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Recommended Citation

Renee M. Jones. "The Irrational Actor in the CEO Suite: Implications for Corporate Governance." *Delaware Journal of Corporate Law* 41, no.3 (2017): 713-762.

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THE IRRATIONAL ACTOR IN THE CEO SUITE:
IMPLICATIONS FOR CORPORATE GOVERNANCE

RENEE M. JONES*

ABSTRACT

This Article challenges corporate governance theorists' standard assumptions regarding the rationality of business leaders. It reviews scholarly research that documents the presence of irrational actors among senior corporate managers and considers the impact these executives might have on corporations and society. The Article focuses analysis on psychological literature that explores why risk-related decision-making often goes wrong.

Research shows that many individuals have a dysfunctional approach to risk that leads them to engage in self-destructive conduct. A non-trivial number of individuals with problematic personality traits work at high levels of major corporations where they have the capacity to cause significant harm. This reality poses challenges for policy prescriptions based on the rational actor theory – the idea that laws should be designed to harness an individual's propensity to act in his rational self-interest.

One potential danger is that policies that promote the pursuit of self-interest have the unintended effect of attracting individuals with antisocial traits to join the corporate workforce. Another concern is that policies that emphasize self-interest may exacerbate antisocial tendencies among corporate employees, leading to increasingly risky and unethical corporate conduct. The Article weighs these possibilities and offers recommendations for reform.

*Professor, Boston College Law School. This article benefitted from comments from participants in the Panel on Securities Fraud at the Law and Society Annual Meeting and a Boston College Law School Faculty Workshop. Professors Mary Bilder, Lawrence Cunningham, Lynne Dallas, Brian Galle, Ray Madoff and Patricia McCoy provided helpful comments and suggestions. Karen Breda provided indispensable research guidance and Colin Edge, Andrew Miller and Craig Shepard provided excellent research assistance. In addition, the author benefitted from attending the University of Pennsylvania Neuroscience Boot Camp, made possible through a Research Training Stipend from the Program on Law and Neuroscience and a Boston College Research Expense Grant.

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I. INTRODUCTION

What is the point of corporate law? One way of answering this question is that corporate and financial laws were designed to curb self-interested, short-sighted, and impulsive conduct in order to protect and preserve the wealth of those who contribute to the corporate enterprise. If we think carefully about what these laws require we can see some of the mechanisms the law employs to achieve these ends.

The cornerstones of traditional state corporate law are the fiduciary duties of loyalty and care. The duty of loyalty commands corporate officials to set aside self-interest when making corporate decisions. The duty of care mandates that officers and directors manage corporate affairs responsibly; that they act with due consideration of the consequences of their decisions. In this way, the duty of care proscribes impulsive or rash decision-making.

Banking law similarly aims to discourage managers from taking ill-advised risks in pursuit of short-term gains. For example, the Glass-Steagall Act's prohibition on investing in equity securities prevented banks from gambling with depositors' money. Lending restrictions, such as the limit on loans to a single borrower, forbid imprudent lending practices.¹ In addition, minimum capital requirements provide prophylactic protection against excess risk taking by bank officials and fiduciary duties apply with equal (or greater) force under banking laws. Federal securities laws, which focus mainly on disclosure, impose obligations of candor and honesty on promoters seeking to attract money from investors.

Overall, our corporate and financial laws aim to protect society from the consequences of extreme or reckless conduct by those entrusted to manage socially significant business institutions. For years, this central understanding of the need for law – to push back against certain natural human tendencies (such as sloth, greed, and gluttony) – informed corporate and financial law analysis. This traditional understanding began to fade with the emergence of the law and economics movement and the broad application of the rational actor theory to corporate law problems.²

Rational actor theorists assert that laws should be designed to leverage each individual's propensity to act in his own self-interest.³ Most corporate law and economics scholarship is premised on the assumption that key corporate actors, including directors, managers, employees, and investors, are rational wealth maximizers.⁴ These

¹12 U.S.C. § 84 (2011); RICHARD SCOTT CARNELL ET AL., *THE LAW OF FINANCIAL INSTITUTIONS* 264-69 (5th ed. 2013).

²See STEPHEN M. BAINBRIDGE, *CORPORATE LAW AND ECONOMICS* 23 (2002) (noting that “neoclassical economics is premised on the rational actor theory, which posits an autonomous individual who makes rational choices that maximize his satisfactions.”).

³See Claire Finkelstein, *Legal Theory and the Rational Actor*, in *OXFORD HANDBOOK OF RATIONALITY* 399-416, 400 (Al Mele ed., 2003) (“Rational actor theory assumes human beings are rational maximizers who reason instrumentally toward the attainment of their ends.”).

⁴See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 3 (6th ed. 2003) (“The task of economics, so defined, is to explore the implications of assuming that man is a rational maximizer of his ends in life, his satisfactions”).

scholars promote policy prescriptions based on the notion that corporate officials will respond to monetary incentives created by law and institutional structures in a sensible and predictable manner.⁵

The notion that corporate managers and directors will act reliably in their own self-interest is seductive. It allows one to imagine a world in which one only needs to create the right incentive structure for people automatically to make socially optimal decisions. Once we embrace this approach, the regulator's task shifts from adopting or applying legal mandates to creating incentive structures that encourage, but do not command, corporate officials to pursue socially desirable goals.⁶ Theorists insist that this approach is more efficient, less intrusive, and less error prone than the command and control or *ex post facto* dispute resolution mechanisms that typify the traditional regulatory regime.⁷

The philosophical framework described above has served as the basis for the deregulatory agenda that law and economics scholars have championed for decades.⁸ The idea that we can achieve common social goals through appeals to individual self-interest underlies three main thrusts of this deregulatory project. First, law and economics scholars promote reliance on market mechanisms over regulatory mandates as a disciplinary tool.⁹ On this account, the power of markets to discipline executives both explains and justifies courts' reluctance to enforce fiduciary duties or hold corporate officials responsible for malfeasance.¹⁰

⁵Proponents respond to the charge that assumptions of rationality are unrealistic by asserting that they offer merely a model, not a complete description of how individuals always behave. Yet, they claim their model provides a close-enough approximation of human behavior to serve as a basis for broad policy prescriptions. *Id.* at 17-18.

⁶See FRANK H. EASTERBROOK & DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 4-7 (1991) (explaining that freedom of choice in governance arrangements redounds to the benefit of investors and society); BAINBRIDGE, *supra* note 2, at 37 (arguing that by emphasizing a "wealth maximization" command for corporations, society can "take advantage of the wealth maximizing incentives built into the firm to alter its behavior at least cost").

⁷See EASTERBROOK & FISCHEL, *supra* note 6, at 15-22 (arguing that market mechanisms are superior for determining optimal governance standards than processes controlled by regulators).

⁸See Donald C. Langevoort, *Behavioral Approaches to Corporate Law in RESEARCH HANDBOOK ON THE ECONOMICS OF CORPORATE LAW* 442, 442-43 (Claire A. Hill & Brett H. McDonnell eds., 2012) (describing the corporate law and economics movement).

⁹See EASTERBROOK & FISCHEL, *supra* note 6, at 35-39, 93-100; Ralph K. Winter, Jr., *State Law, Shareholder Protection and the Theory of the Corporation*, 6 J. LEGAL STUD. 251, 255-57 (1977) (asserting that market discipline makes it unlikely that corporate managers could systematically exploit shareholders); POSNER, *supra* note 4, at 427-30 (discussing rationales for fiduciary duties and the disciplining effect of the market for corporate control).

¹⁰BAINBRIDGE, *supra* note 2, at 261 (asserting that "rational shareholders . . . should prefer a regime that encourages managerial risk-taking by, inter alia, pre-committing to a policy of not litigating the reasonableness of managerial business decisions.").

A related tenet holds that monetary incentives can motivate effective management better than legal commands, shareholder power, or litigation threats.¹¹ This precept led theorists to urge corporations to compensate executives with equity and stock options instead of cash, to better align their risk preferences with those of shareholders.¹² The widespread embrace of this approach spurred an explosion in rates of executive pay beginning in the 1990s.¹³

Perhaps the most influential axiom of rational actor theory has been the broad assertion that sophisticated financial actors can manage risk responsibly without the need for government interference or oversight. This assertion bolstered a decades-long effort to dismantle the modern financial regulatory structure. To illustrate, the presumed sophistication of large financial institutions served as a main justification for adopting the Gramm-Leach-Bliley Act, which demolished the Glass-Steagall wall separating commercial and investment banking.¹⁴ A similar refrain echoed throughout policy debates over efforts in the late 1990s to regulate trading in over-the-counter derivatives.¹⁵

Although widely influential, the neoclassical law and economics movement has attracted significant criticism. The most sustained intellectual challenge has come from behavioral economists who marshaled psychological research to refute many of law and economics fundamental assumptions. Daniel Kahneman and Amos Tversky, among others, have shown that people often act in a predictably irrational manner.¹⁶ These observations lead behavioral economists to assert that the legal system must take into account such systematic irrationality to achieve its desired ends.¹⁷ They, therefore, urge the adoption of a sort of

¹¹See, e.g., Michael C. Jensen & Kevin J. Murphy, *CEO Incentives – Its Not How Much You Pay, But How You Pay It*, 3 HARV. BUS. REV. 138 (1990).

¹²*Id.*; see also Kelli A. Alces & Brian D. Galle, *The False Promise of Risk-Reducing Incentive Pay: Evidence From Executive Pensions and Deferred Compensation*, 38 J. CORP. L. 53, 55-59 (2012) (summarizing arguments).

¹³See Lynn A. Stout, *Killing Conscience: The Unintended Behavioral Consequences of Pay for Performance*, 39 J. CORP. L. 525, 532-34 (2014) (documenting increases in incentive based pay for executives). The increase in equity-based compensation also correlates in time with a marked increase in the incidence of corporate and securities fraud. *Id.*

¹⁴Peter S. Goodman, *Taking a Hard New Look at a Greenspan Legacy*, N.Y. TIMES (Oct. 8, 2008), <http://tinyurl.com/091008-NYT>. See also ALAN GREENSPAN, *THE AGE OF TURBULENCE: ADVENTURES IN A NEW WORLD* (2007).

¹⁵See Rick Schmitt, *Prophet and Loss*, STANFORD ALUMNI MAGAZINE (Mar./Apr. 2009), <http://tinyurl.com/m47tw4>.

¹⁶See Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124, 1130 (1974); Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1473-76 (1998) (applying principles to legal analysis).

¹⁷A number of corporate law scholars have embraced this behavioral turn. For important contributions to this proposition, see generally Jayne W. Barnard, *Narcissism, Over-*

soft paternalism by which regulators develop policies that “nudge” people to make choices that better reflect their true interests, unbound by the distracting and distorting mental shortcuts that hamper our everyday decision-making.¹⁸

Perhaps more devastating to the law and economics project are persistent observations that the most basic predictions of law and economics scholars have not been borne out by events on the ground. The first inkling of a deep chasm between law and economics theory and reality arose during the 1980s’ takeover battles when poison pills, antitakeover legislation, and other entrenchment tools took hold.¹⁹ Law and economics theorists had long maintained that the market for corporate control provided a disciplinary effect on corporate management that obviated the need for intrusive judicial oversight.²⁰ These theorists claimed that a vigorous market for corporate control also enhanced economic efficiency.²¹ In their view, antitakeover devices that impeded the smooth operation of the market were inimical to investors’ interests. As such, these tactics should have been rejected by state lawmakers who were supposedly engaged in a “race to the top” to adopt the most efficient corporate law rules.²² Thus, when state legislators and judges endorsed a range of corporate antitakeover devices it undermined

Optimism, Fear, Anger, and Depression: The Interior Lives of Corporate Leaders, 77 U. CIN. L. REV. 405 (2008); Donald C. Langevoort, *Resetting the Corporate Thermostat: Lessons from the Recent Financial Scandals about Self-Deception, Deceiving Others and the Design of Internal Controls*, 93 GEO. L. J. 285 (2004); LYNN STOUT, *CULTIVATING CONSCIENCE: HOW GOOD LAWS MAKE GOOD PEOPLE* (2011).

¹⁸See RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 4-6 (2008) (describing the philosophy of “libertarian paternalism”); see also GEORGE A. AKERLOFF & ROBERT J. SHILLER *ANIMAL SPIRITS: HOW HUMAN PSYCHOLOGY DRIVES THE ECONOMY*, 1-5 (2009) (providing an overview of how decision-making is guided by “animal spirits” or the basic wants and needs of each individual); DANIEL KAHNEMAN, *THINKING FAST AND SLOW* (2011).

¹⁹See William W. Bratton, *The Economic Structure of the Post-Contractual Corporation*, 87 NW. U. L. REV. 180, 195-96 (1992) (describing how corporate takeover law failed to develop in conformity with the law and economics model’s predictions).

²⁰See Henry G. Manne, *Mergers and the Market for Corporate Control*, 73 J. POL. ECON. 110, 119-20 (1965); Frank Easterbrook & Daniel Fischel, *The Proper Role of Target’s Management In Responding to a Tender Offer*, 94 HARV. L. REV. 1161, 1196-97 (1981).

²¹See, e.g., Easterbrook & Fischel, *supra* note 20, at 1164; John Coffee, *Regulating the Market for Corporate Control: A Critical Assessment of the Tender Offer’s Role in Corporate Governance*, 84 COLUM. L. REV. 1145, 1294-96 (1984).

²²Easterbrook & Fischel, *supra* note 20, at 1164 (“Our investigation leads to the conclusion that shareholders’ welfare is maximized by an externally imposed legal rule severely limiting the ability of managers to resist a tender offer even if the purpose of resistance is to trigger a bidding contest.”); Winter, Jr., *supra* note 9, at 255-56.

theorists' assertions that regulatory competition would ensure that corporate law rules reliably protected shareholder interests.²³

More recently, corporate debacles including the Enron/WorldCom scandals, crises in markets for over-the-counter derivatives, and sophisticated banks' failure to manage risk responsibly belied the flawless efficacy of a self-regulatory regime. The cataclysmic bank failures of 2008 led even some of the most ardent champions of the palliative power of market discipline to abandon the blind faith in markets that formed the core of their ideology.²⁴

Despite persistent critiques and challenges, the rational actor approach remains the dominant mode of analysis in corporate law.²⁵ Legal scholars, judges, and regulators continue to seek guidance from its central teachings. As its proponents frequently assert, it takes a theory to beat a theory, and thus far no other corporate law theory has garnered a stable of adherents as broad, deep, and prolific as the neoclassical law and economics school. Although behavioral law and economics has taken some wind from its sails, the behavioral approach offers more of a qualification of law and economics conclusions than an alternative comprehensive theory.²⁶

Interestingly, both traditional law and economics and the more nuanced behavioral account tend to disregard the problem that irrational or unstable actors introduce into their models.²⁷ Theorists justify this

²³See EASTERBROOK & FISCHER, *supra* note 6, at 167-174, 205-208 (explaining why a free market for corporate control is optimal and criticizing Delaware's takeover jurisprudence). For discussion of the predictive failures of the law and economics approach *see* Bratton, *supra* note 19, at 195; ALAN PALMITER & FRANK PARTNOY, *CORPORATIONS LAW AND POLICY* 432 (2d ed. 2014) (discussing how the market for corporate control does not operate as law and economics scholars had predicted).

²⁴See, e.g., Press Release, SEC, Chairman Cox Announces End of Consolidated Supervised Entities Program, (Sept. 26, 2008) (quoting SEC Chairman Christopher Cox concluding that, "[t]he last six months have made it abundantly clear that voluntary regulation does not work"); RICHARD POSNER, *A FAILURE OF CAPITALISM* xii (2009) ("We are learning . . . that we need a more active and intelligent government to keep our model of a capitalist economy from running off the rails. The movement to deregulate the financial industry went too far by exaggerating the resilience – the self-healing powers—of laissez-faire capitalism"); Edmund Andrews, *Greenspan Concedes Error on Regulation*, N.Y. TIMES (Oct. 23, 2008) (quoting Alan Greenspan's testimony before Congress that, "[t]hose of us who have looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief" and "[t]his modern risk-management paradigm held sway for decades . . . The whole intellectual edifice, however, collapsed in the summer of last year.").

²⁵See BAINBRIDGE, *supra* note 2, at 26 ("[I]t is fair to say the economic theory of the firm is now the dominant paradigm in corporate law."); STOUT, *supra* note 17, at 28-29 (describing the ascendance of the law and economics movement).

²⁶See Langevoort, *supra* note 8, at 442 (explaining that behavioral law and economics is not a very well-defined subject).

²⁷Despite the important contributions of behavioral economists, their prescriptions focus mainly on shaping the behavior of individuals whose conduct falls within a "normal"

omission by citing a need for parsimony, and with the broader assertion that instances of “unbounded” irrationality within the corporate sphere are too incidental to be accommodated in their models.²⁸ To succeed in corporate America, the thinking goes, one must be healthy psychologically. Irrational decision makers, therefore, will be screened out through the natural selection of the corporate tournament process.²⁹

This Article challenges the standard theoretical account regarding the rationality of business leaders. It reviews scholarly research that documents the presence of irrational actors among senior corporate managers and considers the impact these executives, whose degree of “irrationality” lies beyond normal bounds, might have on corporations and society. The discussion is anchored in psychological literature on how people make decisions regarding risk.³⁰

Research shows that many individuals have a dysfunctional approach to risk that leads them to engage in self-destructive conduct. By definition, these individuals do not respond to incentives in the manner that the rational actor model predicts. A non-trivial number of individuals with personality disorders that encompass risk dysfunction occupy high positions in corporations. A major study found, for example, that 4% of a sample of 200 managers from seven large companies met the clinical definition for psychopathy (a severe and destructive personality disorder), a rate four times higher than the rate among the general population.³¹ Another study of corporate managers uncovered a higher rate of certain personality disorder traits among a sample of corporate executives than they found among comparison samples of psychiatric patients and the criminally insane.³²

range. Like their cohorts in law and economics, they eschew efforts to constrain the conduct of those whose moral standards or decisional capacities lie far outside the norm.

²⁸See, e.g., BAINBRIDGE, *supra* note 2, at 23-26 (addressing objections to assumptions of rationality).

²⁹See Langevoort, *supra* note 17, at 288 (“[I]nvoking psychological traits makes the orthodox corporate scholars queasy for a variety of well-mooted reasons, including their contingent, soft, hard-to-model properties and the economists’ natural suspicion that cognitive weaknesses are weeded out in the crucible of corporate competition and thus trivial.”); POSNER, *supra* note 24, at 77 (expressing skepticism that failures of rationality among top bank executive contributed to the financial crisis).

³⁰The Article adopts the term “antisocial risk takers” to describe individuals with a propensity to act in ways that are antithetical to their own interests and the interests of society.

³¹Paul Babiak, Craig S. Neumann & Robert D. Hare, *Corporate Psychopathy: Talking the Walk*, 28 BEHAV. SCI. & L. 178-79 (2010). An additional 4.4% of managers in the sample had scores indicating a subclinical level of psychopathy, which were below the diagnostic threshold, but high enough to cause problems significant problems for their firms. *Id.* at 183-184.

³²Belinda Jane Board & Katerina Fritzon, *Disordered Personalities at Work*, 11 PSYCHOL. CRIME & L. 17, 23-25 (2005) (reporting that the mean score for business managers for the histrionic scale of a personality assessment was significantly higher than the patient

Certainly, the vast majority of corporate managers are not affected by these problems. Still, the percentage of troubled executives is not so small that we can safely ignore the implications of their presence in corporate management.³³ Nor can we take comfort in the belief that such troubled individuals could never reach the highest levels of corporate leadership. To the contrary, studies show that individuals with antisocial tendencies are overrepresented in the ranks of corporate leaders. In fact, research shows that a sub-category of so-called “successful psychopaths” may be more adept at climbing the corporate ladder than most others.

When individuals plagued by serious psychological problems manage to reach the top of corporations, they have the potential to cause significant damage. This possibility compels us to consider how policy prescriptions based on the rational actor model are likely to play out in the real world. One potential danger is that corporate governance policies that promote the pursuit of self-interest have the unintended effect of attracting individuals with antisocial traits to join the corporate workforce.³⁴ Another concern is that policies that emphasize self-interest may exacerbate antisocial tendencies among corporate employees, leading to increasingly risky and unethical corporate conduct.

This Article explores these possibilities and makes recommendations for reforms. It argues that the presence of irrational actors in corporate hierarchies undermines the soundness of certain corporate governance orthodoxies – such as the disciplining effects of incentive compensation and the tournament for corporate promotion. It identifies red flags in the personal conduct of corporate executives that suggest a dysfunctional approach to risk. Drawing on psychological research, the Article makes suggestions for how directors and investors should respond to reports of aberrant behavior by executives.

Part II surveys literature in psychology and neuroscience addressing the relationship between an individual’s personality and her propensity toward risk. It focuses analysis on antisocial risk taking, reviewing research that helps to explain why some people systematically take such risks. Part III reviews research probing the biological mechanisms that underlie financial decision making. These studies,

samples and that scores for the narcissistic scale and compulsive scale were higher, although these differences were not statistically significant).

³³Consider, for example, if the above-referenced percentages were to hold across the corporate landscape, up to 20 (4%) Fortune 500 executives would be clinical psychopaths.

³⁴PAUL BABIAK & ROBERT HARE, *SNAKES IN SUITS: WHEN PSYCHOPATHS GO TO WORK* x-xiii (2006) (explaining why psychopathic individuals may appear to be desirable job candidates); Langevoort, *supra* note 17, at 288 (“[T]raits such as over-optimism, an inflated sense of self-efficacy and a deep capacity for ethical self-deception are *favored* in corporate promotion tournaments, so that people who possess them are disproportionately represented in executive suites.”).

conducted in lab settings and with traders in the field, suggest that a moderate approach to risk correlates with investment success.

Part IV examines correlations between risk seeking conduct in an executive's personal life and reckless or illegal conduct in one's professional role. It focuses on two personality traits – narcissism and psychopathy – that researchers have linked to corporate risk taking, performance volatility, and fraud. It examines the extent to which these traits are represented among corporate managers and reviews studies that assess the impact of these traits on corporate decision-making.

Part V draws lessons for regulators, investors, and corporate officials based on current understandings of what drives people toward antisocial risk. It considers the challenges that irrational actors as corporate leaders pose for certain tenets of corporate governance theory. It discusses how directors and investors should respond to reports of reckless behavior by corporate executives. Drawing on examples of CEOs at firms destroyed by scandal, it highlights several forms of aberrant behavior that directors and investors should address to protect their firms from a downward ethical spiral.³⁵

II. RETHINKING RISK

Law and economics-based conceptions on how to best manage business risk have come to dominate corporate and financial law policy. Most contemporary corporate theorist accept as a truism that policymakers should avoid adopting legal rules that would deter managers from taking business risks.³⁶ These theorists insist that risk-averse shareholders can rely on portfolio diversification to reduce or eliminate firm-specific risk. Shareholders, therefore, should care little about the success or failure of a single firm, because losses at one firm will likely be offset by gains at other firms whose securities they hold. Managers, however, cannot diversify so easily. Their salaries, bonuses, perquisites, and stock options are all tied up in their employers' fortunes. This lack of diversification means managers are almost always more risk avoidant than shareholders would find ideal.

This chain of logic provides the primary justification for the lax liability regime for corporate officers and directors. Federal judge Ralph

³⁵See Robert Cialdini, Noah J. Goldstein & Petia K. Petrova, *The Hidden Costs of Organizational Dishonesty*, 45 MIT SLOAN MGT. REV., 67 (2004) (“[O]rganizations that behave unethically will find themselves heading down a slippery and dangerous fiscal path.”).

³⁶See, e.g., AMERICAN LAW INSTITUTE, PRINCIPLES OF CORPORATE GOVERNANCE § 7.19 (1994); Stephen M. Bainbridge, *The Business Judgment Rule as Abstention Doctrine*, 57 VAND. L. REV. 83, 110-15 (2004) (explaining that the business judgment rule benefits shareholders because it does not discourage risk taking).

Winter, a former law professor, was one of the first jurists to introduce this theory into corporate law doctrine.³⁷ In *Joy v. North*, Winter explained “because potential profit often corresponds to the potential risk, it is very much in the interests of shareholders that the law not create incentives for overly cautious decisions.”³⁸ Judges in Delaware adopted similar reasoning and began to cite the fear of dampening risk taking to defend a range of policies that are highly deferential to the authority of corporate managers.

In *Gagliardi v. TriFoods Int’l Inc.*, Delaware Chancellor William Allen asserted, “directors will tend to deviate from [the] rational acceptance of corporate risk if in authorizing the corporation to undertake a risky investment, the directors must assume some degree of personal risk relating to ex post facto claims of derivative liability for any resulting corporate loss.”³⁹ Similar reasoning appears prominently in other significant Delaware court decisions, which, over time, have dramatically narrowed the scope of directors’ fiduciary duties.⁴⁰

The law and economics school’s worshipful attitude toward risk also helped advance efforts to dismantle the financial regulatory system established by the New Deal. Theorists first asserted that impersonal trading markets could do better at pricing risk and facilitating risk management than rules set by regulators.⁴¹ They also claimed that sophisticated investors could protect themselves when taking risks and should not be burdened by paternalistic regulation. Finally, theorists argued that new financial products, including options, swaps, and

³⁷See Dalia Tsuk Mitchell, *The Import of History to Corporate Law*, 59 ST. LOUIS U. L.J. 683, 696-697 (2015) (tracing doctrinal developments).

³⁸692 F.2d 880, 886 (1982).

³⁹683 A.2d 1049 (Del. Ch. 1996).

⁴⁰See, e.g., *In re Walt Disney Co. Derivative Litig.*, 907 A. 2d 693, 698 (Del. Ch. 2005) (“Should the Court apportion liability based on the ultimate outcome of decisions taken in good faith by faithful directors or officers, those decision-makers would necessarily take decisions that minimize risk, not maximize value. The entire advantage of the risk-taking, innovative, wealth-creating engine that is the Delaware corporation would cease to exist, with disastrous results for shareholders and society alike.”); *In Re Citigroup Inc. S’holder Derivative Litig.*, 964 A.2d 106 (Del. Ch. 2009) (“To impose liability on directors for making a ‘wrong’ business decision would cripple their ability to earn returns for investors by taking business risks.”).

⁴¹See Derivative Financial Markets (Part I): Hearings before the Subcomm. on Telecommunications and Finance of the H. Comm. on Energy and Commerce, 103d Cong. 118 (1994) (testimony of Alan Greenspan, Chairman, Bd. of Gov. of the Fed. Reserve Sys.) (“There is nothing involved in federal regulation per se which makes it superior to market regulation.”); see also JOHN CASSIDY, *HOW MARKETS FAIL: THE LOGIC OF ECONOMIC CALAMITIES* 4 (2009) (summarizing Greenspan’s views on the power of free markets).

securitization, enhanced economic welfare by enabling markets to spread risk and distribute it to those most equipped to bear it.⁴²

These arguments helped support financial reform legislation that weakened regulatory constraints on risk. The Gramm-Leach-Bliley Act of 1999 demolished the Glass-Steagall wall separating commercial and investment banking. Soon thereafter, the Commodities and Futures Modernization Act of 2000 halted efforts to regulate trading in over the counter derivatives.⁴³ The same philosophy influenced new global banking standards. In the Basel II accords, bank regulators across the world agreed to defer more readily to large banks' internal risk management systems at the expense of uniform standards for capital and external oversight.⁴⁴

The policy prescriptions described above are all based on assumptions of rationality – the belief that corporate managers and investors will reasonably weigh the potential costs and benefits of their decisions and act in a manner consistent with their self-interest.⁴⁵ Despite its broad acceptance, there is not much evidence to support the core assumptions of rational actor theory.⁴⁶ Instead, a growing body of research undermines assumptions as to both the “rationality” and “selfishness” of individuals in a variety of situations.⁴⁷

More importantly, the policies recommended by rational actor theorists have failed to produce the predicted results. Rather than expertly managing risk, many of the largest and most sophisticated financial institutions failed or were rescued due to disastrous business

⁴²CASSIDY, *supra* note 41, at 13 (“the basic idea was that by putting a market price on risk and distributing it to investors willing and able to bear it these complex securities greatly reduced the chances of an economic crisis.”).

⁴³Alan Greenspan, Chairman, Bd. of Gov. of the Fed. Reserve Sys., Remarks at the Financial Markets Conference of the Federal Reserve Bank of Atlanta, Government Regulation and Derivative Contracts (Feb. 21, 1997) (“In the case of the institutional off-exchange derivatives market, it seems abundantly clear that government market regulation is quite effectively and efficiently achieving what have been identified as the public policy objectives of private regulation.”).

⁴⁴CARNELL, ET AL., *supra* note 1, at 25, 220.

⁴⁵Although law and economics theorists concede they offer only a model that is not meant to describe of how all individuals act, they claim their model provides a close enough approximation of real human behavior to serve as the basis for sweeping policy reforms. See POSNER, *supra* note 4, at 17.

⁴⁶See AKERLOFF & SHILLER, *supra* note 18, at 41-42 (“With only a small amount of evidence, but with a powerful notion of how people behave, the economists of the 1960s decided economic decisions should be viewed as based on rational behavior.”).

⁴⁷See generally *id.*; JOHN COATES, THE HOUR BETWEEN DOG AND WOLF: RISK TAKING, GUT FEELINGS AND THE BIOLOGY OF BOOM AND BUST (2012); STOUT, *supra* note 17.

decisions.⁴⁸ At the same time, purportedly sophisticated investors including banks, hedge funds, and mutual funds flocked to speculate in over-the-counter derivatives and mortgage backed securities, and then lost billions when the real estate market cratered.⁴⁹

A close examination of the factors that influence risk-related decisions helps explain why so many policies premised on the rational actor model went wrong. Despite the core assumptions of the rational actor model, research shows that our decisions regarding risk are governed by our emotions, rather than a rational thought process.⁵⁰ Furthermore, individual approaches to risk vary widely, which means that corporate governance policies are likely to impact different individual's behavior in different ways. Most importantly, some people have a dysfunctional approach to risk. These individuals are unlikely to respond to policies based on rational actor theory in the manner that theorists predict. For these reasons, policies based on the rational actor model may lead to unexpected and undesirable results.

A. Risk Taking: the Good, the Bad, and the Ugly

Corporate scholars tend to view risk taking solely as a “good” that society must encourage. As law and economics scholars Easterbrook and Fischel put it, shareholders “want managers to take projects with the highest mean returns, which may entail high risk (No pain, no gain).”⁵¹ Although this aphorism has the ring of truth, it overlooks the corollary that great risk also brings the prospect of devastating losses. Our legal system, therefore, must balance the competing objectives of encouraging reasonable risk taking while constraining irresponsible risk.

Evaluating risk taking from the perspective of its impact on society can help us discern appropriate legal policies toward risk. To this end, we can divide risk taking into three main categories: prosocial, neutral, and antisocial risk.⁵² Prosocial risks encompass some danger, but also

⁴⁸THE FINANCIAL CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT, xviii-xx (2011) (“We conclude dramatic failures of corporate governance and risk management at many systemically important financial institutions were a key cause of this crisis . . . Too many of these institutions acted recklessly, taking on too much risk . . .”).

⁴⁹See, e.g., Gregory Meyer, *CFTC Head Blames OTC Derivatives for Crisis*, FIN. TIMES (Jan. 6, 2010), <http://tinyurl.com/FT-CFTC-250111>; Sewell Chan, *Financial Crisis Was Avoidable, Inquiry Finds*, N.Y. TIMES (Jan. 25, 2011), <http://tinyurl.com/NYT-Chan>.

⁵⁰See Andrew W. Lo & Dmitry V. Repin, *The Psychophysiology of Real-Time Financial Risk Processing*, 14 J. COGNITIVE NEUROSCIENCE 323, 332 (2002) (“emotional responses are significant factors in real time processing of financial risk”).

⁵¹EASTERBROOK & FISCHEL, *supra* note 6, at 99-100.

⁵²This typology is adopted from Michael R. Levenson, *Risk Taking and Personality*, 58 J. PERS. & SOC. PSYCHOL. 1073 (1990).

offer the prospect of benefits that exceed their potential harm. Innovation, entrepreneurship, exploration, and social cooperation all require us to confront uncertainty and the possibility of monetary loss, rejection, and failure.

This positive perspective on risk helps explain the basic bargain society strikes with entrepreneurs and investors. Limited liability for corporate shareholders allows those with new ideas and others willing to fund them to protect their personal assets from creditors in the event the venture fails. Similarly, the business judgment rule protects directors from liability when well-considered business decisions turn out badly. Heroism is another form of prosocial risk taking where an individual exposes himself to danger in an effort to help others. A firefighter who rushes into a burning building or a Good Samaritan who assists an accident victim does not focus on how he might benefit from his actions.

Another form of risk taking, often conflated with heroism, is neutral from a societal perspective. Adventurous risk seekers such as rock climbers and skydivers seem to court danger for the thrills it brings. These adventurous risk takers, who are usually careful to prepare and exercise precautions, do not act help others. Still, their behavior rarely poses a threat to outsiders.

When cast as heroism, entrepreneurship, or adventurousness, risk taking is viewed in a positive light. The positive aspects of risk taking begin to fade when the pursuit of risk takes a pathological turn. At this point, the potential benefits of risk taking are far outweighed by their potential costs. For this reason, society generally seeks to discourage these kinds of risks.

Common forms of antisocial risk taking include cigarette smoking, substance abuse, and compulsive gambling; conduct that threatens to harm both the risk taker and innocent others. Although these divergent forms of antisocial risk taking are not always connected in the public mind, psychologists and neuroscientists believe they are all rooted in biological mechanisms centered in the pleasure centers in the brain. Research also shows that a propensity toward impulsivity correlates with substance abuse, gambling, financial risk taking, and other forms of antisocial conduct.⁵³

⁵³For summaries of research on impulsivity and risk taking, *see generally* IMPULSIVITY: THE BEHAVIORAL AND NEUROLOGICAL SCIENCE OF DISCOUNTING (Gregory J. Madden & Warren K. Bickel eds. 2009); MARVIN ZUCKERMAN, BEHAVIOR EXPRESSIONS AND BIOSOCIAL BASES OF SENSATION SEEKING (1994).

B. *Impulsivity and Antisocial Risk Taking*

Neuroscience research provides some insights into what lies behind the darker side of risk. Psychologists have found antisocial risk taking correlates closely with a trait called impulsivity. Psychologists define impulsivity as “a tendency to act on whim and, in so doing, disregard a more rational long-term strategy for success.”⁵⁴ There is, for example, substantial evidence that individuals who suffer from substance abuse or gambling problems have a consistent tendency to pursue large gains while irrationally disregarding the risk of higher offsetting losses. These antisocial risk takers systematically make disadvantageous choices in lab administered gambling tasks, when compared to controls. Substance abusers and gambling addicts also tend to discount future rewards and losses more significantly than controls.

Psychologists believe that one’s propensity toward risk is not limited to one life domain, but instead represents a more deep-seated deficit in impulse control.⁵⁵ These researchers view impulsivity as a trait, “a persistent tendency to behave in an impulsive manner.”⁵⁶ Risk seeking pathologies manifest in behavior such as substance abuse, gambling, overspending, and other problematic conduct including dishonesty, crime, and the failure to comply with social norms.

1. The Iowa Gambling Task

Experts in impulsivity hypothesize that antisocial behavior such as gambling and substance abuse manifests “an underlying disorder of impulse control.”⁵⁷ In studies, substance abusers consistently make more irrational choices than controls on the Iowa Gambling Task. In these studies, subjects play a gambling game in which they choose from four decks of cards with varying probabilities for winning money and incurring losses.⁵⁸ Two decks of cards offer participants occasional large

⁵⁴Gregory Madden & Patrick Johnson, *A Delay Discounting Primer*, in *IMPULSIVITY: THE BEHAVIORAL AND NEUROLOGICAL SCIENCE OF DISCOUNTING*, *supra* note 53, at 11.

⁵⁵See ZUCKERMAN, *supra* note 53, at 225 (“There is considerable evidence for the concept of an ‘addictive personality’”).

⁵⁶See Leonard & Joel Myerson, *Experimental and Correlational Analyses of Delay and Probability Discounting*, in *IMPULSIVITY: THE BEHAVIORAL AND NEUROLOGICAL SCIENCE OF DISCOUNTING*, *supra* note 53, at 68.

⁵⁷See Nancy M. Petry & Gregory J. Madden, *Discounting and Pathological Gambling*, in *IMPULSIVITY: THE BEHAVIORAL AND NEUROLOGICAL SCIENCE OF DISCOUNTING*, *supra* note 53, at 275.

⁵⁸For a more detailed description of the Iowa Gambling Task, see Antoine Bechara et al., *Differential Contributions of Human Amygdala and Ventromedial Prefrontal Cortex to Decision Making*, 19 *J. NEUROSCIENCE* 5473, 5474-75 (1999).

monetary rewards, but are stacked against the players due to occasional substantial losses. The two other decks offer smaller rewards, but are ultimately more profitable because low probability losses are also smaller.

When compared to controls, substance abusers and problem gamblers choose from the high risk/high loss deck more frequently and persistently.⁵⁹ Behavioral differences on the gambling task were more pronounced when subjects abused more than one substance (such as alcohol and drugs) and among substance abusers who also suffered from a gambling disorder.⁶⁰ A recent meta-analysis of 63 studies using the Iowa Gambling Task found that decision making is impaired by a range of clinical conditions including anxiety, substance abuse, gambling disorders, depression, and personality disorders.⁶¹

2. Delay Discounting

In addition to making more irrational choices on the Iowa Gambling Task, problem gamblers and substance abusers also tend to discount future gains and losses more steeply than controls.⁶² In delay discounting studies, subjects choose between receiving a sum of money (such as \$1,000) in the future and accepting a smaller amount immediately.⁶³ The indifference point, or the dollar amount at which a subject will opt for an immediate reward over a later larger sum, differs from person to person. Delay discounting studies show that substance abusers and problem gamblers have higher rates of delay discounting than do controls.⁶⁴

In these studies, substance abusers and gambling addicts have lower indifference points than non-users and indifference points vary with the severity of addiction.⁶⁵ Subjects with more than one addiction disorder showed even higher rates of delay discounting. Taken as a

⁵⁹Petry & Madden, *supra* note 57, at 278.

⁶⁰*Id.* at 278.

⁶¹See Dahlia Mukherjee & Joseph W. Kable, *Value-Based Decision Making in Mental Illness: A Meta-Analysis*, 2 CLINICAL PSYCHOL. SCI. 767 (2014), available at <http://tinyurl.com/14-CLPSY-MK>.

⁶²Richard Yi et al., *Delay Discounting and Substance Abuse*, in IMPULSIVITY: THE BEHAVIORAL AND NEUROLOGICAL SCIENCE OF DISCOUNTING, *supra* note 53, at 191, 192. For a recent review of delay discounting literature, see Amy L. Odum, *Delay Discounting: Trait Variable?*, 87 BEHAV. PROCESSES 1, 1 (2011) (“Delay discounting is of growing interest because of its relation to a number of socially important problems”).

⁶³See Petry & Madden, *supra* note 57, at 29-30 (describing delay discounting studies and methodologies).

⁶⁴Yi et al., *supra* note 62, at 193; Petry & Madden, *supra* note 57, at 279.

⁶⁵Yi et al., *supra* note 62.

whole, delay discounting studies suggest that “pathological gambling and substance abuse disorders lie along a continuum of delay discounting,” and that “moderately high rates of discounting may be a risk factor for developing a problem with either drugs or gambling.”⁶⁶

C. The Biological Basis for Risk Taking

Neuroscientists have focused on dopamine as a neurotransmitter that plays a key role in the development of addiction.⁶⁷ Studies show that addictive stimuli such as sugar, food, alcohol, and cocaine all affect the brain by creating a surge of dopamine in the nucleus accumbens, creating a pleasant sensation that reinforces the activity associated with the stimulus.⁶⁸ The same brain mechanisms that influence one’s propensity to addiction also influence one’s approach to financial risk. Neuroimaging studies show that the nucleus accumbens, the brain region activated by stimulant drugs like cocaine, responds similarly to the opportunity to win financial rewards.⁶⁹ Taken together, these studies suggest that various types of risk seeking behavior have a common biological basis.

In addition, our propensities toward risk seem to be inherited. Genes that control dopamine processing have been linked to various forms of risk seeking behavior.⁷⁰ Specific dopamine receptor genes have been linked to an increased risk for substance abuse, gambling problems, sensation seeking, and ADHD.⁷¹ The genetic traits associated with these disorders also seem to influence an individual’s approach to financial risk.⁷²

⁶⁶Petry & Madden, *supra* note 57, at 280-81; *see also* Odum, *supra* note 62, at 6 (noting that “a person who is relatively impulsive in one situation may tend to be relatively impulsive in other situations”).

⁶⁷*See* Nora D. Volkow et al., *Beyond Dopamine Reward Circuitry*, 108 PNAS 15037, 15037 (2011); Marvin Zuckerman & D. Michael Kuhlman, *Personality and Risk-Taking: Common Biosocial Factors*, 68 J. PERSON. 999, 1024 (2000).

⁶⁸COATES, *supra* note 47, at 148 (noting that food, sex, nicotine, cocaine, and amphetamines all raise dopamine levels in animals); DAVID J. LINDEN, *THE COMPASS OF PLEASURE* 43-46 (2011).

⁶⁹Joshua W. Buckholtz et al., *Mesolimbic Dopamine Reward System Hypersensitivity in Individuals with Psychopathic Traits*, 13 NATURE NEUROSCIENCE 419, 419-20 (2010).

⁷⁰*See* Camelia M. Kuhnen & Joan Y. Chiao, *Genetic Determinants of Financial Risk Taking*, 4 PLOS ONE 1 (2009) (individuals with the “7-repeat allele [of the DRD4 gene] have higher novelty seeking scores than those with other DRD4 variants and are more likely to be pathological gamblers”).

⁷¹*See infra* note 91.

⁷²*See infra* text at notes 91- 95.

1. The Biological Underpinnings of Substance Abuse

Although we tend to view addiction as a sign of personal failings, neuroscientists and psychologists have come to regard addiction as a biological disorder.⁷³ The biological model of addiction posits that certain individuals are susceptible to addiction based on how the brain responds to the anticipation of rewards. More specifically, the brain pathways involved in processing dopamine seem to play an important role in the development of addiction.

As neuroscientists explain it, experiences that cause the ventral tegmental area of the brain to release dopamine to the nucleus accumbens are experienced as pleasurable and motivate a desire to repeat the experience.⁷⁴ An addict becomes driven to pursue the feeling of euphoria provided by the dopamine burst, despite the risk of losing many other things he values. With additional exposure to a stimulus like cocaine, the dopamine surge begins to drift forward in time, so that the surge comes upon exposure to cues associated with the stimulus, rather than the stimulus itself.⁷⁵ At the same time that dopamine release drifts forward in time, the pleasure associated with the stimulus begins to fade.⁷⁶ A larger dose of the drug is required to prompt a similar feeling of pleasure. As dependence develops into addiction, the brain structure begins to change as dopamine release dwindles with each exposure to the drug.⁷⁷

To illustrate, consider a young professional who associates cocaine with the pulsing lights and music of his favorite nightclub, where he first began to use cocaine as a recreational drug. Over time, the club music or the downtown area where he parties can prompt a craving for cocaine. After several months of partying, he finds that he does not enjoy cocaine as much, but the urge to use remains strong. He needs to use increasing amounts of cocaine just to feel normal.⁷⁸

⁷³See Martha J. Farah, *Neuroethics: The Ethical, Legal and Societal Impact of Neuroscience*, 63 ANN. REV. PSYCHOL. 571, 586 (2012) (stating that as a result of neuroscience research, addiction is now viewed “more as a medical problem than a failure of moral responsibility.”).

⁷⁴LINDEN, *supra* note 68, at 43.

⁷⁵Volkow et al., *supra* note 67, at 15039-40 (finding increased dopamine activity in addicts on exposure to drug cues, rather than the administering of drugs); COATES, *supra* note 68, at 150 (“Dopamine provides not a reward but a craving for the triggering stimulus, be it information, food, sex or drugs”).

⁷⁶COATES, *supra* note 47, at 138 (“The really powerful motivation is now the craving of the drug rather than the pleasure it provides.”).

⁷⁷LINDEN, *supra* note 68, at 53, 61.

⁷⁸ZUCKERMAN, *supra* note 53, at 230 (“the drug abuser is first motivated by curiosity, then by pleasure and finally by the need to avoid pain and feel normal”).

Of course, most people who drink alcohol or try other addictive substances do not become addicts.⁷⁹ Many people drink or use drugs occasionally, yet avoid the trap of addiction.⁸⁰ Although researchers remain puzzled over what distinguishes potential addicts from casual users and abstainers, most experts believe the risk for addiction is determined in part by a person's biological makeup.

The fact that substance abuse runs in families provides one indication of a genetic basis for addiction.⁸¹ In addition, genetic studies of twins show that up to 60% of the variability in the incidence of addiction is attributable to heritable factors.⁸² Scientists have identified genes that control dopamine processing that contribute to the risk for addiction. One subtype of a dopamine receptor gene correlates with alcoholism and other forms of abuse.⁸³ The form of alcoholism associated with this gene subtype is a stubborn form of addiction that tends to begin in adolescence and is more prone to relapse after multiple attempts to quit.⁸⁴

2. The Biological Roots of Problem Gambling

Like substance abuse, research suggests that a propensity toward problem gambling is in part biologically determined. Problem gamblers are more likely than others to suffer from alcoholism, drug addiction, and other forms of substance abuse.⁸⁵ In addition, neuroimaging studies show that gambling activates the nucleus accumbens, the same brain region activated by sugary food or stimulant drugs.⁸⁶ Scientists have therefore concluded that pathological gambling is another form of

⁷⁹Volkow et al., *supra* note 67, at 15037 (explaining that only a small percentage of individuals exposed to drugs will become addicted).

⁸⁰LINDEN, *supra* note 68, at 49-50 (reporting that about 80% of those who try cigarettes, 35% of those who try heroin, 22% of those who try cocaine, 8% of those who try marijuana, and 4% of those who try alcohol become addicted).

⁸¹*Id.* at 64.

⁸²See Mary Jeanne Kreek et al., *Genetic Influences on Impulsivity, Risk Taking, Stress Responsivity and Vulnerability to Drug Abuse and Addiction*, 11 NATURE NEUROSCIENCE 1450 (2005) ("Family and twin epidemiological studies show that genes contribute to the vulnerability to addictive disease, with estimates of heritability of 30-60%.")

⁸³LINDEN, *supra* note 68, at 64-65 (discussing the link between the A1 variant of the DRD2 dopamine receptor gene and the risk of addiction).

⁸⁴*Id.*; Ernest P. Noble, *The DRD2 Gene in Psychiatric and Neurological Disorders and Its Phenotypes*, 1 PHARMACOGENOMICS 309, 309 (2000) (finding that there is significantly higher frequency and prevalence of the DRD2 A1 allele in alcoholics).

⁸⁵LINDEN, *supra* note 68, at 130 (reporting that the rate of alcoholism among compulsive gamblers is ten times higher than the general population and that the rate of tobacco use is six times higher).

⁸⁶*Id.* at 127.

addiction with roots in the biochemical pathways of the brain.⁸⁷ According to this account, the anticipation of monetary rewards and the associated uncertainty prompt the release of dopamine to the nucleus accumbens, bringing a feeling of momentary euphoria accompanied by the urge to gamble.⁸⁸

As with other forms of addiction, a genetic basis exists for compulsive gambling. Like substance abuse, problem gambling tends to run in families and twin studies point to genetic factors contributing roughly 35-55 percent to the variance in the incidence of problem gambling.⁸⁹ Genes identified as contributing to substance abuse are also associated with an increased risk for pathological gambling.⁹⁰ When one also considers the co-morbidity of substance abuse and gambling, it is likely that a common biological profile lies at the root of both forms of addiction.

III. THE SCIENCE OF FINANCIAL RISK TAKING

Neuroscientists working in lab settings and in the field have begun to explore the brain mechanisms underlying financial decision-making. These scientists have identified neurotransmitters and naturally occurring hormones that influence our approach to financial risk. Scientists have also identified several genes that contribute to financial risk taking.⁹¹ These same genes have been found to contribute to the susceptibility to substance abuse, problem gambling, and other forms of antisocial conduct.

From these studies it appears that the rational actor model fails to capture the complexity surrounding decisions regarding risk.⁹² Indeed,

⁸⁷See Luke Clark et al., *Pathological Choice: The Neuroscience of Gambling and Gambling Addiction*, 33 J. NEUROSCIENCE 17617, 17619 (2013) (stating that dopamine has been a prime candidate for investigations of neurochemical abnormalities in pathological gamblers given its established roles in both drug addiction and rewarded behavior).

⁸⁸*Id.*; LINDEN, *supra* note 68, at 137 (hypothesizing based on animal experiments that “we are hardwired to get a pleasure buzz from risky events.”).

⁸⁹See Daniella S.S. Lobo & James L. Kennedy, *The Genetics of Gambling and Behavioral Addictions*, 11 CNS SPECTRUM 931, 934 (2006); Nancy M. Petry, *Gambling and Substance Use Disorders: Current Status and Future Directions*, 16 AM. J. ADDICTIONS 1 (2007); Seth A. Eisen et al., *Familial Influences on Gambling Behavior: An Analysis of 3359 Twin Pairs*, 93 ADDICTION 1375, 1380 (1998).

⁹⁰Kreek et al., *supra* note 82, at 1453; Kuhnen & Chiao, *supra* note 70, at 1.

⁹¹See Anna Dreber et al., *The 7R Polymorphism in the Dopamine Receptor D4 Gene (DRD4) is Associated with Financial Risk Taking in Men*, 30 EVOLUTION & HUM. BEHAV. 85, 86 (2009); Kuhnen & Chiao, *supra* note 70, at 1.

⁹²COATES, *supra* note 47, at 31-36; Camelia M. Kuhnen & Brian Knutson, *The Neural Basis of Financial Risk Taking*, 47 NEURON 763, 768 (2005) (suggesting “that

risk-related decisions are influenced both by our biology and our environment, which sometimes guide us toward irrationality. In addition, the same biological factors that contribute to antisocial risk taking seem to influence decisions to take financial risks.⁹³ Taken as a whole, the bulk of neuroscience research suggests that risk taking *per se* does not correlate with investment success.⁹⁴ Instead, research links biological markers consistent with a moderate approach towards risk to long-term investment success.⁹⁵

A. Lab Studies

Neuroscience studies of financial decision-making focus on the dopamine reward system, the same brain pathway linked to substance abuse and other forms of risk seeking behavior.⁹⁶ These studies show that the nucleus accumbens is activated preceding risky decisions, such as a decision to buy stock.⁹⁷ In contrast, a risk averse decision, such as purchasing a bond, is preceded by activation of the anterior insula – a brain region associated with the anticipation of adverse events.⁹⁸ Researchers, thus, conclude that anticipation of reward or gain activates the nucleus accumbens and motivates risk taking, while the anticipation of loss indicated by activation of the anterior insula motivates risk averse decisions.⁹⁹

As with the tendency toward addiction, to some extent our investment preferences are biologically determined. Studies show that roughly 25% of the variation in financial risk preferences is attributable to inheritable factors and that genes play a role in predicting investment success.¹⁰⁰ Scientists have identified a variation of a dopamine receptor

neuroeconomics research may foster a more comprehensive theory of individual decision making than the rational actor model”).

⁹³See Buckholtz et al., *supra* note 69, at 419-20.

⁹⁴Steve Sapa, Laura E. Beavin & Paul J. Zak, *A Combination of Dopamine Genes Predicts Success by Professional Wall Street Traders*, 7 PLOS ONE 1, 5 (2012) (“[S]uccessful traders in our sample weigh risk and reward, rather than taking excessive risks.”).

⁹⁵*Id.* at 1.

⁹⁶Kuhnen & Knutson, *supra* note 92, at 763; Dreber et al., *supra* note 91, at 86 (stating that risk preferences may be influenced by dopamine pathways in the brain). Researchers have also investigated the role of serotonin transporter genes, the MOA-A gene and the COMT gene in financial risk taking. *Id.*

⁹⁷Kuhnen & Knutson, *supra* note 92, at 765.

⁹⁸*Id.*

⁹⁹See *id.* at 766; Brian Knutson & Gregory Samanez-Larkin, *Brain, Decision and Debt*, in *A DEBTOR WORLD: INTERDISCIPLINARY PERSPECTIVES ON DEBT* 167 (R. BRUBAKER ET AL. eds. 2012).

¹⁰⁰Sapa et al., *supra* note 94, at 1 (twin studies show that “29% of the variation in the decision to invest in stocks is attributed to genetics” and “25% of portfolio risk is due to one’s genes”).

gene that correlates with financial risk taking. A study of Harvard University students found that subjects with the specified type of dopamine receptor gene invested more money in risky assets in a lab administered investment task than did controls.¹⁰¹ In a similar study of Northwestern University students, subjects with the same gene variation were more likely than controls to make risky investment choices in lab-based investment tasks.¹⁰²

Taken together, neuroscience studies of risk taking suggest that optimal financial decision-making requires dopamine levels sufficient to motivate a person to take financial risks. At excessive levels, however, dopamine appears to contribute to irrational and destructive risk-seeking behavior. Additional studies of traders in the field lend support to this conclusion regarding the value of moderation in investing.

B. *Field Studies*

Recent field studies of traders shed light on the biological traits that contribute to investment success. In these studies, biomarkers that correlate with moderately high levels of dopamine also correlated with better financial performance. At the same time, high levels of the stress hormone cortisol were associated with irrational risk aversion. Levels of these endogenous hormones fluctuate naturally in the human body, influenced both by one's environment and one's emotional state in a synergistic feedback loop.

1. London Traders

Neuroscientist and former trader John Coates and his colleagues conducted several of studies of high-frequency traders in London. They found that higher levels of circulating testosterone in male traders correlated with better short-term trading performance.¹⁰³ In the study, traders who performed well, earning above-average profits on a particular day, began the next day with significantly higher testosterone

¹⁰¹Dreber et al., *supra* note 91, at 89 (finding that subjects with a 7-repeat allele of the DRD4 gene made more risky investment choices).

¹⁰²Kuhnen & Chiao, *supra* note 70, at 3 (reporting the same result for subjects with 7-repeat DRD4 gene). The authors also found that subjects with two short alleles of the serotonin transporter gene (S-HTTLPR) were more likely to make risk averse investment choices. The serotonin transporter gene contributes to mood regulation and individuals with two short alleles are more prone to anxiety and depression.

¹⁰³J.M. Coates & J. Herbert, *Endogenous Steroids and Financial Risk Taking on a London Trading Floor*, 16 PNAS 6167 (2008); see also Coren L. Apicella et al., *Testosterone and Financial Risk Preferences*, 29 EVOLUTION AND HUMAN BEHAV. 384, 387 (2008) (finding that high testosterone levels correlated with risk taking in a laboratory setting).

levels. These higher morning testosterone levels, in turn, correlated with higher average trading returns for that afternoon. According to Coates, testosterone and dopamine “work synergistically, with testosterone achieving its exciting effects largely by increasing dopamine in the nucleus accumbens.”¹⁰⁴ The authors interpreted testosterone’s impact on trader’s activities as “optimizing performance,” rather than encouraging risk.¹⁰⁵

Coates’s findings are consistent with research in animals and human athletes which suggests the existence of a “winner effect” in physical competitions, in which the winner of a contest or fight experiences an increase in circulating testosterone which translates into increased confidence, improved cognitive and physical performance, and increased risk-taking. The pumped-up competitor goes on to win future contests and creates a feedback loop of wins, increased confidence, and further competitive advantages.¹⁰⁶

There are, however, limits to the “winner effect” – a proverbial “sweet spot” beyond which higher levels of circulating testosterone become destructive by encouraging overconfidence, hyper-aggression, and recklessness.¹⁰⁷ In animal studies, as testosterone levels rose beyond this optimal point, competitors became overconfident, picked more fights, and engaged in other aggressive actions that led to increased risk of injury or death.¹⁰⁸

In addition to studying how the traders’ testosterone levels varied with investment results, Coates examined the impact of the stress hormone cortisol on traders’ risk taking propensities. In lab studies, high

¹⁰⁴COATES, *supra* note 47, at 163.

¹⁰⁵John M. Coates et al., *From Molecule to Market: Steroid Hormones and Financial Risk-Taking*, 365 PHIL. TRANS. R. SOC’Y. B., 331, 336 (2010).

¹⁰⁶Booth et al., *Testosterone, and Winning and Losing in Human Competition*, 23 HORMONE BEHAV. 556 (1989). The “winner effect” has also been observed in sports fans. In one study, fans of a winning soccer team experienced higher testosterone levels, while fans of the losing team experienced a drop in testosterone levels. P.C. Bernhardt et al., *Changes in Testosterone Levels During Vicarious Experiences of Winning and Losing Among Fans at Sporting Events*, 65 PHYSIOL. BEHAV. 59 (1998); see also Coates et al., *supra* note 105, at 339-40.

¹⁰⁷COATES, *supra* note 47, at 192 (“Biologists have found that the effects of testosterone on risk taking among animals display the same [inverted-U shaped] dose-response curve that we have encountered before”).

¹⁰⁸As Coates explains it, “[a]t low levels of testosterone an animal will lack motivation, arousal, energy, speed and so on, but as testosterone levels rise, so too does the animal’s performance in competition and fights. When testosterone reaches its highest point on the curve the animal enjoys optimal performance . . . However, should testosterone continue to rise, the animal begins to slide down the other side of the hill, and its risk taking becomes increasingly foolish . . . At some point, as testosterone builds up in these animals, confident risk taking morphs into overconfidence and rash behavior.” *Id.* Coates also notes similar effects of elevated testosterone on male athletes. Coates, *supra* note 105, at 338.

levels of cortisol correlate with risk aversion.¹⁰⁹ Coates found that the cortisol levels of traders rose during periods of stock price volatility, when it became difficult to predict price movements.¹¹⁰ He theorized that chronically elevated cortisol levels, which could exist during prolonged periods of market volatility, might interfere with rational decision making. As traders' cortisol levels rise, it could impair trading performance by promoting an irrational level of risk aversion.¹¹¹

Coates's findings on the correlation between hormone levels and trading results become all the more intriguing when interpreted against the backdrop of studies in animals and humans which show that hormones and neurotransmitters associated with risk taking and caution all reach a point of diminishing returns. At some point, the benefits associated with higher levels of the biomarker shift and correlate instead with diminished performance on physical or cognitive tasks. For example, the stress hormone "cortisol displays an inverted-U shaped dose-response curve, according to which performance on a range of cognitive and behavioural tasks is optimized at moderate levels, while being impaired at lower and higher levels."¹¹²

Just as moderate levels of cortisol correlate with optimal physical and cognitive performance, researchers have found the same inverted-U shaped curve for testosterone and dopamine, both of which are associated with competition, aggression, risk-taking, and other forms of reward seeking behavior.¹¹³ Taken together, this research reinforces the

¹⁰⁹COATES, *supra* note 47, at 224; S.J. Lupien et al., *The Effects of Stress Hormones on Human Cognition: Implications for the Field of Brain and Cognition*, 65 BRAIN COGNITION 209 (2007).

¹¹⁰Coates & Herbert *supra* note 103, at 6169; *see also* Narayanan Kandasamy et al., *Cortisol Shifts Financial Risk Preferences*, 111 PNAS 3608 (2014)(reporting similar effects of elevated cortisol in a laboratory-based study).

¹¹¹Coates et al., *supra* note 105. In another study, Coates and his colleagues examined the second to fourth finger digit length ratio of the London traders. Coates found that traders with a lower second to fourth finger digit length ratio had better performance in short term trading than a comparable sample. John M. Coates, Mark Gurnell & Aldo Rustichini, *Second-to-Fourth Digit Ratio Predicts Success Among High-Frequency Financial Traders*, 106 PNAS 623, 624 (2009). The second to fourth digit ratio is thought to be a biomarker for prenatal circulating testosterone. Levels of prenatal testosterone have an organizing impact on the brain and seem to lead to advantages later in life in both physical and cognitive tasks. COATES, *supra* note 47, at 188; John Manning & R. Taylor, *Second to Fourth Digit Ratio and Male Ability in Sport: Implications for Sexual Selection in Humans*, 22 EVOLUTION HUMAN BEHAVIOR 61 (2001).

¹¹²Coates et al., *supra* note 105, at 338-39; *see also* Lupien et al., *supra* note 109.

¹¹³*See* COATES, *supra* note 47, at 192; Sapra et al., *supra* note 94, at 2; Dustin Wahlstrom et al., *Developmental Changes in Dopamine Transmission in Adolescence: Behavioral Implications and Issues in Assessment*, 72 BRAIN AND COGNITION 146, 151 (2010) ("[E]vidence suggests that dopamine transmission occurs within a small window of optimal functioning, whereby both excessive and deficient levels of dopamine impair behavioral performance . . . [B]oth animal and human data indicate that the relationship between

notion that moderation is the key to success in investing. Being too cautious (heightened cortisol) or too risk seeking (heightened testosterone and dopamine) can lead to mistakes.

2. Wall Street Traders

Another field study of traders reinforces Coates's finding by showing that genes associated with moderately high levels of dopamine correlated with long-term investment success. Steve Sapra and his colleagues assessed the genetic profiles of long-time Wall Street traders working at five different financial firms. Applying logistic regression analysis, they found that certain genes associated with risk taking correlated with investment success.¹¹⁴ Sapra and his colleagues focused on genes affecting dopamine transmission.¹¹⁵ They found that traders with a combination of genes associated with intermediate dopamine levels were more successful, as measured by the length of their tenure on Wall Street.¹¹⁶

Sapra and his colleagues also assessed the personalities of the traders and found that successful traders "were good at integrating disparate pieces of information, eschewed trading in volatile markets and did not view the world as threatening their survival."¹¹⁷ The authors therefore advise that it may be a mistake to focus on "risk-taking and competitive behaviors when hiring traders."¹¹⁸ Their research suggested that neither taking nor avoiding risks correlates with investment success. Instead, "a balanced level of risk appears to be optimal."¹¹⁹

C. The Wisdom of Moderation

To sum up, psychologists and neuroscientists have concluded that, to some extent, the propensity toward risk is a stable personality trait determined in part by biological differences.¹²⁰ Researchers have further determined that impulsivity, characterized by steeply discounting the

dopamine availability and cognitive performance is characterized by an inverted-U shaped function.").

¹¹⁴Sapra et al., *supra* note 94, at 1.

¹¹⁵*Id.* The researchers focused on the DRD4 gene, the MOA-A gene, and the COMT gene, which produces an enzyme that breaks down dopamine.

¹¹⁶*Id.* at 5. A combination of the *LL variant of the* DRD4P gene and the high activity COMT gene correlated with greater longevity in the profession.

¹¹⁷*Id.* at 6.

¹¹⁸*Id.*

¹¹⁹*Id.*

¹²⁰*See* Odum, *supra* note 62, at 7 (assessing the evidence of impulsivity as a stable personality trait).

long term costs and benefits of a decision, correlates with a propensity for antisocial risk. Several studies link risky choices in lab settings with problematic behavior such as compulsive gambling and substance abuse. Furthermore, researchers have identified genes that correlate with alcohol abuse, problem gambling, and other forms of impulsive novelty-seeking behavior.¹²¹ One of these genes, the 7-repeat allele of DRD4 gene, also correlates with financial risk taking in lab settings.¹²²

These investigations into the neurological mechanisms behind financial decision-making suggest that moderation and flexibility are the keys to investment success. The genes and endogenous hormones associated with risk-taking, openness, and caution all eventually reach a point of diminishing returns where the favored or adaptive trait becomes dysfunctional. That is, testosterone, dopamine, and cortisol all have an inverted-U shaped relationship with skills and traits that correlate with investment success and, more broadly, success in competitive endeavors.¹²³

These findings comport with common sense. We are all aware that boldness, brashness, and drive can help a person get ahead, but such qualities can lead to trouble if not balanced by cognitive flexibility, the ability to shift gears, the capacity for introspection, and a measure of self-control.¹²⁴ To date, the bulk of research in economic neuroscience suggests that a successful investor must be willing to embrace risk, but must be equally cognizant of the need to pull away. Success requires not only a willingness to take risks, but the ability to remain alert to new stimuli and change course quickly in response to new or discordant information. In short, being excessively risk seeking or excessively cautious are both associated with investment mistakes.¹²⁵

¹²¹Kuhnen & Chiao, *supra* note 70, at 3 (describing the relationship between genetics and novelty-seeking behavior).

¹²²*Id.*; Sapra et al., *supra* note 94, at 2.

¹²³Sapra et al., *supra* note 94, at 2 (“levels of synaptic dopamine have an inverted-U relationship with several cognitive abilities as shown by both animal and human data”); COATES, *supra* note 47, at 189 (testosterone); Lupien, *supra* note 109, at 220 (cortisol).

¹²⁴*See* Langevoort, *supra* note 17, at 302-03 (“What is sought [in corporate executives], presumably, is some element of balance and self-discipline”).

¹²⁵Kuhnen & Knutson, *supra* note 92, at 767 (“financial decision making may require a delicate balance - recruitment of distinct circuits may be necessary for taking or avoiding risks, but excessive activation of one mechanism or the other may lead to mistakes.”); Sapra et al., *supra* note 94, at 6 (“Having too little or too much risk-aversion is not associated with success by those in our sample; rather taking a balanced level of risk appears to be optimal.”).

IV. CORPORATE LEADERSHIP AND RISK

A. *Risk and Personality*

Thus far, we have seen that individual attitudes toward risk vary, and that one's approach to risk seems to influence the quality of one's decisions. For example, antisocial risk takers perform sub-optimally on decision-making tasks when compared to controls.¹²⁶ Antisocial risk seekers are also more prone to engage in illegal or unethical behavior. One study that assessed the personalities of different categories of risk takers found that antisocial risk takers (represented by substance abusers) had higher scores for psychopathy - an antisocial personality dimension - than the heroic or adventurous risk takers who participated in the study.¹²⁷ In another study, college students with elevated scores for antisocial/impulsive traits had heightened brain responses both to stimulant drugs and to the opportunity to win financial rewards in a lab-administered task.¹²⁸

Conventional corporate law theory maintains that corporate hiring and promotion practices will filter out persistently irrational individuals before they can cause significant harm to their firms. Despite this conventional belief, research suggests that the business world offers an attractive environment for individuals with a high level of antisocial traits. Numerous studies have found, for example, that business students are less pro-socially oriented than peers studying in other fields and display higher levels of narcissistic traits.¹²⁹ Other studies have found that individuals with higher economic status (a category that includes

¹²⁶See *supra* text at notes 53-61.

¹²⁷See Levenson, *supra* note 52, at 1074, 1078. In the study, pro-social risk takers were represented by public servants who had been recognized for heroic action in the line of duty. Adventurous risk takers were represented by recreational rock climbers who had achieved a high level of skill and antisocial risk takers were represented by substance abusers who had been convicted of serious crimes and were in residential treatment at the time.

¹²⁸Buckholtz et al., *supra* note 69, at 420.

¹²⁹See Stephan Meier & Bruno S. Frey, *Do Business Students Make Good Citizens?* 11 INTL. J. ECON. BUS. 141, 141-42 (2004); Lennart Sjoberg & Elisabeth Engelberg, *Attitudes to Economic Risk Taking, Sensation Seeking and Values of Business Students Specializing in Finance*, 10 J. BEHAV. FIN. 32, 40 (2009) (finding finance students in Sweden were "high in economic risk taking and gambling, low in money importance and concern, high in sensation seeking and success orientation, relatively high in emotional intelligence in comparison with other students, and low in altruistic values."); W. Keith Campbell et al., *Narcissism in Organizational Contexts*, 21 HUMAN RES. MGT. REV. 268, 273 (2011) (citing studies finding that business majors are characterized by a higher level of narcissism than their fellow students).

most business executives) behave less ethically in a range of contexts than those with a lower social stature.¹³⁰

More pointedly, surveys of financial professionals reveal the common perception that illegal or unethical activity is rampant in their field.¹³¹ In these surveys, a significant percentage of employees working at financial firms reported witnessing or having firsthand knowledge of illegal or unethical conduct.¹³² A significant percentage also believed that unethical conduct is sometimes necessary for success in the field.¹³³ This attitude extended to high-level executives. For example, more than half of those surveyed earning at least \$500,000 annually reported believing “it [is] likely that their competitors have engaged in unethical or illegal activity in order to gain an edge in the market.”¹³⁴

Taken together, research on the attitudes and behavior of both aspiring corporate executives and financial professionals challenges the core assumptions of rational actor theory. It suggests that many corporate executives may be more prone to reckless risk taking than rational actor theory predicts. Additional research lends credence to these suspicions by documenting the presence of individuals with antisocial tendencies at high levels of corporate management, and linking these troubling personality traits to high-risk corporate strategies and fraud.

B. CEO Personality and Fraud

Recently, scholars have theorized that CEO personality was a contributing factor in major corporate frauds.¹³⁵ Accounts of the

¹³⁰Paul K. Piff et al., *Higher Social Class Predicts Increased Unethical Behavior*, 109 PNAS 4086, 4086 (2012) (describing seven studies finding that upper-class individuals behaved more unethically than lower-class individuals in contexts including driving, taking goods from others, lying, cheating to win a prize, and behaving unethically at work).

¹³¹See University of Notre Dame & Labaton & Sucharow LLP, *The Street, The Bull and The Crisis, A Survey of the US and UK Financial Services Industry* (May 25, 2015); Labaton Sucharow LLP, *Wall Street Fleet Street Main Street, Corporate Integrity at a Crossroads: United States & United Kingdom Financial Services Industry Survey* (July 2012).

¹³²Notre Dame & Labaton Sucharow, *supra* note 131, at 3 (“More than one-third (34%) of those earning \$500,000 or more annually have witnessed or have first hand knowledge of wrongdoing in the workplace.”).

¹³³*Id.*

¹³⁴*Id.*

¹³⁵See, Barnard, *supra* note 17, at 423; Grace Duffield & Peter Grabowsky, *The Psychology of Fraud*, TRENDS AND ISSUES IN CRIME AND CRIMINAL JUSTICE (2001); Frank S. Perri, *White Collar Criminals: The “Kinder, Gentler” Offender?*, 8 J. INVESTIG. PSYCH. OFFENDER PROFIL. 217, 223 (2011); see also Jayne W. Barnard, *Shirking, Opportunism, Self-Delusion and More: The Agency Problem Lives On*, 48 WAKE FOREST L. REV. 745, 747 (2013) (discussing the possible role of CEO psychopathy in corporate frauds); Clive R. Boddy, *The Corporate Psychopaths Theory of the Global Financial Crisis*, 102 J. BUS. ETHICS 255, 256 (2011).

personal conduct of CEOs of firms involved in scandal lead theorists to focus on narcissism and psychopathy as personality traits most likely to contribute to corporate fraud.¹³⁶ Psychopathy and narcissism are related personality traits, which at extreme levels constitute personality disorders. The two personality profiles share commonalities which, theoretically, if present in corporate managers should be damaging to corporations and their stakeholders.¹³⁷

It is not surprising, therefore, that researchers in a range of fields have explored the relationship between these destructive personality traits and corporate mismanagement and fraud. This research establishes that some psychopaths work for major corporations, and may be represented at higher levels in corporate management than among the general population. In fact, a study of British executives found the incidence of personality traits related to the emotional dimensions of psychopathy matched or exceeded the incidence of the same traits in a sample of individuals incarcerated as criminally insane.

Although there is less direct evidence of the extent to which narcissism exists among senior corporate executives, many management scholars posit that narcissism is a prevalent trait among corporate managers and could even be a necessary quality for success.¹³⁸ To test this hypothesis, several scholars have constructed proxies for CEO narcissism based on publicly available information. Their studies conclude that CEO narcissism, as measured by these proxies, correlates with high-risk decisions, performance volatility, and accounting fraud.

1. Corporate Psychopathy

In the public mind, psychopathy is associated with violent criminals like the serial killer Ted Bundy or fictional characters from psychological thrillers like *Silence of the Lambs*.¹³⁹ Corporate theorists tend to presume that a psychopath could never occupy an important

¹³⁶Antionette Rijsenbilt & Harry Commandeur, *Narcissus Enters the Courtroom: CEO Narcissism and Fraud*, 117 J. BUS. ETHICS 413, 427 (2013) (finding a “positive statistically significant relationship between CEO narcissism and the occurrence of fraud.”); Campbell et al., *supra* note 129, at 272 (“The list of powerful CEOs that allegedly have fit the ‘narcissistic profile’ is long: Jack Welch, Michael Eisner, Larry Ellison, and Bob Nardelli have all been labeled narcissistic CEOs by the popular business press.”).

¹³⁷See Babiak et al., *supra* note 31, at 192.

¹³⁸See Michael Maccoby, *Narcissistic Leaders, The Incredible Pros the Inevitable Cons*, 78 HARV. BUS. REV. 68 (2000); see also MICHAEL MACCOBY, *NARCISSISTIC LEADERS: WHO SUCCEEDS AND WHO FAILS* 6-7 (2007) (discussing the benefits of narcissistic personality traits for innovative corporate leadership).

¹³⁹Babiak et al., *supra* note 31, at 174 (noting popular view that “psychopathy equates to criminality and violence”).

position at a major corporation.¹⁴⁰ This assumption is likely incorrect because a psychopath often possesses many seemingly admirable traits, such as charm, assertiveness, and boldness, that mask his destructive qualities.¹⁴¹ These personal qualities and the impression they create can be employed to forge an image as a leader that might prevent corporate officials from recognizing the “monster” in their midst before it’s too late.¹⁴²

A psychopath is a person who lacks a conscience, shows no remorse, and acts only in his self-interest without regard for the impact of his actions on others.¹⁴³ The psychopath lacks empathy, is deceitful, manipulative, and indifferent to the feelings of others. These troubling traits are often accompanied by superficial charm that allows the psychopath to mask his moral vacuity.

The most reliable diagnostic tool for psychopathy is the Psychopathy Checklist-Revised (PCL-R).¹⁴⁴ In the PCL-R, a trained clinician rates a subject for 20 traits based on an interview and a review of his criminal record, as well as employment and relationship history. Traits assessed on the PCL-R include: superficiality, grandiosity, deceitfulness, a lifestyle characterized by impulsivity, lack of direction, and irresponsibility, lack of remorse and empathy, failure to take responsibility for one’s actions, a history of poor behavior controls, and antisocial activities (crime, drugs, disciplinary problems, or other behavior that falls outside of accepted societal norms) as an adolescent and adult. A subject is assigned 0, 1, or 2 points for each of the traits

¹⁴⁰See Langevoort, *supra* note 17, at 302 (“Anecdotal observation and common sense, however, make it fairly implausible that the pure egoist, much less the sociopath, is likely to rise to the top of an organization.”).

¹⁴¹RONALD SCHOUTEN & JAMES SILVER, ALMOST A PSYCHOPATH, DO I (OR DOES SOMEONE I KNOW) HAVE A PROBLEM WITH MANIPULATION AND LACK OF EMPATHY 24-25 (2012); Boddy, *supra* note 135, at 257 (citing research showing psychopaths are found at greater levels of incidence at senior levels of organizations than at junior levels).

¹⁴²See Boddy, *supra* note 135, at 256 (“Although they may look smooth, charming, sophisticated, and successful, Corporate Psychopaths should theoretically be almost wholly destructive to the organizations they work for.”); Amanda Gudmundsson & Gregory Southey, *Leadership and the Rise of the Corporate Psychopath: What Business Schools can Do about the “Snakes Inside?”*, 2 E-JOURNAL OF SOCIAL AND BEHAVIOURAL RESEARCH IN BUSINESS 18, 19 (2011) (“some leadership styles share traits commonly imbued with psychopathic behaviour”).

¹⁴³BABIAK & HARE, *supra* note 34, at 19. Some scholars have noted similarities between a psychopath and the rational actor, or *homo economicus*, of neoclassical economics. See, e.g., STOUT, *supra* note 17, at 45-47.

¹⁴⁴BABIAK & HARE, *supra* note 34, at 25. Psychiatry’s official analog for psychopathy is Antisocial Personality Disorder (APD). APD differs from psychopathy because the diagnosis depends more on the behavioral conduct components of anti-social behavior, rather than the emotional affective components of psychopathy. See *id.* at 18-19.

assessed. The maximum rating a person can receive is 40 points – two points for each of the 20 items assessed.

A PCL-R score of 30 or higher is the threshold for a clinical diagnosis of psychopathy. However, psychologists do not view psychopathy as an all-or-nothing proposition. Instead, psychologists view psychopathy as existing on a continuum.¹⁴⁵ Those who fall in the middle of the psychopathy scale, while not clinical psychopaths, still have the capacity to cause grave harm to friends, family members, and their employers.¹⁴⁶ A discrete category of psychopaths, dubbed “successful” psychopaths, manage to live their lives with apparent success and little contact with the criminal justice system.¹⁴⁷ The “successful” psychopath is typically more intelligent than those who get caught up in the criminal justice system and is able to use his intelligence to blend into society and avoid getting caught for any major moral or legal transgressions.¹⁴⁸

Several methodological challenges impede the study of negative personality traits among corporate employees, limiting our understanding of how such traits might impact corporate policies or performance.¹⁴⁹ Corporations are understandably reluctant to be identified as employing people with serious psychological problems.¹⁵⁰ Corporate executives are also extremely busy, making it difficult to recruit them to participate in psychological studies. Despite these challenges, resourceful researchers

¹⁴⁵SCHOUTEN & SILVER, *supra* note 141, at 57-59. Experts estimate that about 1% of Americans fit the clinical profile for psychopathy and that psychopaths comprise about 15% of the prison population.

¹⁴⁶*Id.* (reporting that an estimated 5%-15% of general population are “subclinical” psychopaths, people who would score somewhere between the 25th and 75th percentile on PCL-R scale).

¹⁴⁷Gudmundsson & Southey, *supra* note 142, at 22 (“A successful psychopath is defined as an individual who presents a sub-clinical manifestation of psychopathic traits, who has not been incarcerated in the judicial or mental health systems, and is more likely to engage in manipulative and antisocial behaviour”); S. Gustafson & D. Ritzer, *The Dark Side of Normal: A Psychopathy-Linked Pattern Called Aberrant Self-Promotion*, 9 EUROPEAN J. PERS. 147, 148 (1995); T. Pethman & S. Erlandsson, *Aberrant Self-Promotion or Subclinical Psychopathy in Swedish General Population* 53 PSYCHOL. RECORD 33 (2003); SCHOUTEN & SILVER, *supra* note 141, at 57. ZUCKERMAN, *supra* note 53, at 258.

¹⁴⁸Board & Fritzon, *supra* note 32, at 19 (observing that studies of “successful” psychopaths suggest that the “emotional” factor of psychopathy is more pronounced than the “antisocial” dimension when compared to those psychopaths who get into trouble with the law.”).

¹⁴⁹Babiak et al., *supra* note 31, at 175 (“[W]e know little about ‘corporate psychopathy’ and its implications, in large part because of the difficulty in obtaining the active cooperation of business organizations and their personnel for research purposes.”).

¹⁵⁰*Id.* at 176 (“organizations are often reluctant to use measures of psychopathology except under special circumstances”).

have made important strides in discerning the extent to which certain personality problems exist among corporate managers.

Two major studies have found that individuals with psychopathic personalities may be over-represented, relative to the general population, at higher levels of U.S. and multinational corporations. In a well-known study, psychologists Paul Babiak, Craig Neumann, and Robert Hare examined the personnel records of more than 200 managers at seven large American corporations.¹⁵¹ They found that approximately 4% of the individuals in the group met the clinical criteria for psychopathy.¹⁵² This is four times higher than the estimated 1% of the general population that meets the same criteria. Some of the managers with high psychopathy scores held senior positions at their firms.¹⁵³

Despite the common assumption that high levels of psychopathy would impede one's professional progress, Babiak and his colleagues found that high scores for psychopathy correlated with many positive perceptions of an individual's job performance. In performance reviews by peers and superiors, high scorers for psychopathy earned high ratings for "communication skills, strategic thinking, and creative/innovative ability."¹⁵⁴ These intangible qualities are often associated with leadership, innovation, and vision, which are rare but prized attributes for corporate leadership.¹⁵⁵

A study by Professors Belinda Jane Board and Katerina Fritzon assessed the personalities of 39 senior British business executives based on self-administered psychological questionnaires.¹⁵⁶ The researchers compared the personality profiles of these executives with those of a group of psychiatric patients and mentally disordered criminals. They found a higher prevalence of three personality disorder traits among the

¹⁵¹*Id.* at 178-79.

¹⁵²*Id.* at 183. Babiak and his colleagues found that 3.9% of the 203 individuals in the sample studied met the clinical definition for psychopathy, with PCL-R scores of 30 or more. In addition, 4.4% scored 25 or higher, which, while subclinical, is still a cause for concern. When rated on the PCL-SV (a screening survey designed for use with the general population), 5.9% of the sample scored 13 or higher indicating "potential" or "possible" psychopathy. *Id.* at 183-84. This is about five times higher than the 1.2% of a general community sample that scored 13 or above on the PCL-SV.

¹⁵³*Id.* at 185; Boddy, *supra* note 135, at 257 (noting that psychopaths in firms "may be singled out for promotion because of their polish, charm, and cool decisiveness.").

¹⁵⁴Babiak et al., *supra* note 31, at 189.

¹⁵⁵*Id.* at 190-91. As the authors explain, "It is easy to mistake psychopathic traits for specific leadership traits. For example, charm and grandiosity can be mistaken for self-confidence or a charismatic leadership style; likewise, good presentation, communications, and impression management skills reinforce the same picture" and "the psychopath's ability to manipulate can look like good influence and persuasion skills, the mark of an effective leader."

¹⁵⁶Board & Fritzon, *supra* note 32, at 20.

business executives when compared to the criminally insane.¹⁵⁷ Specifically, the business executives were more likely than the clinical and prison populations to exhibit histrionic traits and were statistically as likely to exhibit high levels of traits consistent with narcissism and obsessive compulsive disorder.¹⁵⁸ The problematic personality traits evident in the business executive sample align with the emotional components of psychopathy and are consistent with the findings from Babiak's studies of American corporate managers.¹⁵⁹

Because of the small sample sizes in these studies, we cannot assume their results represent the general population of corporate managers. Still, it seems reasonable to conclude based on these studies that some psychopaths manage to thrive within corporate America. It is easy to understand why individuals with psychopathic traits would be attracted to the business world.¹⁶⁰ The opportunity to earn large sums of money, the attendant power, and prestige appeal to the narcissistic and power hungry.¹⁶¹ The fast pace and relative chaos at firms experiencing upheaval also present opportunities for rapid progress through manipulation that many psychopaths find entertaining.¹⁶² As noted earlier, Babiak and his colleagues found that high scorers for psychopathy received high ratings for communication skills and other intangible leadership traits.¹⁶³ Yet, these high scorers also received poor performance ratings for management style, acting as a team player, and poor performance appraisals from their immediate superiors.¹⁶⁴ It thus appears that a psychopath's superior "impression management" skills may allow him to survive in the corporate environment despite lacking the core competencies of an effective corporate manager.¹⁶⁵

The studies reviewed above show that individuals with high levels of psychopathic traits can survive and thrive in a corporate setting. They

¹⁵⁷*Id.* at 19-21.

¹⁵⁸*Id.* at 25.

¹⁵⁹*Id.*

¹⁶⁰BABIAK & HARE, *supra* note 34, at xiii, 97-98.

¹⁶¹SCHOUTEN & SILVER, *supra* note 141, at 147 ("psychopaths are attracted to money and power the way sharks are attracted to chum"); Stout, *supra* note 13, at 555-56 ("Incentive schemes naturally attract the relatively opportunistic, because relatively opportunistic individuals see potential for personal gain that individuals who are more constrained by personal ethics would discount as out-of-bounds and unavailable.").

¹⁶²Boddy, *supra* note 135, at 257.

¹⁶³Babiak et al., *supra* note 31, at 189.

¹⁶⁴*Id.*; see also Boddy, *supra* note 135, at 256 (observing that "corporate psychopaths are also poorly organized managers who adversely affect productivity and have a negative impact on many different areas of organizational effectiveness."); SCHOUTEN & SILVER, *supra* note 141, at 156 (explaining that an "almost psychopath" might commit fraud or get the company in trouble with the government).

¹⁶⁵Babiak et al., *supra* note 31, at 191.

do not, however, establish a clear link between these personality traits and corporate misconduct or fraud. Despite anecdotal reports of workplace misconduct by individuals with high psychopathy scores, we know little about the direct consequences for the corporations that employ clinical psychopaths.¹⁶⁶

A more recent study helps fill a gap in research by linking one form of antisocial conduct (criminal behavior) with future accounting fraud. In this study, Robert Davidson and colleagues focused on a CEO's prior scrapes with the law as a possible risk factor for fraud.¹⁶⁷ They posited that an executive's prior legal infractions indicated disregard for law and low self-control, which might translate into a higher propensity to commit fraud in one's professional life.¹⁶⁸ Their study found a direct positive relationship between a CEO's prior criminal record and the propensity to perpetrate fraud.¹⁶⁹

The researchers employed a dynamic hazard model to test whether the likelihood of accounting fraud increased during the tenure of a CEO with a criminal record.¹⁷⁰ They concluded that "fraud risk is elevated in firms run by CEOs with a prior record and such record holders are significantly more likely than non-record holders to be directly involved in fraud."¹⁷¹ The study is subject to several limitations that caution against drawing broad conclusions from its findings.¹⁷² Still, by discerning a link between a CEO's past antisocial conduct and future accounting fraud, the study lends support to the theoretical proposition that a CEO's personality can be a contributing factor in corporate fraud.¹⁷³

¹⁶⁶*Id.* ("[a]lthough our results suggest that psychopathic individuals get away with problematic behaviors, we would benefit from systematic research on the dynamics of their interactions with others.").

¹⁶⁷Robert Davidson, et al., *Executives "Off the Job" Behavior, Corporate Culture and Financial Reporting Risk*, 117 J. FIN. ECON. 5 (2015).

¹⁶⁸*Id.* at 9.

¹⁶⁹*Id.* at 8. The researchers created a sample of firms named for fraudulent financial reporting from the Securities and Exchange Commission's (SEC) Accounting and Auditing Enforcement Releases (AAERs). They created a control sample of non-fraud firms, by matching each firm in the fraud sample with a firm with a similar business profile that was not cited in the AAERs. They found that a significantly higher percentage of CEOs of fraud firms had criminal records when compared to the CEOs of non-fraud firms.

¹⁷⁰*Id.* at 13-15.

¹⁷¹*Id.* at 15.

¹⁷²Limitations of the study include its small sample size and the fact that the fraud firms studied were limited to those that SEC had targeted for enforcement action. In addition, the study was not designed to measure directly the relationship between a CEO's personality and fraud. *See Id.*

¹⁷³*Id.* at 6.

2. CEOs and Narcissism

Although strong theoretical arguments link corporate psychopathy and fraud, due to methodological constraints, the empirical case is weaker. Scholars have made more headway investigating the impact of a related personality trait - narcissism - on corporate strategy, performance, and the incidence of fraud. Narcissism is a personality disorder that is closely related to psychopathy.¹⁷⁴ Narcissism is defined as “a pervasive pattern of grandiosity, a need for admiration, a lack of empathy for others, and a belief that one is superior, unique, and ‘chosen.’”¹⁷⁵ The diagnostic criteria for narcissistic personality disorder includes: (1) an exaggerated sense of self-importance, (2) preoccupation with fantasies about success, power, or beauty, (3) a belief that one is special and can associate only with equally special people, (4) a need for constant admiration, (5) a sense of entitlement, (6) taking advantage of others, (7) lack of empathy, (8) being envious of others, and (9) behaving in an arrogant or haughty manner.¹⁷⁶

An individual who meets five or more of these criteria fits the diagnosis for narcissistic personality disorder. As with psychopathy, psychologists view narcissism as existing on a continuum. Those who exhibit lower levels of the trait may not rise to the level of a clinical diagnosis but can still cause considerable trouble for those around them.

Management theorists have noted similarities between narcissism’s distinguishing characteristics and the character traits often associated with successful corporate executives.¹⁷⁷ Although some theorists assert that a certain degree of narcissism is essential for CEO success,¹⁷⁸ at extreme levels, a CEO’s narcissism has the capacity to destroy a firm.¹⁷⁹ As previously mentioned, assessing the personality of

¹⁷⁴BABIAK & HARE, *supra* note 34, at 41 (describing “aggressive or malignant narcissism which is difficult to distinguish from psychopathy”).

¹⁷⁵Perri, *supra* note 135, at 225.

¹⁷⁶DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS TEXT REVISION 717 (4th ed. 2000); Campbell, et al., *supra* note 129, at 268.

¹⁷⁷Board & Fritzon, *supra* note 32, at 19 (“Elements of the narcissistic personality bare a striking resemblance to personality characteristics that have been implicated in aspects of organizational leadership behavior.”).

¹⁷⁸See Seth A. Rosenthal & Todd L. Pittinsky, *Narcissistic Leadership*, 17 LEADERSHIP Q. 617 (2006); Maccoby, *supra* note 138, at 68.

¹⁷⁹Rijsenbilt & Commandeur, *supra* note 136, at 422. (stating that “a high level of narcissism can become a real problem if leaders lose contact with reality, start living in their own world, and cultivate hubris and an obsession for greed.”). The authors also suggest there may be “an intricate relation between leadership and narcissism. Too little narcissism can destroy a CEO’s effectiveness, too much can stifle a CEO’s ability and might lead to unethical conduct.” *Id.*

business leaders presents several methodological challenges.¹⁸⁰ To bypass these obstacles, researchers have looked to unobtrusive indicators of narcissism to determine if these indirect measures correlate with corporate financial performance or fraud. Several studies applying this technique have linked high levels of CEO narcissism with increased acquisition activity and an increased risk of accounting fraud.

In one study, researchers assessed public indications of CEO narcissism (such as the use of “I” and other first person pronouns in media reports and the size of CEO’s photo in the annual report) to create a narcissism index.¹⁸¹ They found that CEO narcissism correlated with greater stock price volatility and high-risk/high profile decisions.¹⁸² The authors found that narcissism index scores did not correlate with better or worse performance. They concluded instead that, although “narcissists tend to generate more extreme and irregular performance than non-narcissists, they do not generate systematically better or worse performance.”¹⁸³

A similar study assessed CEO narcissism based on 15 objective criteria and found a positive correlation between CEO narcissism and accounting fraud.¹⁸⁴ In this study, researchers constructed a narcissism scale that included factors such as CEO compensation, publicity and exposure, CEO power, and acquisition activity.¹⁸⁵ They matched CEOs of firms involved in fraud from the SEC’s AAER database and found a correlation between a high score on their narcissism scale and the incidence of corporate fraud.¹⁸⁶

¹⁸⁰See Arijit Chatterjee & Donald C. Hambrick, *It’s All About Me: Narcissistic CEOs and Their Effects on Company Strategy and Performance*, 52 ADMIN. SCI. Q. 351, 362 (2007) (noting that “top executives of public companies are very reluctant to participate in survey research, questions about traits as sensitive as narcissism would yield especially low response rates and answers would be greatly influenced by social desirability bias”); Rijsenbilt & Commandeur, *supra* note 136, at 414 (noting that “key methodological problems investigating CEO narcissism and the difficulty in obtaining data” undermine efforts to research narcissism in corporate executives).

¹⁸¹Chatterjee & Hambrick, *supra* note 180, at 363. Indicators of narcissistic tendencies included: (1) the prominence of the CEO’s photograph in the company’s annual report; (2) the CEO’s prominence in the company’s press releases; (3) the CEO’s use of first-person singular pronouns in interviews; (4) the CEO’s cash compensation divided by that of the second-highest paid executive in the firm; and (5) the CEO’s non-cash compensation divided by that of the second-highest-paid executive in the firm.

¹⁸²*Id.* at 379.

¹⁸³*Id.*

¹⁸⁴Rijsenbilt & Commandeur, *supra* note 136, at 427.

¹⁸⁵*Id.* at 415-418. Other factors assessed included perquisites, power distribution, and acquisition behavior.

¹⁸⁶*Id.* at 422-23. The study used data from CEOs of S&P 500 companies from 1992 to 2008. Two filters were applied to the data set. First, the study only used CEOs who had started their tenure from 1992 because this is when the most data was available. A second

V. GOVERNANCE IMPLICATIONS OF THE IRRATIONAL CEO

The state of knowledge on how CEO personality affects firm performance remains incomplete. Nonetheless, research findings raise doubts regarding fundamental claims of rational actor theorists. Research makes clear that corporate hiring and promotion processes do not reliably filter out dysfunctional personalities from the corporate workforce. Instead, the promotion process may select for antisocial and narcissistic personality traits.¹⁸⁷ Research also suggests that CEOs who have had prior scrapes with law or who score highly on indirect measures of narcissism can have a destabilizing impact on corporate performance and may contribute to the incidence of accounting fraud.

Although we do not know the precise percentage of irrational actors at the top of corporations, we know that, as a group, business leaders suffer from the same psychological afflictions that affect the general population.¹⁸⁸ In addition, certain problematic personality traits are more prevalent in the business world than among the general population. These traits, including psychopathy and narcissism, correlate with various forms of antisocial conduct.

A. Lessons for Regulators

In light of recent searing experiences of how unethical corporate leaders can wreak havoc on the economy, it is time to reevaluate corporate governance policies premised on the rational actor model. Corporate governance policies should take account of the biological and psychological mechanisms that push some people toward irresponsible risk. When we replace economists' assumptions of perfect rationality with real-world evidence on the factors that influence risk related decisions, we can better understand why so many policies based on rational actor theory have not worked out as hoped.

Although a comprehensive reassessment of corporate governance policy lies beyond the scope of this Article, certain policies naturally

filter was applied so that only data from those CEOs with tenure of more than three years was included. Next, in order to analyze incidents of fraud, the study examined AAERs published by the SEC. If an S&P company appeared in an AAER, it was reviewed to determine when the fraud took place and if it overlapped with a CEO from the sample described above. The study examined a total of 113 relevant AAERs related to 54 CEOs from the sample. Finally, the study examined whether the CEO was involved in the fraud incident identified in the AAERs.

¹⁸⁷See *infra* text at notes 197-99.

¹⁸⁸See Barnard, *supra* note 17, at 405-10 (summarizing psychological problems that sometimes plague CEOs).

come into question when we set aside the notion that only a rational actor could occupy the executive suite. Corporate governance policies that promote risk taking and self-serving behavior present several dangers for corporations and society.¹⁸⁹ Over time, governance policies that encourage or abide antisocial risk taking could have a deleterious impact on corporate culture.

Not only might the raw appeal to self-interest attract individuals with antisocial tendencies to corporations, policies that promote the singular focus on self-interest may also contribute to a corporate environment that exacerbates such attitudes and at the same time drive away those with a more moderate approach to risk.¹⁹⁰ The presence of antisocial personalities at high ranks in the corporate workforce means that corporate law must do more than just encourage risk taking. The law must also seek to constrain irresponsible risk.

Rational actor theorists frequently assert that policymakers can harness the disciplinary effect of markets to encourage optimal corporate behavior. These theorists focus on incentive compensation and competitive employment markets as mechanisms that ensure that only the most capable individuals will assume the helm at major corporations. Our improved understanding of the brain mechanisms underlying risk-related decision-making cast doubt on the accuracy of such assertions.

1. The False Promise of Stock Options and Incentive-Based Pay

Research on how individuals respond to reward related cues provides reasons to worry that incentive compensation programs may contribute to excessive risk taking instead of encouraging a responsible approach to risk. For decades, corporate governance theorists have maintained that compensating corporate executives with stock or stock options would better align managers' interests with those of investors.¹⁹¹

¹⁸⁹See Lynne L. Dallas, *Short-termism, the Financial Crisis, and Corporate Governance*, 37 J. CORP L. 264 (2011); Stout, *supra* note 13, at 553-57 (explaining how incentive compensation policies can crowd out prosocial behavior and attract antisocial and unethical employees); Cynthia A. Williams, Book Review, *Icarus on Steroids*, 94 GEO. L. J. 1197 (2006).

¹⁹⁰See Cialdini et al., *supra* note 35, at 68-70 (noting "policies that promote dishonest business practices are likely to drive the most productive workers into the offices of more honest competitors where those individuals can find greater job satisfaction and be more at ease with their work environments."); STOUT, *supra* note 17, at 169-71; Donald C. Langevoort, *Chasing the Greased Pig Down Wall Street: A Gatekeepers Guide to the Psychology, Culture and Ethics of Financial Risk*, 96 CORNELL L. REV. 1209, 1239 (2011) ("The danger point comes when a long enough time passes without the firm and its people being called out on their self-deception, because during that time the culture feeds on itself, and people rise up the ranks who are its exemplars and cheerleaders and who are risk-takers too."); Stout, *supra* note 13, at 529.

¹⁹¹See Alces & Galle, *supra* note 12, at 58.

The widespread embrace of this pay for performance model triggered a skyrocketing in levels of executive pay.¹⁹²

Many commentators have since concluded that incentive compensation programs do a poor job of aligning managers' interests with those of shareholders, other investors, and society.¹⁹³ After the 2008 financial crisis, some scholars argued, for example, that equity compensation schemes have the perverse effect of encouraging executives of financial firms to take excessive risks. They, therefore, recommended adjustments to compensation practices to tamp down the risk preferences of these executives.¹⁹⁴ Rather than rejecting the rational actor framework, these new approaches merely seek to calibrate the incentive compensation "instrument," to better align managers' interests with the long-term interests of shareholders, creditors, and society. Because these scholars continue to adhere to the strictures of rational actor analysis, their remedies are likely to miss the mark.

Neuroscience research on how we respond to reward related cues suggests that tinkering with incentive pay structures is unlikely to lead to better results than more traditional pay-for-performance models. Neuroimaging studies show, for example, that our brains respond to the opportunity to win financial rewards the same way we respond to addictive substances such as sugar and cocaine. Stock options and securities trading offer employees the opportunity to win financial rewards in conditions of uncertainty and may activate a similar brain response as addictive substances.

If stock options and trading have addictive qualities, we cannot expect performance-based pay to motivate consistently responsible decision-making. Incentive compensation may motivate risk taking for its own sake, even when such risks become irrational. As John Coates explains it, "like an addict who quickly habituates to a given dose of a drug and has to continually increase the hit, traders too may habituate to certain levels of risk and profit and be irresistibly compelled to put up

¹⁹²From 1992 to 2000 average pay of CEO's quadrupled from \$3.5 million to \$14.7 million. The ratio of CEO pay to average worker pay also spiked precipitously from 140 times average worker's pay in 1991 to 500 times by 2003. See LUCIAN BEBCHUK & JESSE FRIED, *PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION* 1 (2004).

¹⁹³See, e.g., Sanjai Bhagat & Roberta Romano, *Reforming Executive Compensation: Focusing and Committing to the Long-Term*, 26 *YALE J. REG.* 359 (2009); Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 *GEO. L.J.* 247 (2010); DAVID SKEEL, *ICARUS IN THE BOARDROOM: THE FUNDAMENTAL FLAWS IN CORPORATE AMERICA AND WHERE THEY CAME FROM* 152-54 (2005); Fredrick Tung, *Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation*, 105 *NW. U. L. Rev.* 435 (2010).

¹⁹⁴See Alces & Galle, *supra* note 12, at 57-63 (reviewing literature).

their position size beyond what would normally be considered prudent.”¹⁹⁵

Thus, far from offering a model “set it and forget it” policy, the prevalence of incentive compensation schemes creates a need for more rigorous external and internal constraints on risk. Directors and policymakers should remain mindful that incentive pay programs can induce individuals to take excessive risks.¹⁹⁶ The more heavily a firm relies on incentive compensation to motivate executives, the more vigorously it should monitor its executives for indications of reckless risk taking.

2. The False Comfort of the Tournament Hypothesis

Neuroscience findings present challenges to another theoretical proposition at the center of rational actor theory. Theorists often argue that the tournament for corporate talent resolves most problems raised by those who question their assumptions regarding the rationality of corporate executives.¹⁹⁷ As Professor Langevoort summarizes the argument, high-level corporate executives “are not randomly drawn from the general population. Rather, they are survivors of high pressure employment and promotion tournaments that almost always took a significant degree of cognitive skill to win.”¹⁹⁸ According to this argument, irrational individuals will be weeded out in the tournament process before they reach the top of their organizations.¹⁹⁹

Unfortunately, both anecdotal evidence and field research suggest that promotion tournaments select personality traits that are not necessarily conducive to effective management, including

¹⁹⁵COATES, *supra* note 47, at 151.

¹⁹⁶See Marcia Millon Cornett, et al., *Corporate Governance and Earnings Management at Large U.S. Bank Holding Companies*, 15 J. CORP. FIN. 412, 413 (2009) (noting links between incentive compensation, earnings management and corporate governance structures at bank holding companies).

¹⁹⁷See, e.g., Richard Posner, *Rational Choice, Behavioral Economics and the Law*, 50 STAN. L. REV. 1551, 1570-71 (1998) (noting that “people are not randomly sorted to jobs and other activities” and surmising for example that “hyperbolic discounters will avoid the financial-services industry.”); see also Anthony V. Alfieri, *Big Law and Risk Management: Case Studies of Litigation, Deals, and Diversity*, 24 GEO. J. LEGAL ETHICS 991, 1001-02 (2011); see also Chip Heath, et al., *Cognitive Repairs: How Organizational Practices Can Compensate for Individual Shortcomings*, 20 RES. ON ORG. BEHAV. 1, 20-23 (1998) (asserting that organizational practices can correct for shortcomings in individual decision making).

¹⁹⁸Langevoort, *supra* note 8, at 443-44.

¹⁹⁹Langevoort, *supra* note 17, at 288 (“invoking psychological traits makes the orthodox corporate scholars queasy for a variety of well-mooted reasons, including their contingent, soft, hard-to-model properties and the economists’ natural suspicion that cognitive weaknesses are weeded out in the crucible of corporate competition and thus trivial”).

overconfidence, self-promotion, and narcissism.²⁰⁰ A highly competitive tournament culture likely encourages aggression and discourages cooperation, factors that could contribute to the winnowing of ethical, prosocially-oriented employees.²⁰¹ As discussed earlier, research suggests the existence of a “winner effect” in competition, where winners experience an increase in testosterone, which translates into increased confidence and increased risk-taking and future victories.²⁰² Eventually, however, the “winner effect” turns sour – as increasing levels of testosterone lead to overconfidence, hyper-aggression, and recklessness.²⁰³

B. *Lessons for Corporate Officials*

The theoretical proposition that irrational risk seekers could thrive and reach the top of major corporations is borne out by research showing that some individuals with personality disorders occupy senior corporate management positions.²⁰⁴ The research reviewed in this Article suggests there could be value in identifying behavior or personality traits among CEOs and senior executives that correlate with fraud. This kind of information could be helpful to auditors who have to determine the scope and depth of audits. Corporate directors and law enforcement officials could also benefit from incorporating this research in their oversight of corporations and their managers. Such information could be useful when hiring and supervising managers and in designing compensation structures and corporate internal controls. Public enforcement officials should also apply such insights when setting law enforcement policies and priorities.

²⁰⁰BABIAK & HARE, *supra* note 34, at xx-xiii (explaining why psychopathic individuals may appear to be desirable job candidates); Langevoort, *supra* note 17, at 288 (“traits such as over-optimism, an inflated sense of self-efficacy, and a deep capacity for ethical self-deception are favored in corporate promotion tournaments so that people who possess them are disproportionately represented in executive suites.”).

²⁰¹Accounts of the rank and yank performance evaluation system used at major US firms including GE, Sunbeam and Enron suggest that such programs create an atmosphere of tension and chaos where antisocial risk seekers are likely to thrive. *See, e.g.*, MIMI SWARTZ WITH SHERRON WATKINS, *POWER FAILURE: THE INSIDE STORY OF THE COLLAPSE OF ENRON* 59-61 (2003)(describing the performance review system at the Enron’s Gas Services division).

²⁰²*See supra* text at notes 106-108.

²⁰³*Id.*

²⁰⁴*See supra* text at notes 151-159.

1. General Guidelines

a) Consistent hiring and promotion practices.

A first step toward protecting corporations from employees with propensities toward reckless risk would be consistent hiring practices for all employees. Firms should adhere to strict hiring protocols including resume verification and reference checks.²⁰⁵ Simply following consistent procedures for hiring and promoting executives should spare firms from the embarrassment and reputational damage that occur when high-level executives are exposed for resume fraud.²⁰⁶ More importantly, such measures protect firms from employing and promoting imposters and other individuals who are willing to lie to get ahead.²⁰⁷ Comprehensive performance evaluation systems can help prevent bad apples who manage to slip through the cracks from advancing in the organization. Experts recommend that performance assessments “focus on ethical, interpersonal, and various citizenship oriented behaviors,” as research suggests, for example, that “narcissism primarily impedes organizational functioning through its association with increased unethical behavior.”²⁰⁸

b) Workplace diversity

Neuroscience studies of financial traders suggest that the successful investor has a combination of genes associated with moderate levels of endogenous hormones that contribute to risk taking, competition, and stress.²⁰⁹ Research also shows that certain forms of risk-taking behavior, such as substance abuse and gambling problems, correlate with impaired decision making on the Iowa Gambling Task and in delay discounting studies.

²⁰⁵BABIAK & HARE, *supra* note 34, at 209-13.

²⁰⁶Recent examples include Yahoo's CEO Scott Thompson, who was fired when it came to light that he had exaggerated his academic credentials. *See Yahoo Confirms CEO is Out After Resume Scandal*, CNNMONEY (May 14, 2012), <http://tinyurl.com/cd7d2u9>. The American Academy of Arts and Sciences suffered similar embarrassment when its president's resume fraud was exposed. *See Todd Wallach, No Record of Academy Head's Doctoral Degree*, BOSTON GLOBE (June 14, 2013), <http://tinyurl.com/lfl2u9t>; *see also* MICHAEL ROSS, ETHICS AND INTEGRITY IN LAW AND BUSINESS 15 (2011) (noting that 500,000 people falsely listed college degrees they did not earn and 43% of resumes had significant inaccuracies).

²⁰⁷BABIAK & HARE, *supra* note 34, at 104-06, 213 (describing how psychopaths manage to infiltrate corporate organizations and noting the importance of verifying the education and employment of job applicants).

²⁰⁸Campbell et al., *supra* note 129, at 280.

²⁰⁹*See supra* text at notes 103-119.

A reasonable conclusion from these studies is that employers should seek to maintain diversity in the work force in terms of age, gender, and personality to ensure that extreme personality characteristics do not dominate in corporate decision-making. As one example, testosterone levels vary greatly between men and women and between older and younger individuals.²¹⁰ Employing traders and managers from a range of demographic groups could help corporations maintain a healthy balance of attitudes toward risk.²¹¹

2. Risk-Oriented Red Flags

Theory and anecdotal evidence also suggest that monitoring antisocial tendencies and attitudes toward risk is of paramount importance at the highest executive levels. A corporation's CEO and CFO make important strategic decisions and control a corporation's financial reporting apparatus. These individuals also set the ethical tone for the entire corporate enterprise.²¹² Unfortunately, research on CEO personality suggests that the very qualities that can compel a person to the top of a corporate enterprise may also threaten a corporation's long-term success.²¹³ For these reasons, directors and others who make key hiring and promotion decisions must remain watchful for behavior that correlates with a dysfunctional approach to risk.²¹⁴ Firms must enforce conduct codes consistently to discipline and weed out unethical employees.

Most importantly, directors must remain focused on ensuring and reaffirming the personal integrity of CEOs and CFOs to ensure that senior executives establish high standards for conduct throughout the

²¹⁰Coates et al., *supra* note 105, at 339-40.

²¹¹Langevoort, *supra* note 190, at 1230; *see also* Irene van Staveren, *The Lehman Sisters Hypothesis*, 39 CAMBRIDGE J. ECON. 995, 999-1004 (2014) (assessing empirical evidence of gender differences in risk preferences and investment and trading performance); Jiekun Huang & Darren J. Kisgen, *Gender and Corporate Finance: Are Male Executives Overconfident Relative to Female Executives?*, 108 J. FIN. ECON. 822 (2013); Langevoort, *supra* note 190, at 1230 (noting the possible influence of testosterone levels in dysfunctional trading behavior).

²¹²Cialdini et al., *supra* note 35, at 72 ("the effort must begin at the top, with senior executives setting the right example and then implementing policies to encourage the same behavior").

²¹³*See* Mark Stein, *When Does Narcissistic Leadership Become Problematic? Dick Fuld at Lehman Brothers*, 22 J. MGMT. INQ. 282, 283-84 (2013) (theorizing that the same personality traits that help contribute to successful corporate leadership can become problematic when economic environment shifts).

²¹⁴As previously mentioned, individuals who suffer from substance abuse, personality disorders, or other forms of mental illness consistently perform poorly on basic decision making tasks. Mukherjee & Kable, *supra* note 61.

organization.²¹⁵ Directors and corporate managers should remain alert to behavioral problems among executives that suggest a struggle with impulsivity. When faced with reports of discordant conduct by senior executives, directors should pause and evaluate all available information and take steps necessary to affirm their confidence in the personal integrity of the officer.²¹⁶ In some cases, coaching or remedial action may be necessary. In other cases, depending on what directors learn, termination of employment may be the only appropriate step.

Anecdotal reports from recent corporate scandals point to broad categories of problematic executive conduct that often becomes evident to employees, directors, and outside observers before fraud or mismanagement at the relevant corporation is publicly revealed. Problematic executive behaviors that seem to correlate with fraud include substance abuse, improper workplace relationships, illegal conduct, and problem gambling.

a) Substance abuse.

In the public mind, substance abuse is associated with crime and social failure. However, substance abuse problems also plague elite professions such as medicine and law. Professional associations and licensing authorities have found that substance abuse contributes to professional malpractice, creating a risk of serious physical or financial harm for the addict's patients or clients. The scourge of substance abuse has led professional associations to establish structured programs to address it.²¹⁷ These programs are designed to address substance abuse in its early stages to prevent client harm and provide guidelines for suspending impaired professionals, encouraging their rehabilitation, and monitoring and supervising individuals who are able to return to practice.

Although there is little hard data available, anecdotal accounts suggest that substance abuse problems also plague the corporate and financial sectors.²¹⁸ Journalists' investigations and a few public trials

²¹⁵See LESLIE S. PRATCH, LOOKS GOOD ON PAPER? 80-81 (2014) (noting the importance of integrity in business leadership).

²¹⁶See, e.g., David F. Larker & Brian Tayan, *Scoundrels in the C-Suite: How Should the Board Respond When a CEO's Bad Behavior Comes to Light*, (May 10, 2016), <http://tinyurl.com/lyxakwb>.

²¹⁷See, e.g., Fred C. Zacharias, *A Word of Caution for Lawyer Assistance Programming*, 18 GEO. J. L. ETHICS 237, 237 (2004) (discussing bar sponsored lawyer substance abuse assistance programs).

²¹⁸See, e.g., *Drugs and Today's Wall Street*, NYTIMES.COM (Dec. 21, 2007), <http://tinyurl.com/lu66lwb>; *Wall Street Drug Use: Employees Giving Up Cocaine for Pot and Pills*, WALL ST. J. (Aug. 20, 2010), <http://tinyurl.com/kyllwo8> (reporting that a drug rehab facility in Pennsylvania "has been crammed with Wall Street refugees in recent months" and

reveal that some of the senior executives of firms brought down by scandal used illegal drugs. For example, Scott Sullivan admitted that he used cocaine on numerous occasions while serving as WorldCom's CFO—often with fellow WorldCom employees.²¹⁹ Sullivan was also convicted of drunk driving in 1984, a fact he hid from regulators and investors.²²⁰ Bear Stearns CEO James Cayne reportedly smoked marijuana frequently in public, often in front of other Bear Stearns employees.²²¹

More broadly, press reports have documented the prevalence of cocaine and other forms of substance abuse among Wall Street traders and executives.²²² Despite widespread reports of drug use on Wall Street, neither Wall Street firms nor their regulators seem to have focused much attention on the problem. This lack of attention to substance abuse in the financial industry is troubling, considering that traders and financial managers have fiduciary responsibilities for large sums of other people's money.

As discussed earlier, research establishes that alcohol and drug addiction correlate with traits such as hyperbolic delay discounting that could lead to irresponsible trading and investment decisions. Substance abusers and gambling addicts have higher discount rates, meaning they prefer immediate gains to long-term rewards and prefer avoiding small immediate losses to averting long term catastrophic losses.²²³

“Investment bankers [. . .] are highly prone to addiction [. . .] And there's a lot of denial among employers.”. See also Melena Ryzik, *Cocaine: Hidden in Plain Sight*, N.Y. TIMES (June 10, 2007), <http://tinyurl.com/lc2uqoc> (“With Wall Street surging and a 24-hour global economy, young professionals have the money and the incentive to stay constantly wired.”); Barnard, *supra* note 17, at 407.

²¹⁹Robert Gearty, *Drugs, Coffee at WorldCom*, N.Y. DAILY NEWS (Feb. 8, 2005), <http://tinyurl.com/kdqsjd8> (reporting Sullivan admitted to using cocaine and marijuana for several years while he worked at WorldCom including at times with other WorldCom employees).

²²⁰*Id.*; Jayne O'Donnell & Greg Farrell, *Business Scandals Prompt Look into Personal Lives*, USATODAY.COM (Nov. 5, 2004), <http://tinyurl.com/lkro4al>.

²²¹ALAN C. GREENBERG WITH MARK SINGER, THE RISE AND FALL OF BEAR STEARNS 164 (2010) (Bear Stearns Chairman and former CEO reporting “I knew that [Cayne] had been smoking pot for years. At bridge tournaments I'd seen him do it myself. Did I ever see him do it in the office? No. Had I heard he did that? Yes.”).

²²²See Alexandra Michel, *Transcending Socialization: A Nine-Year Ethnography of the Body's Role in Organizational Control and Knowledge Workers' Transformation*, 56 ADMIN. SCI. Q. 325, 342 (2011) (reporting that “[b]ankers also lost bodily control in the form of addictions and compulsions”). For additional anecdotal accounts, see *INSIDE JOB* (Sony Pictures Classics 2010); Charles Gasparino & Joann S. Lublin, *Citigroup's Marc Weill Left Firm to Battle Drug Habit*, WALL ST. J. (Nov. 22, 2000), <https://www.wsj.com/articles/SB97484416768928828> (reporting on the resignation of Citigroup CEO Sandy Weill's son Marc Weill for drug addiction. At the time, the younger Weill was responsible for managing Citigroup's \$100 billion investment portfolio).

²²³See *supra* text at notes 62-66.

Accordingly, individuals with impulse control problems are unlikely to weigh the prospective costs and benefits of their decisions in the manner that the rational actor model predicts.

b) Improper workplace relationships.

Extramarital affairs with subordinates represent another form of high-risk conduct by executives. By having an affair, the executive risks destroying his marriage, disrupting his family, and losing the respect of friends and peers.²²⁴ Corporate policies toward workplace relationships vary, but most firms impose limits on consensual relationships between managers and their subordinates, as such relationships create conflicts of interest, raise perceptions of unfairness, and create potential legal liability for employers. Despite such policies, a number of CEOs of firms involved in scandal engaged in inappropriate personal relationships at work.

The CEOs of Enron, WorldCom, and Tyco all engaged in indiscreet affairs with subordinates before their firms failed, but did not face professional consequences for their behavior.²²⁵ These men abused their authority to promote their mistresses to corporate positions where they could help facilitate embezzlement and fraud. For example, Tyco CEO Dennis Kozlowski, carried on numerous extra-marital affairs with employees at Tyco. He lavished his mistresses with large bonuses and luxury housing and placed them in positions at Tyco where they helped to facilitate his unauthorized spending sprees.²²⁶

Enron's CEO Jeffrey Skilling had an open affair with Rebecca Carter, an Enron manager, whom he later married. Skilling promoted Carter from a mid-level management position to the \$600,000/year post as Corporate Secretary, a position from which she managed the executive team's communications with the board of directors.²²⁷ Although in some

²²⁴Among the factors assessed PCL-R psychopathy test are sexual promiscuity or a series short-term relationships. According to Babiak & Hare, "psychopaths have many short-term relationships over the course of their lives . . . They often leave behind a trail of jilted lovers, possibly abused ex-spouses, and unsupported children". BABIAK & HARE, *supra* note 34, at 57. See also Campbell et al. *supra* note 129, at 280-81 ("Narcissism predicts uncommitted sexual relationships, infidelity and sexual coercion, each of which has potentially destructive consequences in an organizational context.")

²²⁵BETHANY MCLEAN & PETER ELKIND, *THE SMARTEST GUYS IN THE ROOM: THE AMAZING RISE AND SCANDALOUS FALL OF ENRON* 124-25 (2003); Simon English, *Kozlowski's Second Affair is Revealed to Tyco Jury*, TELEGRAPH (Nov. 15, 2003), <http://tinyurl.com/TYCO-151103>; See O'Donnell & Farrell, *supra* note 220.

²²⁶English, *supra* note 225.

²²⁷MCLEAN & ELKIND, *supra* note 225, at 124-25. Several other Enron executives were notorious for their marital infidelity. Senior executives Ken Rice and Amanda Martin had an affair that began while they were both were married to other people. *Id.* at 124. Lou

cases the corporations' directors were aware of these improprieties, they failed to address the policy violations or take steps to mitigate obvious conflicts of interest.²²⁸

c) Legal transgressions.

When executives commit crimes or engage in other legal transgressions, it's often just the tip of iceberg. A criminal probe of an executive's conduct outside of work often unearths evidence of professional misconduct. As one example, Tyco CEO Dennis Kozlowski, was brought down by what started out as New York Attorney General Robert Morgenthau's investigation of sales tax evasion.²²⁹ Kozlowski shipped empty boxes from New York to New Hampshire in an effort to avoid paying sales tax on artwork he had purchased. After these charges became public and Tyco dismissed Kozlowski, the scope of his fraud and embezzlement at Tyco became clear.

Along similar lines, the Wall Street Journal reported that a hotel guest in Boston called the police when Bear Stearns CEO James Cayne was smoking marijuana in the room next door.²³⁰ Although the police arrived at the scene, they took no action against Cayne.²³¹ As yet another

Pai, director of Enron's trading operations, spent a lot of time at Houston strip clubs. *Id.* at 58-59. Pai eventually married a former stripper from one of his favorite clubs. *Id.* at 301. WorldCom CEO Bernard Ebbers was also a known philanderer. See O'Donnell & Farrell, *supra* note 220.

²²⁸McLean & Elkind, *supra* note 225, at 124-25 (reporting that Skilling asked the board for permission to date Carter after the affair had begun). More recently, the CEOs of Restoration Hardware, Best Buy, Hewlett Packard, and McDonnell Douglas, among others, were terminated due to their involvement in improper workplace relationships. These men were fired not strictly because of their affairs, but for violating their firms' conduct rules. Some of the executives had misused corporate funds to support or entertain their mistresses. Brandon Bailey, *HP's Challenge in CEO Hunt: Analysts Call for Visionary Who Can Lead Company in Swiftly Changing Era*, San Jose Mercury News at A1 (Aug. 8, 2010), <http://tinyurl.com/k8tgoka>. Others used their authority to hire, promote, or overpay the employees. See Andrew Ross Sorkin, *Restoration Hardware Co-Chief Steps Down After An Inquiry*, Dealbook, nytimes.com (Aug. 16, 2012),

<http://dealbook.nytimes.com/2012/08/16/restoration-hardware-co-chief-steps-down-after-an-inquiry>. These more recent reports suggest that directors may be taking more seriously the risks associated with tolerating rule-breaking and unethical personal behavior at the top of their organizations.

²²⁹Ari Weinberg, *Kozlowski Indicted on Tax Evasion*, FORBES.COM (June 4, 2002), <http://www.forbes.com/2002/06/04/0604kozlowski.html>.

²³⁰Kate Kelly, *Bear CEO's Handling of Crisis Raises Issues*, WALL ST. J. (Nov. 1, 2007), <https://www.wsj.com/articles/SB119387369474078336>. These events allegedly occurred before Massachusetts law was amended by a public referendum to reduce possession of small amounts of marijuana from a criminal offense to a civil offense.

²³¹*Id.*; see also GREENBERG & SINGER, *supra* note 221, at 85-86 (Bear Stearns Chairman Alan Greenberg acknowledged knowing about Cayne's drug use yet failed to take action, even after Kelly's embarrassing Wall Street Journal article was published).

example, a documentary film, titled *Inside Job*, reported that New York prosecutors had evidence of solicitation of prostitutes and accounting fraud by high-level Wall Street executives. Although the prosecutors pursued criminal action against the so-called “Wall Street Madam,” they spared her wealthy clients similar scrutiny.²³²

How should directors respond when a senior corporate executive has a brush with the law? At the very least the matter deserves close board attention as an executive’s prior scrapes with the law may constitute a risk factor for fraud.²³³ These reports of the behavior of CEOs of firms embroiled in legal troubles support the view that directors and public officials should not look away when faced with reports of aberrant personal behavior by business leaders.

The point of this discussion is not to encourage witch hunts or to promote the personal persecution of corporate executives. The point instead is that due to their positions, corporate executives should expect to be held to the highest standards of professionalism. When information comes to light that calls into question the personal integrity of a senior executive, directors should take note and treat the situation as an impetus to consider whether the trust they have shown to the individual in question continues to be well placed.

d) Gambling

Like substance abuse, gambling problems correlate with impaired decision-making. Mental health experts believe that many Wall Street traders are also gambling addicts.²³⁴ As one expert has observed, “the personality traits between the two groups are quite similar: risk taking, sensation seeking and action driven.”²³⁵ In the absence of careful monitoring of their trading activities, gambling addicts with access to corporate resources are capable of bringing down a firm. Stories of rogue traders who destroyed some of the world’s most prestigious financial firms offer sobering examples of these dangers.²³⁶ If it is

²³²See *INSIDE JOB* (Sony Pictures Classics 2010); Ann Schecter, Rhonda Schwarz & Brian Ross, *CEOs, Bankers Used Corporate Credit Cards for Sex*, ABCNews.com, available at <http://tinyurl.com/kb7odb>.

²³³See Davidson et al., *supra* note 167 (discussing a study linking prior legal infractions to financial reporting risks).

²³⁴See Sherree Decovny, *The Financial Psychopath Next Door*, CFA Magazine, (Mar./Apr. 2012) (reporting New York psychologist Christopher Bayer’s observation that many Wall Street traders become compulsive gamblers).

²³⁵*When is Gambling an Addiction?* N.Y. TIMES (Oct. 29, 2010) (quoting Dr. Timothy Fong, co-director of the Gambling Studies Program at UCLA).

²³⁶Nick Leeson brought down Barings Bank in 1995 with 830 million pounds of trading losses. See *How Leeson Broke the Bank*, BBCNEWS.COM (June 22, 1999),

possible to become “addicted” to stock trading, then policies based on the assumption that decisions of traders or corporate managers are guided by rational self-interest are potentially destructive.²³⁷

According to neuroscience studies the anticipation of gains (which in a rising market is a constant feature of securities trading and stock option plans) produces the same dopamine surge as addictive drugs like cocaine and motivates risky financial decisions.²³⁸ It is reasonable to worry, therefore, that incentive compensation schemes that replicate the reward structure of gambling could induce managers to compulsively pursue irrational financial risks.²³⁹ This dynamic would run counter to the predictions of rational choice theory, which argues that incentive compensation motivates the kinds of decisions that shareholders and society prefer.²⁴⁰

In addition, problem gamblers and other antisocial risk takers are more likely to have impaired decision making skills; meaning they have trouble making rational decisions regarding risk.²⁴¹ Antisocial risk takers tend to be perseverative, make excessively risky decisions, and show a preference for small short-term gains at the expense of large long-term losses. Because gambling addiction does not preclude success in the business world, and many financial traders are believed to be gambling addicts,²⁴² corporate officials and policymakers can ill-afford to ignore research that sheds light on how conventional corporate governance policies might impact their behavior.

VI. CONCLUSION

Scientists have made great strides in unlocking the mystery of why some people engage in impulsive and antisocial behavior. A growing body of research suggests that impulsivity is a trait, expressed through various forms of antisocial conduct, which is consistent across all domains of an individual’s life. When we juxtapose research on impulsivity with accounts of the negative impact that executives with

<http://tinyurl.com/g0hmq>; UBS lost \$2.3 billion through rogue trading by Kweku Adoboli. In 2012, JP Morgan lost \$8 billion due to rogue trades by the so-called London Whale. See Jessica Silver-Greenberg & Susanne Craig, *JPMorgan Trading Loss May Reach \$9 Billion*, *DEALBOOK, NYTIMES.COM* (June 28, 2012), <http://tinyurl.com/wb2sah>.

²³⁷Williams, *supra* note 189, at 1226.

²³⁸Buckholtz et al., *supra* note 69, at 421.

²³⁹Williams, *supra* note 189, at 1225-26 (noting executives at firms subject to SEC enforcement action had greater equity-based payoffs and exercised greater fractions of vested options than executives at non-fraud firms).

²⁴⁰Jensen & Murphy, *supra* note 11.

²⁴¹See Mukherjee & Kable, *supra* note 61.

²⁴²LINDEN, *supra* note 68, at 131.

antisocial or narcissistic traits have had on the health of their corporations and the economy, it becomes clear that we must reassess the objective of promoting risk taking which informs much of corporate law analysis.

Although irrational risk aversion poses a threat to social progress, antisocial risk taking also poses dangers that are too severe to ignore. Psychology and neuroscience findings point to moderate risk taking as the key to corporate and investment success. Corporate and financial law policies must be redesigned to reflect this age-old wisdom. We can better protect ourselves from the threat posed by reckless leaders by paying attention to the kinds of conduct that correlate with a dysfunctional approach to risk. This Article identifies several forms of aberrant behavior that merit close scrutiny. In future work, I plan to develop further recommendations for corporate and financial regulatory reform.
