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Psychological Bias as a Driver of Financial Regulation*

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Preliminary Version

Financial regulation is usually analyzed as either the equilibrium outcome of competition among rational pressure groups, or as a tool for protecting naive investors. I propose here a theory of regulation based upon the psychological biases of political participants—voters, politicians, bureaucrats, and media commentators. Some key elements of the *psychological attraction* approach to financial regulation are: salience and vividness; omission bias; scapegoating and xenophobia; fairness and reciprocity norms; overconfidence; and mood effects. This approach further emphasizes emergent effects that arise from the interactions of individuals with psychological biases. This leads, for example, to a powerful influence on regulatory outcomes of availability cascades and ideological replicators.

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The behavioral revolution in finance has mainly taken regulatory structures as given. Recent applications of behavioral finance to financial regulation have mainly focused on the normative issue of how best to protect or assist irrational investors (e.g., Sunstein and Thaler 2003). The literature on positive political economy or ‘public choice’ has examined economic regulation from a positive perspective, but the focus of this field has been mainly on conflicts between rational pressure groups who manipulate the political process and regulations to obtain selfish benefits (as modeled, for example, by Becker (1983)), or on the effects of the activities of rational politicians or regulators. This rational approach has been applied successfully to financial regulation as well.¹

A great missing chapter in the theory of financial regulation is the analysis of how irrationality by participants in the *political* process affects regulatory outcomes.² Such an analysis is positive, seeking to understand what is, not just what should be, recognizing that regulators, politicians and voters are subject to systematic biases. I call this approach the *psychological attraction* approach to financial regulation, because certain attitudes or beliefs about regulation (pro or con) will be especially good at exploiting people’s psychological biases to capture attention and support. Although my focus is on financial regulation, more generally the effects of irrationality on political outcomes deserves far more attention from economists.³

¹ Some recent studies include Kroszner and Stratmann (1998), Rajan and Zingales (2003), and Benmelech and Moskowitz (2007).

² Two recent books on financial regulation (Goodhart 1998, Garten 2001), and a recent survey by the World Bank (Klapper and Zaidi 2005) do not even mention this topic. Even a leading behavioral economist, in an overview article entitled “Understanding Regulation,” does not include a psychological approach in his summary of theories of regulation, nor mention psychology or behavioral economics. In describing the sources of bad regulation, he states the rational self-interest theory: “... the key problem is the risk of public abuse of market participants by an official who is either pursuing his own political interests or is captured by a particular group, including the regulated industry itself” (Shleifer 2005, p. 446).

³ Recent progress is being made; see, e.g., Kuran and Sunstein (1999), Caplan (2001), Murphy and Shleifer (2004), and Mullainathan and Shleifer (2005b).

A very small step in this direction is the notion that ‘rational ignorance’ causes individuals to vote foolishly, or not at all (Downs 1957). However, while rational ignorance can explain big mistakes, it does not explain *bias*; voters should still make the right choices on average (Coate and Morris 1995, Wittman 1995), notwithstanding any efforts by pressure groups to manipulate available information. As such, models based upon the rational ignorance perspective do not explain why some forms of proposed regulation, and some ways of selling them, are better at catching our cognitive or emotional hooks than others. In such an approach, the rhetoric of political discourse doesn’t matter. I will argue here the opposite, that psychological bias is crucial for understanding the political process and its outcomes.

Economists have often wondered why some harmful policies, such as farm subsidies and protectionism, are so enticing, despite the arguments ranged against them. Similarly, it could be asked why generations of socialist revolutionaries have repeatedly expected, in the face of all evidence, that forced collectivization of agriculture would increase productivity (Caplan 2001 p. 4). Inattention alone cannot explain the success of harmful policies; there are times when public discourse focuses sharply on these issues, and the special times of focus are often when bad policies are instated, not removed.

The rational ignorance perspective does capture a part of the truth; time, attention, and processing power are indeed limited, and limited attention does affect public discourse about regulation. This is evident, for example, from the prevalence and effectiveness of simplistic sound bites in political conflicts. However, to understand the form of regulation, it is not enough to recognize that people neglect information and fail to reason deeply. We need to understand what kinds of information are the most salient

and what kinds of arguments and plans are the most enticing. More ambitiously, we need to understand the social process by which naïve feelings and beliefs about public policy spread through the media and from person to person.

I do not try here to provide a comprehensive taxonomy of effects. The biases and resulting patterns of social interaction that I focus on are:

1. Salience and Vividness Effects
2. Omission Bias
3. Scapegoating and Xenophobia
4. Fairness and Reciprocity Norms
5. Overconfidence
6. Mood Effects and Availability Cascades
7. Ideological Replicators

The first five items can be viewed as individual psychological biases, though a propensity toward scapegoating and xenophobia can be amplified by social interaction. In item (6), mood effects can cause individual biases, but these (as well as cognitive biases) can be amplified socially to become availability cascades. Item (7) concerns the contagion of regulation-promoting ideas from person to person.

The field of evolutionary psychology studies the mental mechanisms designed by natural selection to perform the tasks that are necessary for survival and reproduction. Since the human mind, like other adaptations, is the result of evolution, a good theory of human psychology will have an evolutionary grounding, just as a good chemistry theory will be compatible with physics and a good macroeconomic theory with microeconomics. It would be suspicious if an alleged psychological bias did not have a plausible

explanation in terms of adaptiveness or of the limitations of some generally adaptive mechanism. So when I call upon a psychological bias to explain the form of regulation, I will try where possible to give some hint of the evolutionary source of the bias.

Of course, in the examples I discuss, psychological bias is not necessarily the only cause of the relevant regulation. I will at most only briefly mention alternative possible explanations, which in some cases may be quite important. Also, much regulation is through the legal system, but I say little about how psychological biases of judges, juries, or litigators affect legal outcomes (see, e.g., Kahneman, Schkade, and Sunstein, (1998)).

The attribution of a regulation to psychological bias naturally raises questions about its desirability. My main purpose here is to offer a positive theory, but in the conclusion I suggest some possible policy implications. In the remainder of the paper I consider the above seven effects in sequence, and then conclude.

1. Salience and Vividness Effects

Some stimuli tend to be perceived and encoded more easily or retrievably than others. The *salience* of a stimulus is its prominence, or tendency to stand out, or contrast with other stimuli in the environment. The effects of salience are “robust and wide-ranging” (Fiske and Taylor 1991, ch. 7), with influence on judgments about causality, and about how extreme or importance is the stimulus.

Attention is also drawn to vivid stimuli. Vividness is greatest for concrete descriptions and scenarios, personal stories about individual experiences, information that falls into an easily summarized pattern, and stimuli that trigger emotional responses

(Nisbett and Ross 1980, p. 45). In contrast, people tend to underweight abstract, statistical, and base-rate information).

As a consequence of salience and vividness, regulatory debates are influenced heavily by extreme individual cases, and emotional stories about personal experiences. This can explain the tendency for regulations to be imposed in response to deplorable, rare, but highly salient extreme cases, often resulting in less extreme but much more frequent and widespread costs being imposed on the regulated.

A possible example involves the push for tighter disclosure and reporting regulation in the early years of the third millennium. The Sarbanes-Oxley Act of 2002 (SOX) was adopted in aftermath of corporate scandals at turn of millennium involving fraud and inaccurate financial reporting. The Enron scandal helped set the stage for SOX, and accounting fraud at WorldCom gave a strong further impetus. SOX was the biggest change to U.S. reporting regulations since the depression-era Securities Acts of 1933 and 1934.

The Enron scandal was associated with salient media coverage of retirees losing their retirement investments, and the word “Enron” became an emblem for heartless exploitation of employees by managers. The extraordinary salience of the Enron disaster was due in part to the painful experiences of employees who had tied up large fractions of their pensions in Enron stock and experienced severe losses. Greatly contributing to the vividness was a simple dramatic narrative of good versus evil. Management led employees to believe that Enron stock was a great investment for retirement even after management knew the situation was dire. (This was in violation of fairness and reciprocity norms, the topic of Section 4.)

Any benefit of the regulatory response to accounting scandals in protecting own-company investors from the loss of their life wealth (a rare circumstance) needs to be weighed against the substantial costs imposed with certainty on shareholders of all publicly traded companies. However, the costs on general shareholders are much less vivid than poignant stories about the loss of a family's life savings because of lies and malfeasance by wealthy executives.⁴ The costs of SOX to general shareholders do not make a vivid story of victimization, and indeed may not be framed as losses at all. Such costs can be integrated with the overall profit that most firms generate, so that general shareholders are still perceived as overall gainers.

More generally, the costs of regulation, though widely incurred, are often indirect and far less salient than the exceptional wrongdoings that motivated them. One obstacle to estimating the costs of regulation in mind is that cooperation in markets is complex, making it hard to think of all the ramifications of a new regulation. In general, there is evidence that people tend to underweight the probabilities of event contingencies that are not explicitly available for consideration. For example, people tend to underestimate the probability of 'other causes' in a list of possible causes of an event (Fischhoff, Slovic, and Lichtenstein 1978); when the 'other causes' category is broken down into more detailed sub-categories, the total probability assessment increases. Since the side-effects of regulation are not fully foreseeable, such neglect of contingencies can lead to underestimation of associated costs. For example, management time is a precious

⁴ Over 60% of Enron's 401(k) retirement plan was invested in company stock, and Enron employees lost about \$1 billion of retirement assets (Wines 2002). Accounts of individual losses were expressed tearfully in congressional testimony.

resource, but not one that is easy to quantify when planning a regulation, and not necessarily a highly salient consideration in deliberations.⁵

The main reason that employee/shareholders like those at Enron would face the risk of financial ruin in retirement would be the use of a naïve investment strategy—plunging in own-company stock. SOX did not address this problem. To the extent that employee losses in the Enron disaster contributed to the adoption of SOX, the costs imposed on general shareholders can be viewed as collateral damage.

A more direct way of protecting retirees from the relevant danger would be for investors to learn more about the riskiness of such plunging behavior. However, I argue in Section 4 that it is psychologically unattractive to focus a policy response on investor education when there are conspicuous culprits to be blamed.

Loss Salience

Loss aversion is the distaste for losses as measured relative to an arbitrary reference point (Kahneman and Tversky 1979).⁶ This reference-dependence means that framing matters—a given consumption level is treated differently when describes as a gain versus a loss. Loss aversion has been applied widely in behavioral finance. What I

⁵ The Committee on Capital Markets Regulation (2007) discusses estimates indicating that costs in management time of Sarbanes-Oxley Section 404 compliance were about 35 times higher than the costs as estimated beforehand by the SEC. Perkins (2007) argues that SOX has changed the entire nature of boards of directors from a “guidance boards,” which emphasize performance, to “compliance boards,” which focus on complying with legal and regulatory restrictions.

⁶ An aspect of loss aversion is the avoidance of even very small losses, but the key for my purposes is reference-dependence. This distinguishes loss aversion from rational risk aversion; ‘reframing’ a scenario (presenting it differently) can trigger the use of different reference points, thereby eliciting different judgments and choices. Experiments using neurological imaging techniques (fMRI) show that gains and losses are processed in different parts of the brain (Yacubian et al 2006), which reinforces the view that our minds focus upon gains and losses rather than total consumption outcomes as rationality would require.

call *loss salience* extends this notion to the social sphere. We seem to notice and care more about the financial losses than the financial gains of others.

There is some experimental support for loss salience (Arkes and Wilson 2006), and it makes intuitive sense in terms of empathy; when we care about another we imagine ourselves in his or her position. If, owing to loss aversion, we hate losses, we feel that others would too, making their losses salient to us.

Loss aversion and loss salience probably derive from more fundamental psychological forces. The first is limited attention, which can make it efficient to discretize ('gain,' or 'loss,' rather than just a continuous performance measure) in order to simplify judgments and decisions (see the discussion in Hirshleifer (2001)).

The second is the set of evolutionary cognitive adaptations that support protection of and respect for private property. Aristotle maintained that the idea of property comes from human nature: "...people part with what is their own less readily than they avoid taking what is another's" (quoted by Skyrms (1999 p. 76)). In models of evolutionary games in which animals battle for resources, territoriality can arise as an equilibrium in which what is owned by self is protected, and what is owned by others is respected (the 'bourgeois' strategy; see Maynard Smith and Parker (1976), Mesterton-Gibbons (1992), and Gintis (in press)). The endowment effect (Knetsch and Sinden 1984) is consistent with an instinct for preservation of property. Evolved psychological mechanisms to monitor and protect what one currently possesses could cause individuals to be especially sensitive to losses.

There are a number of indications that losses are especially salient for financial judgments and decisions. Analysis of risk often takes the form of studying 'worst-case

scenarios' rather than measures of risk such as variance that reflect the full probability distribution of outcomes. Psychological research suggests that risk perceptions focuses upon the potential for loss (Yates and Stone 1992, Loewenstein et al 2001), rather than on overall variability of outcomes, and there is evidence suggesting that this is the case for analysts and investors (Olsen 1997, Koonce, McAnally, and Mercer 2005).

Indeed, the appeal of the Value at Risk methodology for risk management is a sign of the psychological salience of losses in risk perception. Value at risk method estimates the 'maximum possible loss' under ordinary business conditions (based upon a confidence interval such as 95%). There is no rational justification for evaluating risk by focusing solely on large losses as defined by an arbitrary discontinuous threshold.

Loss salience may help explain the political pressure for derivatives regulation. It may be more salient when a derivatives hedging strategy creates a big loss than when it creates a big gain, causing derivatives hedging to fall into disrepute. Big derivatives losses will be salient regardless of whether they result from a correctly-executed hedge, a poorly-executed hedge, or from speculation.

Ex ante, a good hedge should reduce the variability of total profits. However, the reference point of zero profits on the derivative position is highly salient, so investors think in terms of gains and losses. Furthermore, ex post profits are far more cognitively available than possible inferences about ex ante distributions. Ex ante distributions are abstract, and require greater cognitive processing to consider.⁷

⁷ See Daniel, Hirshleifer, and Teoh (2002). Also, a negative response to derivatives trading often comes from the view that it is financial 'wheeling and dealing,' as contrasted with genuinely productive behavior by the firm. Since derivatives are often used for speculation, some observers may equate their use with speculation, and therefore perceive their use negatively. I argue that anti-speculative perceptions probably derive from fairness/reciprocity norms, as discussed in Section 3.

The tendency of the media to publish news about large derivatives losses (as with Orange County and Barings) rather than gains (Hodder, Koonce, and McAnally 2001) further magnifies the salience of losses. The incentive for the media to report in this fashion itself is presumably a consequence of loss salience, creating a self-feeding effect (see Section 6).

The U.S. Securities and Exchange Commission allows required disclosure of quantitative information about the risk of derivative securities by means of VaR (Value at Risk), sensitivity analysis, or in tabular form (Hodder, Koonce, and McAnally, 2001).⁸ Both the sensitivity analysis and VaR methodologies require the firm to disclose information about the potential downside but not upside associated with relevant market risks.

In a derivatives hedge, the ex ante prospect of big hedging loss is a necessary part of reduction in variability. A disclosure fixated solely upon the derivatives payoff makes the apparent risk from the derivative position cognitively available, and makes the position's offsetting of underlying business risk less available. However, omission bias makes such regulation intuitively appealing. Similarly, loss salience makes a focus solely on losses as an index of risk intuitively appealing. Thus, these two biases help explain the shape of disclosure regulation. Furthermore, regulatory fixation upon losses justifies and reinforces the investor focus upon losses.⁹ So social amplification of psychological bias can occur through regulation as well as through personal interaction and mass media.

2. Omission Bias and Associated Norms

⁸ SEC Financial Reporting Release No. 48 on derivative and market risk disclosures.

⁹ Koonce, Lipe, and McAnally (2005) find experimentally that loss-only risk disclosures cause investors to assess firms with differing underlying exposures as equally risky.

According to Ritov and Baron (1990), *omission bias* is “the tendency to favor omissions (such as letting someone die) over otherwise equivalent commissions (such as killing someone actively).” For example, “Subjects are reluctant to vaccinate a (hypothetical) child when the vaccination itself can cause death, even when this is much less likely than death from the disease prevented.” Omission bias presumably conditions our tendency to blame others for adverse outcomes.

Omission bias may also explain why teachers of economics need to work hard to explain the notion of opportunity cost. The loss of an opportunity for profit does not feel as bad to us as would an expenditure of resources that we already possess, even though the effect is identical.

Intuitively, omission bias is a misapplication of what can potentially be a valid line of reasoning.¹⁰ However, treating errors of commissions as worse than errors of omission is invalid when other factors are held constant, such as the knowledge and intentions of the decisionmaker.

Omission bias may be part of the psychological mechanism for maintaining self-esteem.¹¹ There is a wide universe of possible good activities to undertake, so even a very competent person will neglect some good ones. In contrast, exerting effort to pursue an activity and then failing is a more adverse signal about the individual’s judgment and competence.

¹⁰ As Ritov and Baron point out, “In most cases, we have good reasons for the distinction between omissions and commissions: omissions may result from ignorance, and commissions usually do not; commissions usually involve more malicious intentions than the corresponding omissions; and commissions usually involve more effort, itself a sign of stronger intentions. In addition, when people know that harmful omissions are socially acceptable, they look out for themselves; this self-help principle is, arguably, sometimes the most efficient way to prevent harm.”

¹¹ Trivers (2000) provides a theory of the evolutionary benefit of self-deception based on the idea that it is easier to persuade others that one’s quality is high if one truly believes that this is the case.

Corporate hedging causes adverse ‘side effects’ (losses) much more frequently than is seen for vaccinations. Even an ex ante well-designed hedge frequently produce losses ex post. Observers who are subject to omission bias will be very concerned about losses from hedging, since such losses could be avoided by not hedging (see the discussion in Daniel, Hirshleifer, and Teoh 2002). And, ex ante, observers who fear derivatives losses may perceive a firm that undertakes a risk-reducing hedge as *more* risky than one that does not. By comparison, basic business risk is already present, so observers will not ‘blame’ the firm as much for resulting unhedged losses (losses that result from omission, not commission).

Diversification is another active means of controlling risk. For a given expected return, an investor can reduce risk by diversifying internationally and across asset classes. However, investing in countries like Vietnam, or in commodities such as cocoa futures, feels risky. In part this probably reflects familiarity bias (Huberman (2001), Cao, Hirshleifer, Han, Zhang (2007), Massa and Simonov (forthcoming)), and limited cognition (a failure to think about the risk-reducing effects of diversification). However, it also probably reflects omission bias. Refraining from investing in Vietnam equities or cocoa futures is an act of omission, and any resulting loss outcomes are mere opportunity losses. But if an investor buys Vietnam and Vietnam stocks fall, the investment loss, being the result of a commission, is painful. There is indeed evidence that non-diversification is the result of behavioral bias (Goetzmann and Kumar 2004).

Regulation (either by government or other institutions) is sometimes designed to protect unsophisticated investors from ‘dangerous’ securities or asset classes. The intent is to prevent investors from speculating aggressively. However, even if the planner is

well-intentioned, what feels like aggressive speculation to the planner could be risk-reducing diversification for the investor. Just as omission bias can deter an investor from diversifying, omission bias can push a planner to block diversifying trades.

Del Guercio (1996) discusses that the courts usually evaluate whether an asset is a prudent investment in isolation rather than as part of a portfolio. Again, this could derive either from omission bias or from a simple failure to understand the concept of diversification. Thus, to protect against lawsuit, institutions with fiduciary responsibilities are pressured to avoid assets that seem imprudent. Bank managers are subject to especially stringent prudent-man standards as compared with mutual funds, because they invest on behalf of private trusts and pension plans. As a result, Del Guercio documents that banks tilt their portfolios much more strongly toward ‘high-quality’ stocks.

Omission bias may help explain rules of pension plans about what they cannot invest in (e.g., real estate, commodities, etc.) even though in a diversified portfolio a broad range of assets is useful. Taken in isolation, volatile assets seem risky.¹² Since undertaking a ‘risky’ trade is an act of commission, consequent losses are more painful to imagine than losses resulting from an act of omission. The requirement of ‘prudent’ investments makes psychological sense, since it protects investors from what would be framed as a salient loss, as opposed to a non-salient foregone gain. Nofsinger (p. 56) discusses the Government Finance Officers Association 1999 survey of public pension plans, and the restrictions of some plans from such asset classes as real estate, bonds, foreign securities, and U.S. equities.

¹² This suggests that narrow framing can help explain a failure to diversify. The effects of narrow framing on risk perceptions are analyzed by Barberis and Huang (2006).

Similarly, omission bias may help explain rules that limit trading of the stock of privately held firms, and participation in hedge funds, to ‘qualified’ investors. More generally, there are suitability standards for securities brokers requiring them to ensure that there are “reasonable grounds for believing that investments such as stocks and bonds are suitable for their customers’ financial status and investment objectives” (*Wall Street Journal*, 3/8/07, D1).¹³

3. Scapegoating and Xenophobia

Xenophobia is the tendency to be suspicious, fearful, or hostile toward foreigners and strangers. Social psychologists have analyzed extensively the cognitive processes that support prejudice (Allport 1995). Such explanations are important, but in turn raise deeper questions. It would be an odd coincidence that several prejudice-inducing psychological biases all go in the same direction—thinking better of the in-group than the out-group, rather than the other way around.

More fundamentally, a psychological propensity toward xenophobia comes from the evolutionary principle of kin selection (Hamilton 1964). Genes that promote the reproduction of other individuals who share the same genes (kin) tend to replicate and predominate in the long run. Thus, the minds of animals including humans are designed to help kin. Supporting this theory, there is a great deal of evidence that helping behavior by animals, humans, and even plants is associated with genetic relatedness (Rushton 2005).¹⁴

¹³ Recent failures in the sub-prime mortgage market have caused regulators to propose imposing a suitability standard on mortgage lenders as well, which would restrict credit to risky borrowers. A suitability standard could encourage diversification, but would not if interpreted to exclude asset classes that are useful for diversifying.

¹⁴ Reynolds, Falger, and Vine (1987) discuss the general human tendency to value the own-group above outsiders, leading to ethnocentrism, nationalism, and xenophobia. Caplan (2001, p. 15-16) discusses other studies suggesting in several countries an ethnocentric bias of attributing economic problems to foreigners.

Evolved psychological mechanisms adapted to support exchange may further contribute to xenophobia. Reciprocity tends to be more feasible when there are repeated interactions with familiar individuals, so that cheaters can be identified and punished. In the evolutionary past it paid to be suspicious of strangers with whom the likelihood of repeated interactions was lower.

When things go wrong, people are eager to find someone to blame, often based upon minimal evidence. Inherently implausible accusations and moral censure far out of proportion to the wrongdoing are commonly directed toward some visible, disliked, and relatively weak out-group. Social psychologists call this tendency *scapegoating*. Scapegoating is often described as a way for individuals to displace frustration (Aronson, Wilson, Akert 2006).

Several psychological forces contribute to scapegoating. First is xenophobia, which leads to a focus on people who are different as possible villains. Second is self-esteem maintenance (discussed earlier); when an individual is doing poorly and therefore faces a threat to self-esteem, it is appealing to have an outside force to blame. Third is a tendency to stereotyped thinking about out-groups as more homogeneous than in-groups. Since outsiders are less familiar, such stereotyping is a consequence of limited attention and processing power. Fourth is hair-trigger agency detection, the readiness to look for and believe in causal agents to explain observed outcomes.

With regard to the fourth item, from an evolutionary perspective, a readiness to perceive agency makes sense because the losses from different kinds of inference mistakes are asymmetric. In the environment of evolutionary adaptation, it did not cost much to jump at a shadow, but cost a lot to stand still while a predator was leaping.

Similarly, in navigating a social environment filled with strategic interactions, the cost of attributing a chance event to an intentional agent and taking appropriate precautions was likely to be lower than the cost of attributing the effects of intentional mischief to chance (Barrett 2000, Boyer 2001, Atran 2004). The readiness of individuals to despise scapegoats is compounded by social interactions in which theories of villainy by an out-group become highly available (see Section 6).

Scapegoating and Regulation

The readiness to identify culprits for adverse outcomes (scapegoating) encourages regulatory responses designed to prevent future malfeasance. Solutions that do not focus on the villains are far less vivid and appealing (regardless of whether there really was villainous behavior).

With regard to the Enron debacle, investor education about the risk of investing heavily in own-company stock is probably far more relevant for averting investor ruin than stronger financial disclosure requirements. However, focusing on this solution involves pushing for a change in the behavior of potential *victims*. This feels unjust and less intuitive than constraining *villains* or potential villains.¹⁵

Economic and stock market busts tend to be associated with pressure for regulation. Examples include the depression era Securities Acts of 1933 and 1934, and the Sarbanes-Oxley legislation at the end of the millennial high-tech boom. A rational theory of regulation could potentially explain this pattern. At times when firms are

¹⁵ However, there were proposals by Senators Boxer and Corzine to limit to 20% the amount of company stock that can be held in a 401(k) plan (Wines 2002).

failing, on average observers are learning adverse information about the extent of different kinds of malfeasance such as earnings manipulation.

My focus in this section is on an alternative explanation for a regulatory reaction to bad times—the urge to find someone to blame. When a decline in a stock or the market occurs, investors seek an explanation for their investment losses. Chance or personal incompetence are dissatisfying explanations. Villainy is a salient and emotionally satisfying explanation, particularly if villains belong to some group that is already disliked. At such times investors are receptive to the view that any bubble must have been caused by someone hyping the stock for nefarious ends.

In reality there is often deliberate, exploitive hype, especially during periods of market optimism. But the coincidence of a bubble and hype don't prove that intentional hype caused the bubble. Optimistic expectations could be a spontaneous result of psychological bias and amplifying social processes.

For the millennial stock market boom, another possible explanation is that there was no bubble—that new growth opportunities (the internet) were hard to evaluate. However, other explanations are more vivid and repeatable—that regulators failed to rein in irrational exuberance, that analysts and investment banks were lying, and so forth. Regardless of whether malfeasance had a big effect on the markets or not, a cast of villains can be found, and will be perceived to be an important cause of investor losses. Furthermore, this perception provides a salient argument in favor of regulation—to prevent such villainy from harming the investors again.

Scapegoating can be exacerbated by hindsight bias, the belief ex post that what is obvious at that time was obvious to the individual ex ante. After a bubble bursts we feel

that we knew it was a bubble all along. This reinforces in observers' minds the notion that most of the analysts and intermediaries who recommended high-tech stocks must have knowingly been deceiving investors.

Where there is an identifiable group that can be blamed for adverse financial events, popular thinking that underlies financial regulation tends to focus on constraining the evil group. Thus, stock market crashes have often triggered vilification of speculators, which creates pressure to regulate trading. Short-sellers are associated with stock price drops, so they are also targets of vilification. (This is ironic, since investigation by short-sellers helps ferret out fraud and malfeasance.) Hard economic times also trigger vilification of lenders as greedy exploiters, creating pressure for usury regulation. In Section 4 on fairness and reciprocity norms, I consider further why speculators, short-sellers, and lenders are psychologically appealing targets for blame for financial and social ills.

An alternative to the scapegoating explanation for the regulatory response to stock market drops flows naturally from the investor persuasion theory of Mullainathan and Shleifer (2005a). In their theory, investors become emotionally receptive to messages about 'growth' (the opportunity to get richer) after aggregate stock market runups, and to messages about 'protection' after stock market declines. They provide evidence for this shift in investor orientation based upon the content of financial advertisements targeted to individual investors after high versus low market returns. This argument could be extended to conclude that a stock market drop incites a greater demand for regulation to protect against financial fraud.

This may be part of the explanation. However, it does not explain the feelings of *anger*, not just fear, that are often emphatically expressed by advocates of financial regulation. The discourse in the news media leading to the passage of Sarbanes/Oxley, for example, was not mainly about how dangerous life is, and the need for protection. More common were expressions of rage against wrongdoers, and accusations of betrayal on the part of financial gatekeepers who were supposed to be acting on behalf of investors.

Of course, if a group is already despised, such as the Jews during much of the history of Europe, that makes it an especially salient candidate for scapegoating. During market crashes, conspiracy theories have sometimes included accusations that foreigners were engaged in bear raids on U.S. markets (Chancellor 2001). Section 7 discusses the social processes that lead to contagious ideologies such as conspiracy theories.

Xenophobia and Regulation

Financial practices that are associated with hated groups will tend to be hated for this reason. Jeremy Bentham (1787:2004 p. 28) argued that Christians' rejection of usury was intensified by their dislike of the Jews, who were identified with money lending. Of course, the opposite causality was also present; the fact that the Jews engaged in moneylending was used as a further excuse to hate them.

Xenophobia can help explain regulation of foreign shareholding and control of domestic companies. At the individual level, Morse and Shive (2006) provide evidence that patriotism is associated with greater home bias in portfolio holdings. Cross-national takeovers are sometimes politically delicate, and when heavily reported in the press are

sometimes blocked by regulators. This seems to reflect territorial feelings and suspicion of outsiders. Similarly, in part for ‘patriotic’ reasons many countries have government ownership of airlines or firms in other key industries such as oil. More generally, dislike and suspicion of foreigners can justify regulation that restricts cross-border capital flows. As a side effect, such restrictions may in turn increase opposition to financial development by incumbents pursuing their rational self interest (Rajan and Zingales 2001), compounding the costs to society of xenophobia.

4. Fairness and Reciprocity Norms

The scapegoating of speculators and lenders derives in part from norms for fairness and reciprocity. I do not provide a comprehensive taxonomy of different notions of fairness, but one basic distinction is between norms of equity (equal division of resources) versus norms of reciprocity (fair exchange). Reciprocity and equal division are inconsistent, but both call upon strong human feelings, and probably have a basis in evolved human psychology.

The equal division norm is reflected, for example, in progressive income taxes. In the experimental laboratory, individuals are often far more altruistic than the hypothesis of rational egoism would predict. In the ‘Ultimatum Game’ and ‘Dictator Game,’ the selfish equilibrium outcome has the first mover takes almost all the resources. In reality equal division is often observed (Camerer and Thaler 1995, Hoffman et al 1998), though for players from traditional societies the amount of altruism and the frequency of equal division is much lower (Douglas 2001).

Equal division can arise as an evolutionary equilibrium in games of resource division (Skyrms 1999). Furthermore, although competition for dominance was surely an aspect of human evolution, some have argued that in hunter-gatherer societies potentially subordinate males have colluded to control potential dominants and force a high degree of egalitarianism (Boehme 1999). Feelings of envy help motivate action to limit the power and wealth of important individuals, although this is not necessarily the reason that a disposition to feel envious evolved.

The norm of fairness as equal division implies an aversion to seeing anyone get unusually rich or powerful. Such feelings are intensified when the group is doing poorly. For example, CEOs who receive high pay at companies that are laying off workers are generally reviled. Of course, some managers of struggling firms are overpaid and incompetent. However, popular discussion tends to neglect the legitimate reasons for high pay for managers during bad times. At such times it may require great managerial effort and skill to keep an enterprise going. Also, since laying off workers is unpleasant, a high managerial wage may be called for as a compensating differential.

Egalitarian sentiments have led to fierce criticisms of the unfairness of executive pay, and such practices as the resetting of options after a firm does badly. Attitudes about fairness explain regulation of managerial compensation, such as corporate taxes on high executive salaries, and recent proposals to require an annual shareholder advisory vote for executive compensation plans.¹⁶

¹⁶ Some academics are critical of the pressures to limit executive pay. According to Kaplan (2007), “In other words, the regulation, criticism and hounding of public company CEOs may have a major cost. CEOs can and will leave public companies to do something else. And, it is the better CEOs who will tend to do so. The result may be more private companies that are less transparent and more public companies with less able CEOs.”

A basic norm of reciprocity requires that someone should not take without giving something commensurate in value. A failure to do so is an indication cheating, deception, or coercion. A sense of fairness as reciprocity supports mutually beneficial exchange.

In economic life, in contrast with purely egoistic models, agents refrain from shirking or cheating even when they have the opportunity to do so. This suggests that the human psyche is designed, up to a point, to be trustworthy. Double-blind experiments on the ‘trust game’ show that there is much more trust and reciprocation than is predicted by the rational egoistic model (Berg, Dickhaut, and McCabe, 1995). Furthermore, being on the receiving end of a trusting move in a trust game triggers the release of the neuroactive hormone oxytocin, and the amount of oxytocin released was correlated with reciprocation, e.g., trustworthiness (Zak, Kurzban, and Matzner, 2004, Zak 2005).

A further important element of reciprocity norms is the necessity of punishing violators, even if punishing is costly. Such ‘moralistic aggression’ (Trivers 1971) could evolve through kin selection. However, economic and evolutionary models provide conditions under which such behavior is self-enforcing even among unrelated and non-altruistic individuals (Hirshleifer and Rasmusen 1989, Boyd and Richerson 1992). Empirically, there is evidence that people are willing to incur personal costs in order to punish defectors in social dilemma games (Bowles and Gintis 2002, Fehr and Gächter 2002). Such willingness is socially valuable as an enforcer of cooperation. It also means that the public may be receptive to the imposition of severe sanctions upon perceived wrongdoers, even when doing so is costly to society. For example, the prospect of ‘jackpot’ litigation awards can deter exchange and innovation, but *ex post* may feel appropriate to a public to punish wrongdoings.

The idea that *intermediation* adds value is unintuitive. As a result, owing to reciprocity norms, people often perceive the profits of intermediaries negatively. Some forms of intermediation are more intuitive than others. We can distinguish the transformation of commodities technologically (converting inputs to outputs), across locations, over time, across fundamental states of the world, and across information states (from a state in which consumers do not know what product meets their needs to one in which they do).

All such transformations can be productive, but the first is the most intuitive as a value creator. Transforming inputs to outputs creates a vivid physical transformation from a non-consumable (e.g., a field of wheat) to a consumable (a loaf of bread). The other forms of transformation are more abstract. Providing a shift in resources over space, time, states of Nature, or information states, though just as essential for the consumer, is harder to recognize as an act of reciprocation comparable to the price paid for the product.

As a result, individuals in the business of making these transformations are often viewed as parasites that profit at the expense of others. The notion that middlemen provide little real value in return for the payments they receive is implicit in the saying “eliminate the middleman”; often through history the elimination has been violent. English common and statute law during and after the Middle Ages made commodity speculation a crime. The public often demanded price ceilings after crop failures, with severe punishments for violators. The correlation of speculative profits with high prices and bad times for consumers can lead to the wrong inference that speculators cause bad times. Adam Smith compared the fear of speculators to the fear of witches.

Product middlemen (such as peddlers and other traveling merchants) have often been vilified as price gougers.¹⁷ Such middlemen are involved in several different kinds of intermediation, each of which is costly and contributes to the price charged. The buyer, however, does not see all these costs—of geographical transport, storage to shift resources through time and as insurance against possible adverse states of Nature, and of marketing products so that consumers will know what is available. The costs of sellers are not psychologically available to buyers, and may be underestimated, leading to inferences of price-gouging.

In the environment of evolutionary adaptation before the rise of specialized exchange, opportunities to shift product geographically, over time, across states of Nature, or informationally, were far more limited than in historic times. Thus, the human mind may not have been designed to recognize relatively abstract intermediation activities as reciprocation.

Norms of equal division may contribute to the dislike of lenders, since it is the rich who have the resources to lend to the poor. Because of the displacement over time between payment and repayment, self-serving attribution biases also contribute. The lender whose services seem useful at the time of borrowing becomes a villain when repayment is due (Bentham 1787:2004 p. 28-9). Denigrating the lender helps maintain the self-esteem of impecunious borrowers.

Arguments against usury are often based on claims of unfairness and a lack of genuine reciprocity. Christian thought on usury was influenced by Aristotle's view that money is barren—it does not reproduce like an animal or crop. This argument seems to

¹⁷ Advertising and marketing (an intermediation over information states) is also frequently condemned as not productive.

imply that charging interest makes the exchange between borrower and lender inequitable. In a somewhat related vein, it has often been argued that the lender is not doing anything productive, whereas the borrower is working hard, so that it is unfair that the borrower pay interest.

Shylock's insistence on a pound of flesh in Shakespeare's *Merchant of Venice*, is another example; repayment in the form of a human life seems incommensurate with money. Martin Luther's condemnation of the Jews emphasizes an imbalance between price paid and service rendered in lending and other commercial activity:

'Tis a pernicious race, oppressing all men by their usury and rapine. If they give a prince or a magistrate a thousand florins, they extort twenty thousand from the subjects in payment.

From Section DCCCXX. *The Table Talk of Martin Luther*, William Hazlitt, translator., from the web site http://www.reformed.org/master/index.html?mainframe=/documents/Table_talk/table_talk_8.html

Reciprocity norms help explain why lenders are more vilified than, say, landlords, and why prohibitions of payments for the rental of money are more common than prohibitions on payments for the rental of property. Although landlords are often criticized for imposing hardships on poor families, a landlord is clearly providing a real commodity (housing) in return for money. In contrast, a lender just provides money—in an amount smaller than the amount he insists be repaid.

A non-salient social benefit of intermediation activities is that they facilitate other productive transformations. For example, lending does not just help borrowers consume more today; it enables borrowers to invest, increasing aggregate future consumption. Thus, even under exchange with certainty the benefits to intermediation can be subtle and non-salient.

The social benefits to speculative activity can be especially subtle. Speculators seem to be profiting just by taking for others, without providing any useful service, in violation of reciprocity norms. It is tempting to think of speculation as ‘mere gambling,’ a zero sum game. Speculative trading can directly shift real resources to the right place at the right time, as when a storekeeper in a hurricane-prone neighborhood holds a larger stock of necessities. But more subtly, speculators can make asset prices more efficient, which indirectly guides productive transformation of resources across states of Nature. For example, if speculative bets on biotech encourage greater biotech research, the benefit is indirect; the fact that some speculators make large profits is vivid and salient.

Thus, the idea that speculators profit at the expense of others is appealing. If speculators do not create value, they are profiting in violation of reciprocity norms. Indeed, the costs or apparent costs to society of speculation (volatility, crashes, impoverishment of other investors) are highly salient. Speculators are especially active in volatile times, and that is when the winners make their fortunes. It is a small step from this correlation of speculative activity with volatility and crashes to the belief in a causal relationship—that speculators cause financial instability.

These psychological forces have led to regulations in many countries designed to limit speculation, such as higher taxation of short-term than long-term capital gains, securities transaction taxes, and restrictions on short-selling. Restrictions on short-selling especially has the potentially important effect of allowing price bubbles to form and

persist.¹⁸ Indeed, most stock return prediction anomalies are stronger on the short-side than on the long-side, suggesting that deterrents to short-selling matter.

The short-seller causes bad news to be incorporate sooner. The correlation of short-selling with bad news is easily confused with a causal relation between short-selling and bad news. Indeed, short-sellers become salient objects of attention exactly when the news is worst.

There is much criticism of short-sellers in media discussions of troubled firms, often coming from interested parties, the representatives of the firm under attack. However other observers may find the criticisms plausible. Confusion by observers between correlation and causation is likely to be adverse to short-sellers, since short-sellers profit precisely when the market is doing badly. It is especially tempting to kill the bearer of ill tidings when the bearer is also getting rich from the tidings. According to Chancellor (2001), when the market crashes shorts are regularly blamed, rather than the speculative buyers who helped drive the price up during the preceding boom. Short sellers are more immediately linked with the crash than exuberant buyers during the preceding period. It requires greater cognitive processing to blame speculative buyers.

Omission bias provides a subtler reason for disliking short sellers more than exuberant buyers. A drop in stock price seems to hurt holders of the stock (although if this is just an acceleration of news arrival, it does not really do so unless the holder was planning on selling). Since continuing to hold an already-owned stock is an act of omission, we sympathize with the wealth losses of such holders. In contrast, a buyer who drive up the stock price hurts other potential buyers of the stock. But we don't

¹⁸ One commentator argues that such a problem has occurred in China; Xinghai (2007) criticizes the delay of the planned legalization of short-selling and hedge funds, and contends that Chinese stocks are overpriced owing to a failure to impound pessimistic sentiment.

sympathize with these other potential buyers, because buying the stock is an act of commission. We don't feel that potential buyers have any right to buy the stock at a low price.

5. Overconfidence

The failure of socialism as an economic system shows that it is hard to manage an economy from the top down. Smith (1776) and Hayek (1978) emphasize how markets create an astonishing spontaneous order, and the impossibility of a central planner understanding the complex web of coadaptations brought about by individual decisions.

The fact that an industry or economy is a complex functionally adapted system provides a challenge to effective regulation. When we encounter a problem in everyday life, we try to fix it. But everyday life involves small-scale decisions about which we usually are informed and have experience. It is more challenging to make good decisions on behalf of millions of interacting strangers, each with distinct preferences and information.

The "law of unintended consequences" applies more to fixing complex functional systems than to fixing a broken door hinge because in a complex functional system the effects of interventions can ramify unforeseeably. New economic regulations create incentives for individuals to shift their behaviors. In the world of second-best, such responses could be good or bad. In some cases individuals may largely 'undo' the regulation, incurring some deadweight cost along the way. In others unexpected distortions are introduced.

Why then are regulatory solutions to perceived problems so appealing?

Opponents of activist government policies often disparage ‘government bureaucrats,’ a villainy theory of bad regulation. Alternatively, psychological bias offers an explanation for excessive regulatory activism even when proponents of regulation are well-intentioned. I argue that just as overconfidence helps to explain excessively active trading strategies (Odean 1998), it also helps explain excessive activism in economic and financial regulatory strategies.

Overconfidence is the belief that one’s personal qualities (such as intelligence, judgment, benevolence, reliability) are better than they really are. Among the several aspects of overconfidence that have been studied are calibration overconfidence (thinking that one’s beliefs are more accurate than they really are), the better-than-average effect (thinking that one’s abilities are superior to others), and the illusion of control (a belief that one can influence outcomes which are actually controlled by chance or external forces). Another aspect of overconfidence is a failure to recognize and adjust for one’s own limitations, including limited attention.

An overconfident analyst who perceives a social problem will be too sure that the problem is not addressed by the market, and too sure of any solution he thinks of to address it. With respect to the first point, markets, being the work of numerous individuals over long periods of time, represent the accumulation of creative solutions to a variety of problems. Some of these solutions are carefully designed, others are the happy outcome of trial and error. (This is analogous to the fact that complex organisms have, through blind mutation and selection, evolved creative solutions to the adaptive problems they face.) For example, the problem of assuring product quality might seem to

be fatal in various markets, but market responses such as branding, reputation, and screening and ratings agencies have repeatedly arisen to address it.

The range of and implicit rationale for market solutions can be subtle, and are not necessarily fully understood by *anyone*, including the market participants themselves. (This is one reason why economists insist on developing and testing academic theories about markets, rather than just asking business people.) The concept of a spontaneous order is unintuitive. The idea of a spontaneous order in markets was not developed until the 18th century, and evolution by natural selection was not understood until the 19th century. Even today much of the world's population understands neither concept. The human mind evolved to understand social interaction in terms of individual causes and effects, not ultra-long-run or ultra-large-population social interactions.

Even those who understand the general notion of spontaneous order do not always internalize fully, in specific regulatory contexts, the richness of adaptation in the economic system, and the likelihood that for any problem there is already some creative market response. In part this constitutes a better-than-average effect; the planner paternalistically believes that he can manage other people's decisions better than they can, to their benefit.

However, a belief that one can design better institutions than the market implicitly requires a faith that one is *far* better than average, since the market finds solutions which no single individual could create. Market creativity can only partly be explained by individual creativity. In part market creativity represents evolution as random variations in business methods are selected for success and accumulate into an adaptive whole.

Another reason that overconfidence promotes regulation is that there are many ways to regulate, and only one way not to regulate. To see this, consider as a benchmark case the situation in which no regulation is optimal. If an individual forms an independent assessment of each proposed regulation (modeled as independent identically distributed signals), and overestimates the accuracy of his assessments, by chance there is likely to be some regulation which appears to be desirable. A rational individual will discount for this ‘regulator’s curse,’ but an overconfident one will not discount sufficiently.

A possible illustration is the principle of the Pigouvian tax to correct externalities. This approach is intuitively appealing, and indeed was regarded by economists as obviously correct until Ronald Coase discovered that (under appropriate conditions) the market will internalize externalities without regulatory intervention. The Coase Theorem was a revelation to many economists. But for millennia before economists figured this out, individuals in markets had been making deals that reaped the benefits of internalizing costs and benefits.

A second possible illustration is the use of transactions taxes in asset markets to reduce speculation. My purpose is not to assess the desirability of this policy, but to exemplify the difficulty of fully assimilating the creativity of market responses to perceived problems.

Transactions taxes are prevalent internationally for the purpose of limiting speculation, and have been proposed repeatedly in the U.S., both in broad-based forms, and targeted at derivative securities (Hakkio 1994). Keynes (1936) proposed a tax on stock transactions to reduce speculation and make stock markets more stable. In a similar spirit, Tobin (1978) proposed a tax on foreign exchange transactions. After the 1987

stock market crash, other leading economists (Stiglitz 1989, Summers and Summers 1989) offered further support for a transactions tax to limit stock market speculation.

Just as a tariff can be viewed as a negative railroad, a transactions tax on stock trading is negative liquidity—at first glance a bad thing. However, in general the private and social value of information do not match (Hirshleifer 1971), which can lead to wasteful expenditures of resources on gaining foreknowledge of events such as an announcement to be made in the near future, even though this knowledge will not affect resource allocation. Furthermore, irrational speculative trading may generate further social costs. One argument made by proponents of transaction taxes is that aggressive speculators will be willing to play a negative sum game against each other in which they expend resources to obtain short-term information in order to bet against each other. The net effect is a waste of resources on investigation and trading, which makes all the speculators worse off. This argument is paternalistic; resource costs are reduced by protecting speculators from their irrational overconfidence.

This is an argument about controlling excessive investigation and transactions costs, not about controlling mispricing. Thus, this argument alone does not imply that transactions taxes would address problems like the 1987 stock market crash. I will therefore focus on broader arguments for transactions taxes—that excessive speculation leads to overreactions, excess volatility, and capital misallocation. A possible objection to this rationale for a transactions tax is that transactions taxes can deter smart traders as well as irrational ones. Indeed, a transaction tax may drive out rational traders before overconfident ones.

However, my main point is that proponents of securities transactions taxes have neglected the possibility that market institutions could respond to the problems of excessive trading. Proponents have not to my knowledge considered that firms have several means of reducing short-term trading. Indeed, many firms do choose to have illiquid stock. For example, many firms never go public at all, and many public firms have gone private, creating their own ‘transactions taxes.’ Furthermore, some public firms limit liquidity by refraining from stock splits, resulting in high stock prices which limit trading. Warren Buffet’s Berkshire Hathaway is a famous example. Firms can also control liquidity through a policy of relatively intransparent disclosure, which tends to create greater adverse selection problems in stock trading.

This point does not invalidate all arguments for transactions taxes. However, it is surprising that policy discussions would neglect the *possibility* that some of the costs of excessive trading would be recognized and internalized by shareholders. The same individuals who in the political arena support transactions taxes are, after all, shareholders as well.

Managing Market Fluctuations

Overconfidence can also persuade officials that they can effectively manage business and market fluctuations. It is tempting for a policy economist to think he understands how to manage interest rates or money supply to ‘cool overheated stock markets’ or ‘lift the economy out of recession.’ Since stock markets reflect average beliefs in the economy, the better-than-average effect encourages regulators to believe that they can identify whether the market is overvalued.

The illusion of control is the belief that one can use skill to control things that are actually controlled by chance or outside factors, as with rolling the dice at a craps table. In the financial policy arena, an illusion of control would tempt a policymaker to think that bad events such as bubbles and crashes could be averted by intelligent policy. An individual who thinks that he can do this (or thinks he can choose regulators who can do this) will place blame on any regulator or regulatory system that fails to avert negative outcomes. An implication is that after crashes more regulation will be put in place. Failures are regarded as policy failures calling for new interventions, rather than just chance outcomes. This suggests a pattern in which the system evolves toward greater regulation over time.

Another example of high policy analyst confidence in a ‘negative railroad’ solution involves recommendations by the Commission on the Regulation of U.S. Capital Markets in the 21st Century. The motivating purpose is to persuade investors and firms to focus on long-run instead of short-run value. Firms are very concerned about failing to meet earnings forecasts since even a small shortfall tends to be associated with a big drop in stock price. The Commission’s recommendation is that public companies stop issuing earnings guidance, or else shift from quarterly earnings guidance to annual guidance, and give a range forecast instead of a single number.¹⁹ In other words, the proposal is to make corporate disclosure infrequent and noisy. The idea of reforming markets by *reducing* corporate transparency is counterintuitive. This makes the proposals quite revealing about

¹⁹ The committee’s purpose in this regard is persuasion, not regulation; its third principal recommendation (pp. 4-5) was to “Convince public companies to stop issuing earnings guidance or, alternatively, move away from quarterly earnings guidance with one earnings per share (EPS) number to annual guidance with a range of EPS numbers.”

policymaker overconfidence and, as I will discuss in Section 7, about the psychological attractiveness of financial ideologies.

It is true that there are agency problems and possible market inefficiencies associated with earnings forecasts and earnings management (DeGeorge, Patel and Zeckhauser (1999), Richardson, Teoh and Wysocki (2004)), and that managers may manipulate both accounting numbers and real business activity in order to meet forecasts. However, the existence of a problem doesn't imply that the market has no response to it. For example, firms are free to refrain from making special efforts to meet analyst or management forecasts. And if there is a pattern of accounting manipulation to meet forecasts, investors are free to discount for it appropriately.

Indeed, the fact that the market reacts sharply to quarterly earnings news surprises relative to forecasts suggests that quarterly earnings guidance is *highly informative* to investors about long-run prospects. It is this very fact that creates an incentive to manipulate this signal. Such manipulation may add some noise, but scrapping the signal is equivalent to adding infinite noise.

The argument that investors focus too much on quarterly earnings forecasts or announcements seems to have little empirical support. Earnings surprises are positive predictors of future returns—post-earnings announcement drift (Bernard and Thomas 1989). This evidence suggests that the market *underreacts* to quarterly earnings news—a failure to place sufficient weight on short-term earnings information.

It is possible that externalities and market inefficiencies somehow make intransparency desirable, yet market imperfections pressure firms to be transparent. However, in Section 7 I will discuss an alternative possibility, that the appeal of such

policies are driven by the ideology of anti-short-termism. I consider there how psychological bias drives the success of this ideology.

6. Mood Effects and Availability Cascades

Psychologists discuss two main cognitive systems, a fast intuitive, affect driven, automatic mode versus a slow, controlled, analytical mode (Kahneman 2002), which operate in different parts of the brain. One might expect the quick and dirty decision mode to be used for minor decisions or decisions that are not tractable to analysis. However, there is evidence suggesting that short-term moods affect a wide variety of judgment and decisions, including tipping, suicide, judgments about future life prospects, product purchase and selling decisions, and stock market behavior (see Hirshleifer and Shumway 2003, Lerner, Small, and Loewenstein 2004, and citations therein).²⁰ There is also a great deal of non-informative advertising which seems designed to influence mood. Important financial decisions (such as how to make retirement investment allocation decisions, whether to invest in the stock market, whether to invest in own-company stock, and whether to diversify internationally) are probably often decided in intuitive mode, resulting in the status quo bias and several non-diversification effects. Such decisions seem important enough to deserve careful thought, and are susceptible to explicit analysis.

The fact that mood affects judgments about the long-run, and that sellers exploit consumer susceptibility to affective manipulations, suggests that the systems that direct our usage of different cognitive systems may be imperfectly attuned to the decision

²⁰ Mood effects have been tested using natural variables such as whether it is sunny outdoors, and using manipulations such as the playing of video clips designed to elicit specific feelings.

problems people face in the modern environment. However, there are also indications that feelings play a functional role in decisionmaking. Psychological studies show that positive mood is associated with optimism about the future, and openness to innovation, whereas negative mood is associated with pessimism and careful critical thinking. This suggests that feelings help us redirect efforts in reasonable ways in response to life circumstances.

There is also evidence that mood is contagious (Hatfield, Cacioppo, and Rapson 1994), which suggests that feelings may sometimes aggregate to the societal level. This suggests that mood effects may explain bubbles and crashes. The contagiousness of mood, and the fact that negative mood is associated with greater pessimism and critical thinking, also suggests that bad times may trigger a push for greater regulation to protect against malfeasance and perceived threats in markets.

Fears, concerns, and policy issues do tend to gain widespread public attention in intense bursts. During these periods, a hot issue will be discussed by numerous media commentators and in individual conversations. Public discourse becomes focused on the issue. In the availability heuristic (Tversky and Kahneman 1973) individuals judge the frequency or probability of a phenomenon according to their ability to remember examples of it. Thus, the more that people talk about an issue, the more important the issue seems, which triggers further discussion. Facts and ideas relating to the issue become psychologically available, increasing fluency in discussion of the topic. So discussion of the issue is self-reinforcing.

In particular, owing to the availability heuristic, when people hear repeatedly about a danger or hear many examples of it, they will tend to overestimate its probability.

This is especially the case if the danger is emotionally vivid or newsworthy for reasons other than high probability. For example, the popular 1979 movie *The China Syndrome* contributed to public fears about nuclear power. Similarly, in 1989 talk show publicity by actress Meryl Streep about possible carcinogenic effects of the pesticide Alar on apples led to a major food scare in which apples were removed from school cafeterias in several major cities (Carlson 1989). Thus, psychological biases can lead to distorted regulatory outcomes.

Owing to such considerations, Kuran and Sunstein (1999) propose that risk regulation policies are influenced by *availability cascades*. They analyze the psychological sources of availability cascades and describe episodes in which availability cascades were the impetus for expensive regulations designed to protect against minor risks. Kuran and Sunstein point out that availability cascades can be exacerbated by availability entrepreneurs—individuals or groups who stand to gain by hyping risks and amplifying availability cascades.

Kuran and Sunstein also point out that the news media amplifies availability cascades selectively, for a variety of reasons. A crucial one is that extreme cases are more interesting, vivid, and newsworthy. Rare disasters will seem more common because they are presented frequently in the news media.

Rational imitation reinforces availability cascades. When many individuals assert a proposition, such as the claim that a new regulation is needed, it is rational to infer that they have some reason to do so. This can lead others to join the bandwagon in an information cascade (Bikhchandani, Hirshleifer, and Welch 1992, Banerjee 1992). Instincts for conformity reinforce this tendency. People have a readiness to accept the

truth of widely repeated propositions, even those that might seem inherently implausible. In the environment of evolutionary adaptation, such conformist instincts were valuable as a way to obtain the benefits of survival-relevant information possessed by others. Henrich and Boyd (1998) model the evolution of such conformity-based information transmission.

In an availability cascade, as media or general public opinion swings toward one position the presentation of evidence becomes increasingly one-sided in favor of that position. People are unduly influenced by one-sided evidence (Brenner, Koehler, and Tversky 1996), even when the one-sidedness is explicit. This finding can be understood as a result of limited cognitive processing power; compelling opposing arguments are less psychologically available, and therefore we tend to underestimate the extent to which they exist. It also may reflect conformist instincts.

Together these effects imply that certain issues, ideas, or theories will tend to suddenly become popular in a self-reinforcing way. During these availability cascades the political pressure to change laws and regulations can become irresistible.

Owing to vivid major scandals after the turn of the third millennium, corporate fraud had high availability. Such availability is self-feeding, because fraud seems more relevant and important to people when they hear many commentators discussing fraud. There was also high availability of moral judgments, often linked with expressions of anger at examples of villainy. This availability cascade created enormous political pressure for action by Congress, which resulted in Sarbanes-Oxley.

During bad times when firms become distressed and manipulation activities are conspicuously revealed, public attention tends to focus more on malfeasance. As a result,

there is pressure for tightening financial controls, and greater threat of litigation against wrongdoers. The benefit to availability entrepreneurs such as district attorneys from taking action against perceived malfeasance increases. There may be prosecution of parties involved with gray area activities, or practices which were publicly known to be the norm but are no longer considered acceptable. As even more wrongdoers are sued or are sent to jail, news about malfeasance becomes even more available in the media. Thus, there is a self-reinforcing effect wherein an increasing restrictiveness of the regulatory and litigation environment can lead to *more* calls for regulation.

Stock market bubbles are probably the result of availability cascades. During the tech boom the wonders of the internet and the new economy were discussed extensively.²¹ It seems likely that the availability of positive sentiments during boom periods tends to make observers less receptive to new regulation. News items about cheating during such periods are easier to ignore.

7. Ideological Replicators

Why is there so much financial regulation, much of it dysfunctional? To take just one example, consider socialism, wherein capital assets are controlled by the government. Socialism once held sway over much of the globe, but proved to be disastrous as a means of organizing society. Yet quasi-socialist ideology remains popular, and forms a wellspring of economic regulation.

²¹ Restrictions on short selling can have a subtle compounding effect on market booms. If shorting is not feasible, bearish sentiments will be mentioned in media less often because this viewpoint is of less interest to the audience, and because there will be fewer people in the business of identifying developing opportunities. Less discussion of bearish viewpoints in the media makes these ideas less psychologically available. This leads to a short-speaking constraint, which can encourage the formation of a positive availability cascade.

I argue here that ideologies—religious, political, and more specific regulatory ideologies—shape financial regulation. The reason ideologies exist is that they are good at catching cognitive and emotional hooks. This aids the spread of the ideology from person to person. In other words, ideologies are good replicators, or, in the terminology of Dawkins (1976), *memes*.

In particular, ideologies are assemblies of more basic memes—very simple statements or ideas. These units of thought, or ‘mind-bites’ can have a disproportionate effect on our thinking. For example, the cognitive approach to psychotherapy focuses on the patient becoming aware of rapid spontaneously-appearing ‘fringe’ or preconscious thoughts about the self. Beck (1999, pp. *ix-xi*) argues that such thoughts profoundly influence perceptions and behavior.

Religious ideology directly affects financial regulation, as with prohibitions on usury, and attitudes toward inequality. Utopian ideologies like communism engage deep human feelings about equity. Even though communism is a failure, a socialist assembly of memes continues to have emotional appeal which promotes replication across individuals. Ideologies of class conflict and exploitation are associated with envy of the rich, and the idea that business activity and people are evil. For example, the meme that commerce is a zero-sum game (“if he got rich, he must have been cheating”) reinforce the pro-socialist assembly. Such zero sum views are more credible in a stagnating economy, in which people crave explanations for their hardships, than in a growing and innovating one.

Radical mass movements can become popular during times of change and dislocation, when individuals with damaged self-regard seek a cause outside themselves

(Hoffer 1963). Thus, an ideology can persist as a low-level infection for long periods, before bursting into dominance as part of an availability cascade.

The Ideology of Anti-Short-Termism

More specific financial market ideology trigger psychological bias and have self-replicating properties. I will consider in depth one example, the contention that markets and firms suffer from an excessively short-term focus—a phenomenon sometimes referred to as ‘myopia’ or ‘short-termism’. Section 5 discussed the recommendations of the Chamber of Commerce’s bipartisan Commission on the Regulation of U.S. Capital Markets in the 21st Century that public companies stop issuing earnings guidance, or at least provide less frequent and noisier forecasts of earnings. During the 1980s popular discourse about the U.S. economy was teeming with criticisms of takeovers as pressuring U.S. firms to focus on the short term at the expense of investment and innovation. Japan was enviously acclaimed for its superior corporate model of long-term focus. In retrospect the U.S. economy during the next two decades achieved greater innovation and long-term growth than that of Japan. I argue that psychological bias made allegations of U.S. corporate short-termism attractive.

Ideologies evolve by adding memes that complement other components of the ideology and discard those that do not help the ideology spread. The proposition that firms are focused on short-term stock prices, that firms underinvest, and that the stock market is too short-term focused (an informational inefficiency), are conceptually quite distinct. For example, even if the market is efficient, a focus on short-term stock prices can cause underinvestment (Stein 1988). Furthermore, since the stock market on average

reacts positively to capital expenditure increases, the attempt to boost short-term stock prices can cause *overinvestment* (Trueman (1986)). Indeed, the attempt to boost short-term stock prices can distort firms' decisions away from routine projects toward innovative ones (Chordia, Hirshleifer, and Lim (2001)).

However, the different concepts of short-termism complement each other to form a more virulent ideology, and public discussions almost uniformly conflate them. One reason for doing so is that these memes manipulate our psychological biases in similar ways. These memes take advantage of the common feelings that self-discipline and foresight are virtues. Owing to the value of these virtues in our personal lives, we honor thrift, and teach our children to defer gratification and examine the long-term consequences of their actions. A focus of investors on the short-term seems to show a lack of foresight, as does a failure of a corporate manager. Thus, although mistakes by corporate managers and market inefficiencies seem like very different notions to financial economists, they seem quite similar to the general public. Assembling the different memes together creates an ideology that is more contagious than if each meme were on its own.

Empirically, it is far from clear that the stock market undervalues growth opportunities.²² And, as discussed in Section 5, the evidence does not support the notion that the market overreacts to short-term news relating to quarterly earnings announcements (Bernard and Thomas 1989).

²² Consider market valuations of a growth firm such as Google, the fact that equity book-to-market ratios positively predicts future equity returns, and the fact that capital expenditures negatively predict future returns. On the other hand, although the evidence is mixed, some studies find that R&D expenditures positively predict returns.

Moralistic interpretation dominates public discussion of market and corporate short-termism, which is viewed as imprudent and sinful. Moralistic interpretation is emotionally rewarding to commentators, and thus has self-replicating properties. We are built to be critical of the defects for at least two reasons. The first is that it helps maintain our self-esteem to emphasize ways in which others lack our virtues. The second is that in the environment of evolutionary adaptation, denigrating others (when it can be done safely) can be a method of improving one's status in the social hierarchy. In the modern environment, commentators have a cheap opportunity to feel superior and take the moral high ground by criticizing earnings forecast and management games. After all, there is genuine misbehavior or unproductive behavior in many cases.

I propose that the ideology of anti-short-termism is not popular because of strong evidence for it, nor because of any conspiracy by interested parties to fool the public. It is popular merely because, as an ideology, it is good at being popular—it appeals to our emotions, which makes it good at replicating itself.

In the competition for public attention, arguments in favor of earnings guidance and transparency are to some extent handicapped by a lack of vividness. An argument in favor of earnings guidance is that current earnings is highly informative about future firm prospects. Another is that there is a value to transparency and accurate stock prices, as a guide to resource allocation. However, these arguments are analytical and abstract, rather than moralistic.

Conspiracy Theories

There is evidence that certain kinds of physical dangers are feared by the public far out of proportion to the expected mortality they create, such as nuclear accidents. As a result, government spends vastly disproportionate amounts to prevent different kinds of death (Tengs and Graham 1996). Slovic (2000) analyzes several aspects of fear which he argues are qualitatively different, including the extent to which the danger is catastrophic, exposure to it is involuntary, and its outcome is uncontrollable. For example, nuclear power is much feared in America, and accidents have the involuntary and uncontrollable aspects emphasized by Slovic.²³

More generally, this perspective on fear suggests that dangers that are potentially catastrophic but whose workings are unseen or poorly understood should be especially disturbing. Evidence of and models built upon ‘uncertainty aversion’ or ‘ambiguity aversion’ (a dislike of ‘model uncertainty’ or the compounding of gambles, as in the Ellsberg paradox) are consistent in spirit with these ideas. Also in a somewhat similar spirit is evidence that, for a given probability distribution of outcomes, a gamble is less appealing if it is outside the individual’s self-perceived domain of competence (Heath and Tversky 1991).

Such effects are related to familiarity bias as studied in the finance literature, but such fear has further important consequences. A fear of unseen and poorly understood dangers is a natural precursor to conspiracy theories. Conspiracy theories are assemblies of memes that reinforce the message of the villainy of some despised group by emphasizing the group’s power and threat of doing harm. Conspiracy theories are

²³ However, Sunstein (2005) points out that the evidence of Slovic can be explained by availability cascades (see Section 6) without resorting to multiple dimensionalities of fear.

presumably motivated by xenophobic instincts, which are exacerbated by hard times and social change. Conspiracy theories suggest the need for regulation to protect the public.

Financial conspiracy theories are popular. An example is the persistent claim that an international cabal of Jewish bankers or speculators control the financial system, and through this, control the world politically as well.²⁴ The receptiveness of people to conspiracy theories about evildoers manipulating the financial system may derive from the fact that the financial system seems to contain dangers that are poorly understood. This helps explain the puzzle of low participation in the stock market. Financial markets and institutions can be intimidating to outsiders for several reasons.

First, financial markets have an elaborate jargon relating to stocks, bonds, interest rates, and so forth which is used heavily in the media yet is incomprehensible to the uninitiated.

Second, markets fluctuations feel dangerous. They are described sensationally in the news media, and when the stock market crashes or a bank run occurs, there are important consequences for the economy such as people losing their savings or their jobs.

Third, the source of these dangers are poorly understood. The folk theories people have about events like market crashes—that there has been a sudden loss of investor confidence, or an attack of bearish speculation—are not reassuring; they don't give the naïve observer a clear sense of what to expect or how future dangers can be averted.

Fourth, there seem to be powerful agents whose actions are ill-understood, but whose activities affect the outcomes. These agents can include government officials such as the chair of the Federal Reserve Board, but also more shadowy figures. Speculators are

²⁴ On anti-Semitism as a theme of the People's Party (or Populist Party) in the 1896 U.S. Presidential election, see Edwards and Defeo (2000).

of course all the more suspect since they operate in secrecy, and are sometimes foreigners.

Fifth, the idea that a market crash may reflect the interaction of many individuals, no single one of which is powerful, is unintuitive.

Given these considerations, hyperactive agency detection suggests that market crashes will tend to be attributed to some kind of powerful agent or agents. Since markets are evidently man-made, it does not seem reasonable to attribute their behavior to supernatural beings. So it becomes natural to suspect shadowy human figures such as speculators of manipulating markets for their own benefit. Of course, in reality manipulation does sometimes occur. However, regardless of whether there is manipulation and whether such manipulation is important, psychological forces encourage a belief that it has occurred and is dangerous.

8. Conclusion

I offer here the *psychological attraction* theory of financial regulation—that regulation is the result of psychological biases on the part of political participants and regulators, and the evolution of regulatory ideologies which exploit these biases. A competing approach to financial regulation is based on political pressure by incumbent firms who oppose competition. Two general issues arise for theories of rational pressure groups within democracy.

First, most people think that they are good, and reject the notion that their pressure group activities are primarily egoistic. Yet almost everyone agrees that efforts of *other* special interest groups are egoistic. This suggests that psychological biases (the

self-idealizing biases that are an aspect of overconfidence) underlie the nominally rational special interest group theories. A second issue is how successful pressure groups manage to fool others, and persuade society to settle for a smaller pie? Why do people accept policies which will hamper economic growth, when they could vote against them? Future models of how pressure groups compete in the setting of financial regulations will be enriched by explicitly incorporating psychological bias. This will permit analysis of how incumbents enlist these biases on their side.

An implication of the *psychological attraction* approach to regulation is that we expect to regulatory misses rather frequently, in which regulatory responses to perceived problems are not closely attuned to the nature of the problem. Indeed, we often expect to see friendly fire incidents in which investor-protection regulation hurts the investors it is supposed to help.

My focus here has been on offering a positive theory of regulation. I will offer a few tentative hints about the normative policy implications of the psychological attraction theory. Perhaps the most important is the value of political institutions that constrain irrational policymaking. If psychological bias motivates regulation, inertia can be valuable in limiting the adoption of bad regulation, especially to the extent that political pressure is transient (as with availability cascades).

Such inertia can be achieved through constitutional limitations. For example, in the U.S. such institutional features as separation of powers, the Bill of Rights, presidential veto, and long terms in office of senators, limit the effects of current political sentiments on regulation. Indeed, the authors of the U.S. constitution desired such features not only to constrain the self-interest of the majority, but to limit the effects of

temporary passions on the part of the public. The psychological attraction approach suggests that meta-policy (the design of political institutions and constitutional constraints) may be a crucial ingredient for achieving good regulatory outcomes. Of course, psychological bias influences debates over meta-policy as well. But to some extent, meta-policy issues can be decided in advance of the specific policy issues that will arise in the future. To this extent meta-policy can put into place that can limit the effect of psychological biases on later decisions.

Such proposals have already been made from the perspective of the rational pressure group approach to political economy (Buchanan and Tullock 1962). The psychological attraction approach to regulation suggests that even when there is a large degree of agreement among political participants, there are benefits to such constitutional constraints.

An example of such a ‘constitutional’ limitation is the inclusion of sunset provisions in new regulation. When new regulation is imposed, it can create pressure groups interested in maintaining the new status quo, and other inertial forces can prevent reversal of mistakes. Since the effects of new regulations on complex functional systems are hard to predict, and proponents of new regulations are likely to be overconfident about their ability to do so, a general principle of sunset provisions for new regulation can be valuable.

The psychological attraction approach also indicates that a general implicit presumption about the implications of behavioral finance for policy is invalid. Behavioral economics and finance calls into question some popular arguments for *laissez-faire*: that people make excellent decisions for themselves, and that markets work almost perfectly.

The behavioral approach suggests that naïve investors are error-prone, and that markets can be inefficient, which can distort resource allocation.

However, as pointed out by Daniel, Hirshleifer, and Teoh (2002) and Glaeser (2006), a behavioral approach in some ways *strengthens* the case for *laissez-faire*, because psychological bias is likely to be even more important in political interactions than in markets. Individuals have stronger incentives to analyze carefully and overcome their biases when spending their own resources than when voting about matters that affect others.

A case for *laissez-faire* based upon optimality of competitive equilibrium and informational efficiency of markets is somewhat brittle, in the sense that any market imperfection or market inefficiency seems to provide a case for regulation. In contrast, a behavioral approach to regulation suggests that even though markets work imperfectly, we expect political interactions to work even less so.

However, I will close by emphasizing that the scientific validity of the psychological attraction approach to regulation is independent of these possible policy implications. For example, as this research program develops, it could in principle be found that the main effects of psychological bias were to block the adoption of desirable regulations, and to cause regulatory outcomes to be unresponsive to changing needs. If so, my suggestion that high political inertia is desirable would be wrong, but the psychological attraction approach as a scientific hypothesis would be correct.

References

- Allport, G. W., (1954;1995), *The Nature of Prejudice*. Reading, MA: Addison Wesley.
- Arkes, H., and Wilson, R., Ohio State University, 2006. “,”
- Aronson, E., Wilson, T. D., Akert, R. M., (2006), *Social Psychology*, Sixth Edition, Pearson-Prentice Hall.
- Atran, S., 2004, *In Gods We Trust: The Evolutionary Landscape of Religion*, Oxford University Press.
- Barberis, N., and Huang, M. (2006), “The Loss Aversion/Narrow Framing Approach to the Equity Premium Puzzle,” Yale University working paper.
- Barrett, J. L., “Exploring the natural foundations of religion,” *Trends in Cognitive Sciences* 4 (2000): 29-34
- Beck, A.T., (1999), *Prisoners of Hate: The Cognitive Basis of Anger, Hostility, and Violence*, HarperCollins, New York.
- Berg, J., Dickhaut, J., McCabe, K., 1995. “Trust, reciprocity, and social history,” *Game and Economic Behavior* 10, 122-142.
- Becker, G. S., (1983), “A Theory of Competition Among Pressure Groups for Political Influence,” *Quarterly Journal of Economics*, 98(3), 371-400.
- Benmelech, E., and Moskowitz, T., (2007), “The Political Economy of Financial Regulation: Evidence from U.S. State Usury Laws in the 19th Century,” NBER Working Paper 12851.
- Bentham, J., (1787:2004), *Defence Of Usury*, Kessinger Publications, Whitefish, MT.
- Bernard, V.L., and J.K. Thomas. 1989. Post-earnings-announcement drift: Delayed price response or risk premium? *Journal of Accounting Research* 27: 1-48.
- Boehm, C. (1999), *Hierarchy in the Forest: The Evolution of Egalitarian Behavior*, Cambridge, MA: Harvard University Press.
- Bowles, S. and Gintis, H., (2002), “Home reciprocans,” *Nature*, 415, 125–28.
- Boyd, R. and Richerson, P. J. (1992), “Punishment allows the evolution of cooperation (or anything else) in sizable groups,” *Ethology and Sociobiology*, 13, 171–195.
- Boyer, P. 2001. *Religion Explained: Evolutionary Origins of Religious Thought*, New York: Basic Books.

- Buchanan, J. M. and Tullock, G., (1962), *The Calculus of Consent Logical Foundations of Constitutional Democracy*, University of Michigan Press, Ann Arbor, MI.
- Brenner, L., D. Koehler, and A. Tversky. 1996. "On the evaluation of one-sided evidence," *Journal of Behavioral Decision Making* 9 (March): 59-70.
- Camerer, C. and Thaler, R., (1995), "Anomalies : Ultimatums, Dictators and Manners," *Journal of Economic Perspectives*, 9, 209-19.
- Caplan, B., (2001). "Rational Ignorance versus Rational Irrationality," *Kyklos*, 54(1), 3–26.
- Carlson, M., (March 27, 1989), "Do You Dare To Eat A Peach? Or an apple, or a grape? The fruit panic was a lesson about terrorism -- and living with risk." *Time*, 133(13).
- Chancellor, E., (2001), "A Short History of the Bear," http://www.prudentbear.com/press_room_short_selling_history.html
- Chordia, T., Hirshleifer, D., and Lim, S., "Firm and Managerial Incentives to Manipulate the Timing of Project Resolution," (2001), Merage School of Business, University of California, Irvine.
- Coate, S. and Morris, S., (1995). "On the Form of Transfers to Special Interests," *Journal of Political Economy*. 103, 1210–1235.
- Daniel, K., Hirshleifer, D., and Teoh, S.H., "Investor psychology in capital markets: evidence and policy implications," *Journal of Monetary Economics*, 49 (2002) 139–209.
- DeGeorge, F., Patel, J., and Zeckhauser, R., (1999), "Earnings management to exceed thresholds," *Journal of Business*, 72(1), 1-33.
- Del Guercio, D., (January 1996), "The distorting effect of the prudent-man laws on institutional equity investments," *Journal of Financial Economics*, 40(1), 31-62
- Downs, A. (1957), *An Economic Theory of Democracy*, New York: Harper.
- Edwards, R., and Defeo, S., (2000). 1896: The Presidential Campaign, Vassar College, <http://projects.vassar.edu/1896/1896home.html>.
- Douglas, K. (March 10, 2001), "Playing Fair," *New Scientist*, 2281, 38–42.
- Fehr, E. and Gächter, S., (2002), "Altruistic Punishment in Humans," *Nature*, 415, 137–40.

- Fiske, S. T. and Taylor, S., 1991, "Social Encoding: Attention and Consciousness," ch. 7 of *Social Cognition*, 2d Edition, McGraw-Hill, New York, NY, pp. 243-294.
- Garten, H. A., 2001, *U.S. Financial Regulation and the Level Playing Field*, Palgrave, New York.
- Gintis, H., (in press) "The Evolution of Private Property," *Journal of Economic Behavior and Organization*.
- Glaeser, E. L., (Winter 2006), "Paternalism and Psychology," *University of Chicago Law Review*, 3(1), 133-56.
- Goetzmann, W. and Kumar, A., (April 2005), "Why Do Individual Investors Hold Under-Diversified Portfolios?" Yale University.
- Goodhart, C., Hartmann, P., Llewellyn, D., Rojas-Suarez, L., Weisbrod, S., (1998), *Financial Regulation: Why, How, and Where Now?*, Routledge, London & New York
- Hakkio, C. S., 1994 "Should we throw sand in the gears of financial markets?" *Federal Reserve Bank of Kansas City - Economic Review*, Second Quarter.
- Hamilton, W. D. (1964), The Genetical Evolution of Social Behaviour I and II, *Journal of Theoretical Biology* (7), 1-16, 17-52.
- Hatfield, E., Cacioppo, J., and Rapson, R., 1994, *Emotional Contagion*, Cambridge University Press, New York.
- Hayek, F. A., 1978, *Law, Legislation and Liberty, Volume 1: Rules and Order*, University of Chicago Press, Chicago, IL.
- Heath, C. and Tversky, A., (1991), "Preference and belief: Ambiguity and competence in choice under uncertainty," *Journal of Risk and Uncertainty*, 4(1), 5-28.
- Henrich, J., and Boyd, R., (1998), "The Evolution of Conformist Transmission and the Emergence of Between-Group Differences," *Evolution and Human Behavior*, 19, 215-242.
- Hirshleifer, J. (1971), "The Private and Social Value of Information and the Reward to Inventive Activity." *American Economic Review* 61: 561-74.
- Hirshleifer, D and Rasmusen, E., (1989), "Cooperation in a repeated Prisoners' Dilemma with ostracism," *Journal of Economic Behavior and Organization*, 12, 87-106.
- Hirshleifer, D. and T. Shumway, 2003, "Good Day Sunshine: Stock Returns and the Weather." *Journal of Finance*, 63, 1009-1032.

- Hodder, L., Koonce, L., McAnally, M. L., 2001. "SEC market risk disclosures: implications for judgment and decision making." *Accounting Horizons* 15, 49–70.
- Hoffer, E., (1963), *The Ordeal of Change*, New York, NY, Harper and Row.
- Hoffman, E., K. McCabe, and V. Smith. (1996), "On expectations and the monetary stakes in ultimatum games," *International Journal of Game Theory* 25: 289-301.
- Huberman, G., (2001), "Familiarity Breeds Investment," *Review of Financial Studies*, Fall, 14(3), 659-680.
- Kahneman, D., 2003, "Maps of Bounded Rationality: Psychology for Behavioral Economics," *American Economic Review*, (93)5, 1449-1475.
- Kahneman, D., Schkade, D., and Sunstein, C. R., (1998) "Shared Outrage and Erratic Awards: The Psychology of Punitive Damages," *Journal of Risk and Uncertainty*, 16(1), 49-86.
- Kahneman, D., and Tversky, A. (1979). "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, 47, 263-291.
- Kaplan, S. N., (2007), "Are U.S. CEOs Overpaid?" Testimony before the Committee on Financial Services United States House of Representatives, March 8, 2007.
- Klapper, L., and Zaidi, R., (2005) "A Survey of Government Regulation and Intervention in Financial Markets," Prepared for *World Development Report 2005: Improving the Investment Climate for Growth and Poverty Reduction*.
- Knetsch, J.L. and Sinden, J.A., (1984), "Willingness to Pay and Compensation Demanded: Experimental Evidence of an Unexpected Disparity in Measures of Value," *Quarterly Journal of Economics*, 99(3), 507-521.
- Koonce, L., Lipe, M., and McAnally, M., 2005, "Judging the Risk of Financial Instruments: Problems and Potential Remedies," *Accounting Review*, 80(3), 871-895
- Koonce, L, McAnally, M, and Mercer, M., 2005, "How Do Investors Judge the Risk of Financial and Derivative Instruments?," *Accounting Review*, 221-241.
- Kroszner, R. S. and Stratmann, T., 1998 "Interest Group Competition and the Organization of Congress: Theory and Evidence from Financial Services' Political Action Committees," *American Economic Review*, 88(5), 1163-1187.
- Kuran, T. and Sunstein, C., (1999), Availability Cascades and Risk Regulation, *Stanford Law Review*. 51: 683–768.

- Lerner, J. S., Small, D. A., and Loewenstein, G., (2004), "Heart Strings and Purse Strings: Carryover Effects of Emotions on Economic Decisions," *Psychological Science*, 15(5), 337-41.
- Loewenstein, G., E. Weber, C. Hsee, and E. Welch. 2001. "Risk as feelings," *Psychological Bulletin*, 127, 267-86.
- Massa, M., and Simonov, A., (2006), "Hedging, Familiarity and Portfolio Choice," *Review of Financial Studies*, 19: 633-685.
- Maynard Smith, J. and Parker, G. A., (1976) "The Logic of Asymmetric Contests," *Animal Behaviour*, 24,159-175.
- Mesterton-Gibbons, M., 1992, "Ecotypic variation in the asymmetric Hawk-Dove game: when is Bourgeois an evolutionarily stable strategy?," *Evolutionary Ecology*, 6, 198-222.
- Morse, A. and Shive, S., (2006), "Patriotism in Your Portfolio," Notre Dame University.
- Mullainathan, S. and Shleifer, A., (2005a), "Persuasion in Finance," NBER Working Paper No. W11838.
- Mullainathan, S. and Shleifer, A., (2005b), "The Market for News," *American Economic Review*, 95(4), 1031-1053.
- Murphy, K. M. and Shleifer, A., (2004), "Persuasion In Politics," *American Economic Review*, 94(2), 435-439.
- Nisbett, R. and Ross, L., *Human Inference: Strategies and Shortcomings of Social Judgment*, Prentice-Hall, 1980, Englewood Cliffs, NJ.
- Nofsinger, J., 2002, *The Psychology of Investing*, 1st edition, Pearson, Upper Saddle River, NJ.
- Odean, T., 1999, "Do Investors Trade too Much?," *American Economic Review*, 89, 1279-1298.
- Olsen, R. (1997). "Investment risk: The experts' perspective," *Financial Analysts Journal*, 53, 62-66.
- Perkins, T., "The 'Compliance' Board," *Wall Street Journal*, Friday 3/2/07, p. A11.
- Rajan, R.G., Zingales, L., "The Great Reversals: The Politics of Financial Development in the 20th Century," *Journal of Financial Economics*, 69(1), July 2003, pp. 5-50

- Reynolds, V., Falger, V., and Vine, I. (1987). *The Sociobiology of Ethnocentrism: Evolutionary Dimensions of Xenophobia, Discrimination, Racism and Nationalism*. Athens, Georgia: University of Georgia Press.
- Richardson, S., Teoh, S., Wysocki, T., (2004), "The walk-down to beatable analyst forecasts: the role of equity issuance and insider trading incentives," *Contemporary Accounting Research*, 21, 885-924.
- Ritov, I., & Baron, J. (1990), *Journal of Behavioral Decision Making*, 3, 263-277.
- Rushton, P. (2005), "Ethnic Nationalism, Evolutionary Psychology, and Genetic Similarity Theory," *Nations and Nationalism*, 11(4), 489–507.
- Shleifer, A., (2005), "Understanding Regulation," *European Financial Management*, 11(4), 439-451.
- Skyrms, B., (1996), *Evolution of the Social Contract*, Cambridge University Press.
- Slovic, P. (2000), *The Perception of Risk*, London, Earthscan.
- Stiglitz, J. E., (1989), "Using Tax Policy to Curb Speculative Short-term Trading." *Journal of Financial Services Research*, 3, 101-15.
- Summers, L. H., and V. Summers, (1989), "When Financial Markets Work Too Well: A Cautious Case for a Securities Transactions Tax," *Journal of Financial Services Research*, 3, 261-96.
- Stein, Jeremy C, 1988. "Takeover Threats and Managerial Myopia," *Journal of Political Economy*, 96(1), pages 61-80,
- Sunstein C. R., (2005) *Laws of Fear: Beyond the Precautionary Principle*, Cambridge University Press.
- Sunstein, C. R. and Thaler, R. H., (2003) "Libertarian Paternalism Is Not an Oxymoron," *University of Chicago Law Review*, 70 (4), 1159-1202.
- Tengs, T., and Graham, J., 1996). "The Opportunity Costs of Haphazard Social Investments in Life-Saving, in Risks, Costs, and Lives Saved," ch. 8, 167-82, R. Hahn ed., New York, Oxford University Press
- Trivers, R.L. (1971), "The evolution of reciprocal altruism," *Quarterly Review of Biology*, 46, 35-57.
- Trivers, R., 2000, "The elements of a scientific theory of self-deception," *Annals of the NY Academy of Sciences*, 907, 114-131.

- Trueman, B., (June 1986), "The Relationship between the Level of Capital Expenditures and Firm Value," *Journal of Financial and Quantitative Analysis*, 21(2), 115-129.
- Tversky, A., and Kahneman, D., (1973), "Availability: A Heuristic for Judging Frequency and Probability," *Cognitive Psychology*, 5, 207-232.
- Wittman, Donald (1995). *The Myth of Democratic Failure: Why Political Institutions are Efficient*, Chicago: University of Chicago Press.
- Xinghai, F. Tues 3/6/07, "Taking Stock in China," *Wall Street Journal*, p. A19.
- Yacubian, J., Gläscher, J., Schroeder, K., Sommer, T., Braus, D. F., and Büchel, C., (2006), "Dissociable Systems for Gain- and Loss-Related Value Predictions and Errors of Prediction in the Human Brain," *Journal of Neuroscience*, 26(37):9530-7.
- Yates, F. and Stone, E., (1992), "The risk construct," in *Risk-Taking Behavior*, F. Yates ed., New York, NY: Wiley, 1-25.
- Zak, P. J., (June 2005), "Trust: A Temporary Human Attachment Facilitated by Oxytocin," *Behavioral and Brain Sciences*, 28(3), 368-369.
- Zak, P. J., Kurzban, R., and Matzner, W. T. (2004). "The neurobiology of trust," *Annals of the New York Academy of Sciences*, 1032, 224-227.