discuss the positive externalities that analysts’ research provides all investors; and Talley and Choi (2002) discuss the costs and benefits of selective disclosures to analysts.

15. Similar arguments have been made concerning the relative cognitive competence of judges versus juries (Viscusi 2001; see also Meadow and Sunstein 2001; Sale 2002).

16. An analogy is to a patient's fears and behavior in the medical disclosure context. A patient may imagine and fear the worst if a physician does not disclose certain information about medical risks in a timely fashion. In other words, in both financial and medical contexts, people may infer or imagine bad news from silence and experience fear or anxiety from not having enough information.

17. For empirical evidence concerning a similar question about consumption decisions, see Waldfoel (2002).

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