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The Custom-to-Failure Cycle[1]

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Abstract. In areas of complexity, people often rely on heuristics—by which we broadly mean simplifications of reality that allow us to make decisions in spite of our limited ability to process information. When this reliance becomes routine and widespread within a community, it can develop into a custom. As long as such a heuristic-based custom reasonably approximates reality, society continues to benefit. In the financial sector, however, rapid changes in markets and products have disconnected some of these customs from reality, leading to massive failures; and increasing financial complexity is accelerating the rate of change, threatening future failures. We examine this "custom-to-failure cycle," considering how law can help to manage the cycle and mitigate its failures. In that context, we also analyze whether individuals and firms who follow heuristic-based customs should be subject to liability if the resulting failures harm society.

I. INTRODUCTION

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Human beings are "limited-capacity information processors."[4] In areas of complexity, we tend to compensate by relying disproportionately on heuristics—which we broadly define in this article as simplifications of reality that allow us to make decisions in spite of our limited ability to process information.[5] Sometimes these simplifications are based on models.[6] The simplifications could also be more psychologically based.[7]

Reliance on a heuristic can become so routine and widespread within a community that it develops into a custom (hereinafter, a "heuristic-based custom").[8] This type of custom may not—and indeed, this article assumes it does not[9]—become the basis for law per se. Rather, it is a custom in the sense of a "usual or habitual course of action, a long-established practice,"[10] which is merely "one element of the law-creating fact called custom."[11]

When a heuristic-based custom reasonably approximates reality, society should benefit. Modern finance, for example, has become so complex that the financial community routinely relies on heuristic-based customs, such as determining creditworthiness of securities by relying

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[4] Philip E. Tetlock, *The Impact of Accountability on Judgment and Choice: Towards a Social Contingency Model*, *in* 25 ADVANCES IN EXPERIMENTAL SOC. PSYCHOL. 331, 334–35 (1992).

[5] *Cf*. MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 584 (11th ed. 2008) (referring to a heuristic as a "method or procedure" that "serv[es] as an aid to . . . problem-solving by experimental and especially trial-and-error methods"). An example of such a heuristic is the U.S. legal requirement that purchasers of alcohol must be at least twenty-one years of age. In this article, the term "heuristic" does not refer to cognitive biases, such as availability and optimism bias, that are sometimes referred to as heuristics. For further information on such biases, *see generally, e.g.*, NASSIM NICHOLAS TALEB, THE BLACK SWAN (2007); Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME L. REV. 1349 (2011) [hereinafter "*Regulating Systemic Risk*"]. There is significant literature detailing these biases and offering suggestions to reduce the impact of such biases in consumer decisionmaking. *See generally, e.g.*, RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE (2008); MARK KELMAN, THE HEURISTICS DEBATE (2011).

[6] In operations research, for example, the term "heuristic" refers to "computationally simple models that allow people to ' . . . quickly find good feasible solutions." Konstantinos V. Katsikopoulos, *Psychological Heuristics for Making Inferences: Definition, Performance, and the Emerging Theory and Practice*, 8 DECISION ANALYSIS 10, 11 (2011) (quoting F. S. HILLIER AND G. J. LIEBERMAN, INTRODUCTION TO OPERATIONS RESEARCH 624 (2001)).

[7] In psychology, the term "heuristic" refers to both informal and quantitative "psychological processes that 'in general . . . are quite useful,' but sometimes lead to severe and systematic errors. Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCI. 1124, 1124 (1974). For discussion of many common psychologically-based simplifications and errors, see generally DANIEL KAHNEMAN, THINKING, FAST AND SLOW (2011).

[8] We use the term "custom" in its common meaning of "a usage or practice common to many or to a particular place or class." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 308 (11th ed. 2008).

[9] *See infra* note 19 and accompanying text.

[10] H. KELSEN, PRINCIPLES OF INTERNATIONAL LAW 440 (2d ed. 1967) (R.W. Tucker, ed.).

[11] *Id.* (arguing that the second element needed for custom to become law-creating is that the individuals performing the custom "must be convinced that they fulfill, by their actions or abstentions, a duty, or that they exercise a right"). *Cf*. Gerald J. Postema, *Custom, Normative Practice, and the Law* [cite to this DLJ symposium issue] (discussing customary rules as "rules of a particular community that govern, but also emerge from, the interactions of its members").

on formalistic credit ratings and assessing risk on financial products by relying on simplified mathematical models. Without this reliance, financial markets could not operate.[12]

However, when a heuristic-based custom no longer reflects reality, reliance on the custom can become harmful. In recent years, for example, financial markets and products have innovated so rapidly that heuristic-based customs—and thus behavior based on those customs—have lagged the changing reality. That, in turn, has led to massive financial failures, such as investors relying on credit ratings that no longer are accurate[13] and members of the financial community assessing risk under simplified models that have become misleading.[14]

We call this cycle—(i) reliance on heuristics that reasonably approximate reality; (ii) the development of customs based on those heuristics; (iii) changes that disconnect those customs from reality; and (iv) failures resulting from continued reliance on those customs—the custom-to-failure cycle.

This article tests the hypothesis of the custom-to-failure cycle in the context of financial complexity. The focus on financial complexity is not intended to suggest that the custom-to-failure cycle arises only in that context; the cycle may well be part of the larger problem of human limitations in processing and acting on complex information.[15] We have not, however, systematically examined the custom-to-failure cycle in that larger context.

The analysis proceeds as follows. First, the article shows that reliance on heuristics can develop into heuristic-based customs. The article then explains why heuristic-based customs can

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[12] James P. Crutchfield, *The Hidden Fragility of Complex Systems—Consequences of Change, Changing Consequences* 4–5 (Santa Fe Inst., Working Paper No. 09-12-045, 2009), *available at* http://www.santafe.edu/media/workingpapers/09-12-045.pdf (noting the increasing structural complexity and fragility of modern markets, including financial markets, as part of "the world we built"). *See also* Markus K. Brunnermeier & Martin Oehmke, Complexity in Financial Markets 1, 5–8 (Sept. 10, 2009) (unpublished manuscript), *available at* http://scholar.princeton.edu/markus/files/complexity.pdf (noting the fact that financial community members have bounded rationality and some of the simplifications, including models and summaries, used to combat this in the face of bounded rationality); Manuel A. Utset, *Complex Financial Institutions and Systemic Risk*, 45 GA. L. REV. 779, 799–803 (2011) (noting the reality of financial markets, including the complexity of financial markets and the need for prompt action despite the bounded rationality of financial community members). *Cf.* TALEB, *supra* note 5, at 69 (observing that heuristics are necessary to enable action in the face of otherwise overwhelming complexity and randomness).

[13] See discussion *infra* Part II.B. Although different examples in this article refer to reliance on different heuristic-based customs, each particular example refers, for clarity, on only a single heuristic-based custom. This article's analysis should be valid, however, even if an example involved reliance on multiple heuristic-based customs.

[14] See discussion *infra* Part II.A. Similar failures almost certainly will continue, since increasing financial complexity is increasing the rate of change.

[15] *Cf.* Steven L. Schwarcz, *Controlling Financial Chaos: The Power and Limits of Law*, 2012 WIS. L. REV. 815, 821–22 (discussing broader problems resulting from human irrationality and overreliance on heuristics) [hereinafter "*Controlling Financial Chaos*"].

discourage the reassessment of their underlying heuristics. Thereafter, the article shows that failures can result when the customs no longer reflect reality.

Finally, the article examines how law can help to manage the custom-to-failure cycle and mitigate its failures. This examination confronts an important normative, yet real-world,[16] dilemma. Heuristic-based customs, like any other customs, can become internalized as social norms of appropriate behavior (hereinafter, "custom-derived norms").[17] The creation of such norms in private groups, such as the financial community, is a "standard explanation" for successful self-regulation.[18] The dilemma is whether individuals and firms following heuristic-based customs that have become custom-derived norms—assuming the custom-derived norms have not themselves become law[19]—should be subject to criminal or civil liability when their behavior causes failures that harm society.

II. Reliance on Heuristics Can Develop into Heuristic-Based Customs

As reliance on a heuristic spreads throughout the financial community and becomes routine,[20] it can develop into a heuristic-based custom,[21] as evidenced by the following examples.

A. Reliance on VaR Models

Since the 1990s, financial firms increasingly have relied on value-at-risk (VaR) models to evaluate and report market risk.[22] Although many variations of these models exist, all summarize

[16] *See* discussion *infra* Part V.
[17] A "norm" is a "a principle of *right action* binding upon the members of a group and serving to guide, control, or regulate *proper and acceptable behavior*." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 846 (11th ed. 2008) (emphasis added).
[18] ANNALISE RILES, COLLATERAL KNOWLEDGE: LEGAL REASONING IN THE GLOBAL FINANCIAL MARKETS 33 (2011).
[19] This article assumes that the custom-derived norms in question have not themselves actually become law. *Cf. supra* notes 9-11 and accompanying text (explaining that this article's concept of custom lacks the second element needed for custom to become law-creating).
[20] For example, a heuristic may spread due to the desire of members of the financial community to reduce transaction costs.
[21] We focus on this notion of a heuristic-based custom, as opposed to custom as unwritten law among participants. *See*, *e.g.*, RICHARD C. OSBORN, BUSINESS FINANCE: THE MANAGEMENT APPROACH 177–78 (1965) (discussing the use of trade credit as a common form of payment).
[22] Christopher L. Culp et al., *Value at Risk: Uses and Abuses*, 10 J. APPLIED CORP. FIN. 26, 27 (1998). For current examples of value-at-risk reliance, see, e.g., Earnings Release, Morgan Stanley, Morgan Stanley Reports First Quarter 2012 (Apr. 19, 2012), *available at* http://www.morganstanley.com/about/ir/shareholder/1q2012.pdf?v=1; Goldman Sachs Group Inc., Quarterly Report (Form 10-Q) (May, 9, 2012), *available at* www.goldmansachs.com/investor-relations/financials/current/10q/10q-2012-1q.pdf.

risk evaluation as a simple quantitative statistic expressed in dollar terms.[23] Reliance on VaR has become so routine and widespread that it is now the financial industry's "standard risk measure"—effectively a heuristic-based custom based on computationally simple models[24]—for assessing market risk exposure.[25]

B. Reliance on Credit Ratings

Credit ratings are simplifying metrics for addressing information asymmetry between borrowers and lenders.[26] Rating agencies formalistically assess borrower creditworthiness based on models,[27] expressing their ultimate conclusion through "an ordinal ranking of a borrower's, or a security's, credit quality" relative to other borrowers and securities.[28] Credit ratings also play a "certification" role that enables comparison of securities with different risk characteristics.[29]

Due to the simplicity of credit ratings, investors routinely have relied on such ratings for decades to assess borrower creditworthiness.[30] This reliance has become widespread not only in the United States but throughout the world,[31] effectively forming a heuristic-based custom for assessing creditworthiness.

III. HEURISTIC-BASED CUSTOMS CAN DISCOURAGE REASSESSMENT OF THEIR UNDERLYING HEURISTICS

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[23] Giorgio Consigli, *Tail Estimation and Mean-VaR Portfolio Selection in Markets Subject to Financial Instability*, 26 J. BANKING & FIN. 1355, 1356 (2002).

[24] *Cf. supra* note 6 and accompanying text (explaining that heuristics are sometimes simplifications of reality based on models).

[25] Consigli, *supra* note 23. *See also* Joe Nocera, *Risk Mismanagement*, N.Y. TIMES, Jan. 2, 2009, at MM24, *available at* http://www.nytimes.com/2009/01/04/magazine/04risk-t.html?pagewanted=all.

[26] Pragyan Deb et al., Bank of England, Financial Stability Paper, *Whither the Credit Ratings Industry?* 4 (2011), http://www.bankofengland.co.uk/publications/fsr/fs_paper09.pdf. *See also* Donald MacKenzie, *The Credit Crisis as a Problem in the Sociology of Knowledge*, 116 AM. J. SOCIOLOGY 1778, 1785 (2011) (noting that use of credit ratings enables comparison across asset classes by reference to spreads over benchmark rates such as LIBOR, perhaps at the danger of "black box[ing]" the complexities of some assets).

[27] *Cf. supra* note 6 and accompanying text (explaining that heuristics are sometimes simplifications of reality based on models).

[28] Deb et al., *supra* note 26, at 5.

[29] *Id.* at 5–6.

[30] Steven L. Schwarcz, *Private Ordering of Public Markets: The Rating Agency Paradox*, 2002 U. ILL. L. REV. 1, 1-3.

[31] *Id*. at 3. *See also* Piero Cinquegrana, *The Reform of the Credit Rating Agencies: A Comparative Perspective* 1 (2009), http://aei.pitt.edu/11732/1/1797.pdf (noting widespread use of credit ratings).

If members of the financial community expect that heuristic-based customs approximate reality, they can become complacent, not questioning the continuing accuracy of the underlying heuristic.[32] This again can be illustrated by the foregoing two examples.

A. Reliance on VaR Models

As previously observed,[33] routine and widespread reliance on VaR models has developed into a heuristic-based custom. Financial firms now rely on VaR models not only to evaluate market risk but also to generate bases for compensating their employees and managers, such as adopting compensation systems that reward profit generation with "low risks" as indicated by VaR statistics.[34] Until recently, neither firms using VaR models nor employees and managers being compensated based on such models have questioned the models.[35] And senior managers of financial firms, who often lack the technical expertise to themselves question the models, have not attempted to resolve the conflicts of interest that make reliance on the models even more questionable.[36]

B. Reliance on Credit Ratings

Similarly, the heuristic-based custom of relying on credit ratings had become so entrenched that, at least until the recent financial crisis, financial firms rarely questioned the accuracy of these ratings. Faith in the accuracy of credit ratings was reinforced by their long record of reliability for assessing the creditworthiness of borrowers under relatively simple debt instruments, such as corporate bonds[37] and basic securitization instruments.[38]

Members of the financial community continued their unquestioning belief in the accuracy of credit ratings even when ratings were applied to new debt instruments, such as collateralized debt obligations that were themselves backed by asset-backed securities ("ABS CDO"

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[32] For further discussion of complacency, see *Regulating Systemic Risk¸ supra* note 5, at1366–68, 1386–87.
[33] See Part II.A, supra.
[34] Steven L. Schwarcz, *Conflicts and Financial Collapse: The Problem of Secondary-Management Agency Costs*, 26 YALE J. ON REG. 457, 460 (2009) [hereinafter "*Conflicts*"].
[35] *Id.* at 460, 463.
[36] *Id*. *See also infra* note 47 and accompanying text.
[37] *See, e.g.*, Statement of the Bond Market Association, SEC Hearing on Credit Rating Agencies (Nov. 21, 2002), *available at* http://www.sec.gov/news/extra/credrate/bondmarket.htm#P35_5249; *Rating the Ratings*, WORLD FIN. (Oct. 25, 2011), http://www.worldfinance.com/columnists/rating-the-ratings; Moody's Investors Service, *Corporate Default and Recovery Rates, 1920-2010* 9 (Feb. 28, 2011), http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_131388; Standard & Poor's, *Understanding Ratings: Guide to Ratings Performance* 13 (2011), http://img.en25.com/Web/StandardandPoors/SP_GuideToRatingsPerformance.pdf ("Higher credit ratings have typically correlated with lower default rates[.]").
[38] MacKenzie, *supra* note 26, at 1784.

securities). ABS CDO securities were much more complex and highly leveraged than corporate bonds and basic securitization instruments,[39] requiring the use of sophisticated Gaussian copula analysis to analyze complex default correlations.[40] This represented a marked change from the traditional ratings methodologies that had proven to be reliable over many decades.[41] Nonetheless, members of the financial community, including investors, simply assumed the continued reliability of the credit ratings on the new instruments.[42]

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[39] Rating agencies acknowledged a few differences between the rating methodology for structured finance securities compared to that of corporate securities, but noted the rating process was "similar" for both. Letter from Frédéric Drevon, Senior Managing Dir., Europe, Moody's Investors Service Ltd., to Fabrice Demarigny, Sec'y Gen., Comm. of European Secs. Regulators (Jul. 31, 2007) (available at http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_104185); STANDARD & POOR'S, GENERAL: PRINCIPLES-BASED RATING METHODOLOGY FOR GLOBAL STRUCTURED FINANCE SECURITIES (May 29, 2007), *available at* http://www.standardandpoors.com/prot/ratings/articles/en/us/?articleType=HTML&assetID=1245324618770.

[40] In the decade preceding the recent financial crisis, bond investors and banks adopted a specific statistical technique, the Gaussian copula, to evaluate the default correlation. Felix Salmon, *A Formula for Disaster*, WIRED, Mar. 2009, at 74. See *also* MacKenzie, *supra* note 26, at 1804; Kathryn Judge, *Fragmentation Nodes*, STAN. L. REV. (forthcoming 2012) (manuscript at 5, 13–14), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1894105. Although this technique had previously been used by actuaries to consider the impact of events on human lifespan with some success, it had not been applied to credit risk analysis and evaluation of asset-backed securities (ABS) prior to this period. Sam Jones, *Of Couples and Copulas*, FIN. TIMES, Apr. 25, 2009, at MAG1; MacKenzie, *supra* note 26, at 1803–04. Essentially, a Gaussian-copula approach enabled a single estimate of default correlation by combining probabilities of default of the underlying assets in a CDO portfolio based on numerous assumptions—in other words, a heuristic. MacKenzie, *supra* note 26, at 1803, n. 33. Even the three major rating agencies—Moody's Investors Service, Standard & Poor's (S&P), and Fitch Ratings—adopted some form of Gaussian-copula default correlation assessment for CDO portfolios. *Id.* at 1804. The extent to which members of the financial community understood the underlying assumptions and limitations of the Gaussian-copula approach is unclear. Judge, *supra* note 40 (manuscript at 22). This is not to say that rating agencies solely relied on models in their creditworthiness evaluations of securities, see, e.g., Raymond W. McDaniel, Chairman and CEO, Moody's Corp., & Yuri Yoshizawa, Senior Managing Dir., Moody's Investors Serv., Testimony before the United States Senate Permanent Subcommittee on Investigation 10 (Apr. 23, 2010) (transcript available at http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_124448); STANDARD & POOR'S, GUIDE TO CREDIT RATING ESSENTIALS 7 (2011), *available at* http://img.en25.com/Web/StandardandPoors/SP_CreditRatingsGuide.pdf; Standard & Poor's, General: Principles-Based Rating Methodology for Global Structured Finance Securities, *supra* note 39.

[41] MacKenzie, *supra* note 26, at 1785. *Compare also, e.g.*, Moody's Investors Service, *Rating Methodology: Global Packaged Goods Industry* (July 2009), http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_119226 *with* Moody's Investors Service, *Rating Methodology: The Binomial Expansion Method Applied to CBO/CLO Analysis* (Dec. 1996), http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBS_SF5066; Moody's Investors Service, *Rating Methodology: Moody's Approach to Rating SF CDOs* (May 2012), http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBS_SF157850.

[42] MacKenzie, *supra* note 26, at 1785. Rating agencies acknowledged that "[b]onds with the same credit rating, therefore, may be comparable with respect to overall credit quality," even if specific characteristics were not the same. MOODY'S INVESTORS SERV., RATING METHODOLOGY: THE EVOLVING MEANING OF MOODY'S BOND RATINGS 3 (1999), *available at* http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBM_PBM48185. *See also About Credit Ratings*, STANDARD & POOR'S, http://www.standardandpoors.com/aboutcreditratings (last visited Jun. 26, 2012) (follow "Comparable Across Different Sectors and Regions" hyperlink) ("Standard & Poor's uses the same rating scale across the structured finance, corporate, and government sectors. This rating scale is designed to

IV. Failures Can Result When Heuristic-Based Customs No Longer Reflect Reality

The usefulness of a heuristic depends, of course, on its approximation of reality. In relatively stable times, when there are considerable historical data or personal experiences upon which to draw, heuristics—and thus heuristic-based customs—can closely approximate reality.

This article focuses, however, on the financial industry, which is marked by constant change. Under these circumstances, it is unlikely that a given heuristic will provide a close approximation of reality for long. Periodic reevaluation of heuristic-based customs is therefore critical.

Unfortunately, as discussed in Part III above, the complacency of financial community members can hinder that reevaluation. The result can be failure, as illustrated below—beginning with the examples previously used (reliance on VaR models and reliance on credit ratings) and then including additional examples.

A. Failure Resulting from Reliance on VaR Models

In the decade preceding the recent financial crisis, financial community members placed "'enormous faith in the market's ability to analyze and measure risk' through mathematical models," such as VaR.[43] When markets changed to embed credit-default swaps—a new form of derivatives product—in many financial transactions, financial community members continued to use VaR models to assess the risk of those products.[44]

Unfortunately, VaR modeling of credit-default swaps was distorted because, although these swaps "generate small gains but only rarely have losses,"[45] VaR models did not take into account that credit-default swaps are likely to generate outsized losses if and when such losses occur.[46] Although some mid-level managers of firms may have understood this distortion, conflicts of interest appear to have dissuaded them from informing senior management.[47] As a result, many firms that were counterparties on credit default swaps, or that invested in

provide a common language for comparing creditworthiness, regardless of the type of entity or assets underlying the debt instrument or the structure of the financial obligation.").

[43] *Conflicts*, *supra* note 34, at 462.

[44] Nocera, *supra* note 25.

[45] *Conflicts*, *supra* note 34, at 460.

[46] *Id*.

[47] *Id*.

transactions with embedded credit-default swaps, lost huge amounts of money.[48] For example, as a result of losses on credit-default swaps, American International Group (AIG) required a $155 billion bailout from taxpayer funds in order to avoid insolvency and potential systemic consequences.[49]

B. Failure Resulting from Reliance on Credit Ratings

The recent financial crisis also highlighted the potential for failure resulting from reliance on credit ratings. As discussed, members of the financial community continued to believe in the accuracy of credit ratings even when ratings were applied to complex new, highly-leveraged ABS CDO securities.[50] Investor reliance on credit ratings was further reinforced by financial regulators, who sometimes incorporated credit ratings into their oversight frameworks[51] and set minimum-rating requirements on investments by financial institutions.[52]

Failure resulted when the rating methodologies utilized for ABS CDO and similar securities produced inaccurate ratings.[53] The resulting unexpected defaults on what were thought to be investment-grade securities triggered a loss of confidence in the accuracy of all credit ratings, contributing to the financial crisis.[54]

There are many other possible examples, two of which follow,[55] of failures resulting from reliance on heuristic-based customs that no longer reflect reality.[56]

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[48] *See, e.g.*, Steven M. Davidoff, *After $2 Billion Loss, Will JPMorgan Move to Claw Back Pay*, DEALBOOK (May 14, 2012, 1:16PM), http://dealbook.nytimes.com/2012/05/14/after-2-billion-trading-loss-will-jpmorgan-claw-back-pay.

[49] *See, e.g.,*, Steve Schaefer, *Government Watchdog Says AIG Bailout Could Turn $15.1B Profit for Taxpayers,* FORBES.COM (May 7, 2012 4:18PM), http://www.forbes.com/sites/steveschaefer/2012/05/07/government-watchdog-says-aig-bailout-could-turn-15-1b-profit. For purposes of our analysis, the article's suggestion that taxpayers may ultimately profit from the bailout is irrelevant. The government did not choose to invest in AIG as a sound investment, but rather were forced to do so to prevent the collapse of AIG. For a brief discussion of the motivations behind and effects of these collateral calls, *see* RILES, *supra* note 18, at 3–4.

[50] *See supra* note 39 and accompanying text.

[51] Financial Stability Board, *Principles for Reducing Reliance on CRA Ratings* 1–2 (2010), http://www.financialstabilityboard.org/publications/r_101027.pdf, at 1.

[52] MacKenzie, *supra* note 26, at 1784. MacKenzie notes that financial statutes and regulation may encode ratings preferences as well, *id.* at 1784, but this is not the focus of this article.

[53] *Conflicts*, *supra* note 34, at 462 (noting that "many mortgage-backed securities turned out to be incorrectly rated").

[54] Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 225 (2009).

[55] *See infra* Parts IV.C & IV.D.

[56] Social scientists have also observed these types of failures. Sociologist Patricia Thornton, for example, has observed such a failure in the higher education publishing industry when that industry shifted from an emphasis on building author-editor relationships as a source of long-term organic growth to adoption of the consolidated conglomerate model's focus on acquisitions to drive profitability and growth. Patricia H. Thornton, MARKETS FROM CULTURE: INSTITUTIONAL LOGICS AND ORGANIZATIONAL DECISIONS IN HIGHER EDUCATION PUBLISHING 26–36

C. Failure Resulting from Reliance on Collateral

Reliance on collateral is a rational response of lenders to the asymmetric information and uncertainty inherent in making a loan. Assessment of a borrower's ability to repay debt can be complex and difficult because it depends not only on individual borrower characteristics but also on macroeconomic factors. Banks and other lenders therefore often rely on overcollateralization—requiring collateral whose value exceeds the amount of the loan—as a simplified means to assess the creditworthiness of their loans.[57] Because it is usually much easier to assess collateral value than to assess a borrower's ability to repay, reliance on overcollateralization has become routine and widespread, effectively developing into a heuristic-derived custom.[58]

Overcollateralization can in fact provide sufficient protection against borrower default (and thus it can be a reasonable proxy for creditworthiness). Should the borrower default, the collateral can be sold to repay the debt.[59] However, in periods of rapid change, illustrated below by the Great Depression and the recent financial crisis, reliance on overcollateralization can sometimes fail.

For example, in the years preceding the Great Depression, banks lending "on margin"—meaning that borrowers used the loan proceeds to purchase shares of stock and then pledged that stock as collateral to the banks—assumed they were adequately protected, even for margin loans made to risky borrowers.[60] Although these loans were not initially overcollateralized (because

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(2004). In the 1970s, higher education publishers faced increased resource competition and began to acquire firms and create conglomerates to achieve economies of scale and scope to improve yearly profitability and growth. *Id.* at 27–28. Eventually, reliance on making acquisitions to enhance profitability and growth became so routine and widespread that it effectively developed into what we characterize as a heuristic-based custom. Publishing managers, whose success was now measured by yearly growth figures, widely pursued acquisitions. *Id.* at 31, 34. But as the industry consolidated, the making of further acquisitions stopped being efficient. Firms nonetheless continued to make acquisitions, without independent cost-benefit evaluations, simply because others in the industry were doing so. *Id.* Acquisitions involving higher education publishers occurred "in waves . . . that could not be explained by efficiency outcomes," and many publishing conglomerates failed. *Id.* at 6. We do not suggest that *all* of the failed acquisitions were caused by reliance on the heuristic-based custom of pursuing acquisitions; however, failure to reevaluate the strategy of pursuing acquisitions as a simplified mode to greater profitability at least contributed to these failures.

[57] *Cf. supra* notes 6 & 7 and accompanying text (explaining that heuristics include simplifications of reality based on models and psychological processes). Reliance on overcollateralization is a heuristic that overlaps these categories.

[58] *See generally Securities Lending: Managing Value Generation and Risk*, J.P. MORGAN, http://www.jpmorgan.com/tss/General/Securities_Lending_Managing_Value_Generation_and_Risk/1256338170739 (last visited Jul. 1, 2012). *See also Regulating Systemic Risk*, *supra* note 6, at 1356–57 & 1359–60.

[59] Financial community members have similarly used collateral as a creditworthiness assessment tool in derivatives trading. RILES, *supra* note 18, at 35–36.

[60] *Regulating Systemic Risk*, *supra* note 5, at 1356.

the value of the pledged stock initially equaled, but did not exceed, the amount of the loan), banks expected the stock market to continue rising, as it had for decades. An increase in stock prices (and thus consequent increase in the value of the collateral) would then quickly cause the loans to become overcollateralized.[61] In October 1929, however, the collapse in stock prices caused massive failure as many of those risky borrowers defaulted on the now-*under*collateralized margin loans.[62]

Similarly, prior to the recent financial crisis, banks and private mortgage lenders made loans to risky, or "subprime," borrowers who used the loan proceeds to purchase homes and then mortgaged those homes as collateral to the lenders. The lenders assumed they were adequately protected.[63] Although these mortgage loans were not initially overcollateralized (because the value of a mortgaged home initially equaled, but did not exceed, the amount of the loan), the lenders expected housing prices to continue rising, as had been the case for decades.[64] An increase in housing prices (and thus consequent increase in the value of the collateral) would then quickly cause the loans to become overcollateralized.[65] In the Fall of 2007, however, the collapse in housing prices caused massive failure as many subprime borrowers defaulted on the now-*under*collateralized mortgage loans.[66]

D. <u>Failure Resulting from Incremental Innovation</u>

Heuristic-based customs can build incrementally, with small financial innovations building on past heuristic-based customs with which financial community members have become comfortable.[67] Kathryn Judge notes just such an effect within the mortgage securitization

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[61] *Id.*
[62] *Id.* at 1357.
[63] *Id.*
[64] *Id.* at 1359–60.
[65] Barry Ritholtz, *Case Shiller 100 Year Chart (2011 Update)*, THE BIG PICTURE (Apr. 13, 2011, 7:00AM), http://www.ritholtz.com/blog/2011/04/case-shiller-100-year-chart-2011-update/.
[66] *Regulating Systemic Risk*, *supra* note 5, at 1360.
[67] A somewhat analogous example of this is the judicial misapplication of substantive consolidation law. Substantive consolidation is an equitable remedy in bankruptcy whereby a bankruptcy judge can decide, in certain circumstances, to order the consolidation of two (or more) otherwise legally separate companies. All courts agree that substantive consolidation requires, as a minimum, significant breaches of corporate formalities between the companies being considered for consolidation. When such breaches occur, however, courts frequently state that substantive consolidation should be permitted only if its benefits substantially outweigh any harm. STEVEN L. SCHWARCZ ET AL., SECURITIZATION, STRUCTURED FINANCE AND CAPITAL MARKETS § 3.03 (D), at 86 (2004). The substantially-outweigh test serves as a simplifying analytical framework—a sort of judicial heuristic. In the trivial scenario where the failure to substantively consolidate companies would harm *all creditors*, including creditors otherwise opposing substantive consolidation, all courts will come to the same conclusion. However, for all other scenarios, courts purporting to apply this substantially-outweigh test fail to do so in a systematic way. The confusion stems from the fact that substantive consolidation is actually a zero-sum game: It simply rearranges how assets are

industry in the decades preceding the recent financial crisis, resulting in incredibly complex and unwieldy fragmentation of cash flows.[68]

After banks and investors became comfortable with basic mortgage-backed securities, they gradually became comfortable with the addition of incremental structural innovations, riskier assets, or both—without reconsidering that these innovations created new securities with new risks.[69] As a result, they widely and routinely relied on assessment techniques (heuristics) previously applied to simpler securities without properly considering the possibility that each new innovation or asset rendered the heuristic less accurate. In fact, with each innovation, additional complexity was introduced through a fragmentation of cash flows, whereby not all investor interests were aligned.[70] Furthermore, increases in the number of intermediaries between the originators of mortgage loans and investors in the securities backed by those mortgage loans caused the loss of important information about the loans.[71] This growing complexity and fragmentation played a significant role in the recent financial crisis, as members of the financial community found themselves unable to adequately assess the risk exposure of their counterparties.

The discussion above has shown that reliance on heuristics can develop into heuristic-based customs, that heuristic-based customs can discourage the reassessment of their underlying heuristics, and that failures can result when the customs no longer reflect reality. We next examine how law can help to manage the custom-to-failure cycle and mitigate those failures.

V. HOW LAW CAN HELP

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distributed to creditors without increasing the aggregate distributions. Accordingly, a substantially-outweigh test is mathematically nonsensical in this context. We believe that courts have not recognized this for two reasons: (1) the application of substantive consolidation is inherently complex, especially for judges who (as is unfortunately true for lawyers generally) rarely have deep mathematical aptitude; and (2) frequent judicial repetition of the contours of the substantially-outweigh test renders that a heuristic-based custom, which impairs critical inquiry into the test.

[68] Judge, *supra* note 40 (manuscript at 5, 13–14).

[69] *Id.* (manuscript at 13–14, 24–26). This is also consistent with Donald MacKenzie's hypothesis of path dependence, in which market participants respond to change through the modification of existing evaluation practices, rather than the creation of new evaluation practices. MacKenzie, *supra* note 26, at 1783.

[70] Judge, *supra* note 40 (manuscript at 29–30). For instance, investors in the AAA-rated tranche of a CDO would prefer the highest-quality portfolio of assets possible, even at lower yield, while investors in the unrated equity tranche of a CDO would prefer a lower-quality but higher-yielding portfolio of assets to maximize their return. Note that investor interests may change over time according to asset performance.

[71] *Id.*

To understand how law could help to manage the custom-to-failure cycle and mitigate its failures, consider how law could address each step in that cycle.[72] Law could be used to try to (i) prevent reliance on heuristics in the first place; (ii) block the development of heuristic-based customs; (iii) make it less likely that parties will follow heuristic-based customs that have become disconnected from reality (hereinafter, "outdated heuristic-based customs"); or (iv) address failures that result when parties follow heuristic-based customs that no longer reflect reality.

It is unlikely that law could effectively address the first two approaches. As to the first approach, even if law could prevent reliance on heuristics, it would generally be unwise to do so in the case of financial markets.[73] At least in complex matters, human beings lack the cognitive ability to make decisions without some reliance on heuristics.[74] As to the second approach, we do not see how law could effectively block the development of heuristic-based customs, the development of customs being so integrally a part of human nature.

Our analysis therefore focuses on the latter two approaches. First, we examine how law could make it less likely that parties will follow outdated heuristic-based customs. Thereafter we examine how law could address failures that result when parties follow outdated heuristic-based customs.

A. Making it Less Likely that Parties Will Follow Outdated Heuristic-Based Customs

We see at least four possible ways that law could be used, in the context of financial complexity, to make it less likely that parties will follow outdated heuristic-based customs: (1) require financial firms to engage in more self-aware operational risk management and reporting; (2) limit complex financial products; (3) criminalize the following of outdated heuristic-based customs; (4) impose ex post liability in an effort to internalize harm. We discuss the first three approaches in this Part V.A. Because it also implicates the ex post addressing of failures, we discuss the fourth approach as part of Part V.B.[75]

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[72] Recall that the custom-to-failure cycle is described as follows: (i) reliance on heuristics that reasonably approximate reality; (ii) the development of customs based on those heuristics; (iii) changes that disconnect those customs from reality; and (iv) failures resulting from continued reliance on those customs. *See* text accompanying notes 14-15, *supra*.

[73] As a positive matter, law has accomplished this in certain narrow areas, such as employment discrimination. Employers may not refuse to hire or discriminate against an individual on the basis of race, color, religion, sex, or national origin. 42 U.S.C.S. § 2000e-2 (LexisNexis 2012).

[74] *See supra* discussion in Part I.

[75] In this article, we focus on options that make it less likely that parties will follow outdated heuristic-based customs, rather than possible solutions to the underlying problems of financial community members. Our article

(1) *Requiring More Self-Aware Operational Risk Management and Reporting.*

The goal of requiring more self-aware operational risk management and reporting would be to motivate firms to periodically reevaluate their heuristic-based customs. By analogy, the recently approved Basel III capital adequacy guidelines require banks to engage in periodic financial "stress" scenarios,[76] in order to motivate them to consider the possibility of, and better prepare for, future periods when previously adequate liquidity and capital resources might prove inadequate.[77] Similarly, section 165(d) of the Dodd-Frank Act requires banks and other systemically important financial institutions to plan for the possibility of their liquidation.[78] A central goal of this "living will" requirement is self-awareness, to motivate those institutions to consider and better prepare for a time when changing circumstances might cause their demise—no matter how unlikely that demise may seem at the time the living will is being prepared.[79]

Applying this requirement to the earlier discussion of outdated heuristic-based customs, requiring periodic self-awareness and reporting could have made financial community members more aware of the limitations of, and thus the potential for failure inherent in, VaR models, thereby avoiding their reliance on outdated VaR models.[80] It also could have made financial community members more aware of the limitations of credit ratings and the potential for failure when old ratings methodologies are applied to complex new financial products.[81] Furthermore, such a requirement for self-awareness and reporting could have made financial community members more aware that loans that are not initially overcollateralized are inherently risky, since

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does not, for example, address financial regulation that could resolve core market failures such as minimizing complexity in the financial system, mitigating intra-firm conflicts, or internalizing systemic risk consequences. For an example of such broader analysis, *see, e.g.*, Steven L. Schwarcz, *Keynote Address: A Regulatory Framework for Managing Systemic Risk* (delivered at the October 20-21, 2011 European Central Bank conference, Regulation of Financial Services in the EU), *available at* http://ssrn.com/abstract=1945742 and at http://www.ecb.europa.eu/events/conferences/html/reg_fs.en.html.

[76] BANK FOR INTERNATIONAL SETTLEMENTS, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS 8–9 (2011), *available at* http://www.bis.org/publ/bcbs189.pdf.

[77] CHRIS BRUMMER, SOFT LAW AND THE GLOBAL FINANCIAL SYSTEM: RULE MAKING IN THE 21ST CENTURY 217 (2012). *Cf. Regulating Systemic Risk*, *supra* note 5, at 1389 (arguing that the simple reminder that negative economic shocks have occurred in the past will itself encourage more critical reflection and accurate risk assessments).

[78] Dodd-Frank Wall Street Reform & Consumer Protection (Dodd-Frank) Act § 165(d), 12 U.S.C.S. § 5365 (LexisNexis 2012).

[79] *See, e.g.*, Martin J. Gruenberg, Acting Chairman, FDIC, Speech at the Federal Reserve Bank of Chicago Bank Structure Conference (May 10, 2012) (transcript available at http://www.fdic.gov/news/news/speeches/chairman/spmay1012.html) (commenting that required resolution planning "will improve [financial firms'] efficiencies, risk management[,] and contingency planning").

[80] *See supra* Part IV.A. A requirement of this sort could even be coupled with a safe harbor from liability for firms that perform frequent, ongoing operational risk assessments.

[81] *See supra* Part IV.B.

a decline (or even a plateau) in collateral prices can prevent those loans from ever becoming overcollateralized.[82] In each case, the requirement could have prevented reliance on those outdated heuristic-based customs, thereby preventing the failures caused by that reliance.[83]

(2) *Limiting Complex Financial Products.*

The second way that law could make it less likely that parties will follow outdated heuristic-based customs would be to limit complex financial products. As complexity increases, financial community members need to rely more heavily on heuristic-based customs; yet the more complex something is, the less likely it will be (other things being equal) that the heuristic will accurately reflect reality.[84] Limiting complex financial products would not only reduce the need to rely on heuristics but also would make it more likely that the heuristics that are relied on will more accurately reflect reality.

Absent agreement on what constitutes complexity, it would be difficult to limit complex financial products per se.[85] Complexity also could be limited, however, by requiring some form of standardization of financial products. It is unclear, though, whether the net effect of requiring standardization would be socially beneficial. Although standardization would certainly reduce the need to rely on heuristics, it would limit the ability of the market to achieve efficiencies by issuing securities tailored to the particular needs of investors and also could make financial

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[82] *See supra* Part IV.C.

[83] As a practical matter, financial community members may choose to rely on in-house risk managers to conduct the required reevaluation of heuristic-based customs. Effective risk managers function independently of profit centers and have the requisite knowledge and experience to properly question the underlying methodologies and heuristics of financial products. Therefore, these individuals may be ideally situated to reevaluate the continued accuracy of heuristic-based customs. However, for financial community members to benefit from this required reevaluation, risk managers must have the ability to promptly notify and request action of top management with respect to outdated heuristic-based custom. Granting risk managers the authority to override the decisions of business managers upon a determination that the underlying heuristic is outdated would timely prevent continued reliance. Monitoring incentives may also encourage periodic reevaluation if structured to reward past superior risk practices with actual observed losses. Such an incentive would have likely increased attention to future long-term losses not properly captured in VaR models, the different credit rating methodology (and increased unreliability) for structured finance products, and the risk inherent in relying on rising collateral prices to achieve overcollateralization.

[84] *Regulating Systemic Risk*, *supra* note 5, at 1370**.**

[85] A possible approach to limiting new complex financial products might be to require an approval process for such products, similar to that used by the Food and Drug Administration for approving new medications. *Compare* Eric A. Posner & E. Glen Weyl, *An FDA for Financial Innovation: Applying the Insurable Interest Doctrine to Twenty-First-Century Financial Markets*, 107 NW. U. L. REV. (forthcoming 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2010606, *with* Saule T. Omarova, *License to Deal: Mandatory Approval of New Complex Financial Products* (Feb. 19, 2012), *available at* http://ssrn.com/abstract=1996755. Even if this approach otherwise reduces the introduction of dangerous new financial products, however, it would not directly address our article's problem: reliance on outdated heuristic-based customs even for financial products that are not inherently dangerous.

markets less competitive with unstandardized markets.[86] Also, perversely, standardization could reinforce complacency with heuristic-derived customs, creating a greater risk of failure if changing circumstances cause those customs to become outdated. Standardization would also be likely to face opposition by financial community members because commoditizing financial products would reduce profitability.[87]

It therefore is unclear whether, on a cost-benefit basis, it makes sense to try to limit complex financial products.

(3) *Criminalizing the Following of Outdated Heuristic-Based Customs.*

The third way that law could make it less likely that parties will follow outdated heuristic-based customs would be to criminalize it. We believe, however, that criminalization would be inappropriate. Criminal liability, which in the United States is largely imposed by state and federal statute,[88] generally requires *mens rea*, or a "general notion of moral blameworthiness," on the part of the actor.[89] Many states have adopted a more specific, elemental *mens rea* component whereby criminal liability attaches only if an actor has a specific state of mind for the crime.[90] Because it is difficult for one following a heuristic-based custom to know if that custom is outdated, it may be difficult to show, much less prove, mens rea.

[86] *Compare Regulating Complexity in Financial Markets*, *supra* note 54, at 241 n.165 and accompanying text (arguing that regulatory attempts to limit uncertainty by standardizing transactions and financial products would likely have unintended negative consequences) *with* Judge, *supra* note 40 (arguing that standardization could reduce the informational burden on investors, facilitate coordination in the face of changed circumstances, and make it easier for investors to compare securities issued in different transactions) *and* NOURIEL ROUBINI & STEPHEN MIHM, CRISIS ECONOMICS: A CRASH COURSE IN THE FUTURE OF FINANCE 193–94 (2010) (examining effect of increasing standardization in securitization).

[87] *See, e.g.*, Joseph R. Mason, *Regulating for Financial System Development, Financial Institutions Stability, and Financial Innovation*, *in* BANK OF IT. 4 (Apr. 17, 2009), http://www.bancaditalia.it/studiricerche/convegni/atti/Financial_Market_Regulation/session_c2/Mason.pdf (arguing that banks may oppose greater standardization because standardization tends to reduce profit margins).

[88] JOSHUA DRESSLER, UNDERSTANDING CRIMINAL LAW 28 (5th ed. 2009).

[89] *Id.* at 118. *See also* Morissette v. United States, 342 U.S. 246, 251 (1952) (stating that criminal liability requires "concurrence of an evil-meaning mind with an evil-doing hand").

[90] Guyora Binder, *Felony Murder and Mens Rea Default Rules: A Study in Statutory Interpretation*, 4 BUFF. CRIM. L. REV. 399, 411–12 (2000). *See also, e.g.*, N.Y. Penal Law § 125.25 (McKinney 2012) (requiring "intent to cause the death of another person" to be guilty of murder in the second degree); Cal. Penal Code § 242 (West 2012) (defining battery as "any willful and unlawful use of force or violence upon the person of another"); 720 Ill. Comp. Stat. Ann. 5 / 12-4 (West 2012) (guilt of aggravated battery requires "intentionally or knowingly caus[ing] great bodily hard, or permanent disability or disfigurement"). *But see* Gary Fields & John R. Emshwiller, *Federal Offenses: As Federal Crime List Grows, Threshold of Guilt Declines*, WALL. ST. J., Sept. 27, 2011, at A1. Elemental states of mind can be used not only to impose liability, but also to impose varying degrees of liability. *Compare, e.g.*, N.Y. Penal Law § 125.25 (McKinney 2012) (requiring "intent to cause the death of another person" to be guilty of murder in the second degree) *with* N.Y. Penal Law § 125.25 (McKinney 2012) (requiring the "reckless caus[ation of] the death of another person" to be guilty of manslaughter in the second degree).

Moreover, criminalizing the following of outdated heuristic-based customs would not appear to be justified by any of the traditional justifications for imposing criminal liability, of which the most relevant would be deterrence and retribution.[91] The deterrent value is likely to be minimal because, as indicated, it is difficult for one following a heuristic-based custom to know if that custom is outdated. On the other hand, criminalization might have a chilling effect on the use of heuristics, which are necessary.[92] In other contexts, it has been shown that criminal liability can sometimes "over-deter[] otherwise desirable business activities" because parties may avoid beneficial but "marginally lawful" acts due to the uncertainty of criminal conviction, thereby increasing social costs and generating inefficiency.[93] (We later examine whether civil liability could provide appropriate deterrence.[94])

Retribution, or revenge, does not appear to justify imposing criminal liability on parties following outdated heuristic-based customs.[95] Nonetheless, where significant harm results, the media often tries to identify wrongdoers who should be sent to jail. Retribution has been posited, for example, as one reason for Enron executives Kenneth Lay and Jeffrey Skilling's criminal prosecutions.[96] Recent frustration with the Obama Administration for not seeking indictments in the wake of the recent financial crisis and subsequent banking failures suggest continued strong impulses for retribution.[97] Conceptually, though, significant harm in and of itself should not justify criminalizing actions that lack mens rea.[98]

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[91] Dressler, *supra* note 88, at 15, 17, 18 (identifying these justifications as deterrence, retribution, denunciation, and rehabilitation).

[92] *Cf. supra* note 12 and accompanying text (observing that, without reliance on heuristics, financial markets could not operate).

[93] Sandeep Gopalan, *Skilling's Martyrdom: The Case for Criminalization Without Incarceration*, 44 U.S.F. L. REV. 459, 461 & 461 fn. 10 (2010) (quoting Kenneth G. Dau-Schmidt, *An Economic Analysis of the Criminal Law as a Preference-Shaping Policy*, 1990 DUKE L.J. 1, 14).

[94] *See infra* Part V.B.

[95] *Id.* at 17. Another version of retribution seeks to signal to the victim that society values his rights more than that of the wrongdoer. *Id.* at 18. The fairness of punishment under this theory is that, by choosing to commit the act in question, the wrongdoer "elevate[d] himself with respect to others." *Id.* However, this justification fails with respect to failures resulting from the custom-to-failure cycle, since the actor did not choose to do wrong and, in fact, was even unaware that his actions were wrong. To the extent that advocates of criminal liability seek restitution for victims through the imposition of criminal fines, this objective can be just as easily accomplished through civil liability, without the social harms associated with excessive criminalization discussed above.

[96] Gopalan, *supra* note 93, at 460.

[97] *See* Michael Greenberger's comments on a recent radio show. *The Diane Rehm Show*: *Risky Bank Investments and the U.S. Economy* (WAMU 88.5 radio broadcast May 14, 2012) (transcript available at http://thedianerehmshow.org/shows/2012-05-14/risky-bank-investments-and-us-economy/transcript).

[98] Consider, for example, if one person was unwittingly a carrier—but not himself infected due to a natural immunity—of a terminal, contagious disease and spread it to several others. Significant harm results, yet it would be unreasonable to seek revenge on that person for something of which he was unaware.

B. Addressing Failures that Result when Parties Follow Outdated Heuristic-Based Customs

To address failures that result when parties follow outdated heuristic-based customs, we focus primarily on internalizing externalities.[99] This implicates the theory of civil damages, the goal of which is to "put the plaintiff in the same position . . . as he would have been had there been no injury or breach"—namely, to compensate the plaintiff for actual injuries.[100] In so doing, civil damages (1) "restore a sense of fairness" and (2) incentivize actors to internalize externalities.[101]

Externalities could be internalized by imposing civil damages for costs "closely associated with" the act that causes the externalities.[102] If such damages were imposed for foreseeable harms, the externalities would be at least partly internalized. If such damages were imposed for all harms, regardless of foreseeability, most if not all externalities would be internalized.

Civil damages are normally imposed only for foreseeable harms.[103] However, civil damages can be imposed for all harms, regardless of foreseeability, under the allocation-of-resources justification of enterprise liability.[104] The allocation-of-resources justification views unforeseeable harms as "just as truly costs" of doing business as foreseeable harms.[105]

(1) *Applying the Theory of Civil Damages to Natural Persons and Firms.*

Which justification for liability should apply in the case of damages caused by reliance on outdated heuristic-based customs? In a financial context, we believe the answer should depend on whether the defendant is a natural person or a firm. A natural person, unlike an enterprise (such as a firm), usually cannot effectively reallocate resources to prevent harm. A natural person can also be expected to follow—and, as an individual, likely cannot change—

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[99] Criminal liability also could be used to address those failures, but we have shown in Part V.A, *supra*, why imposing criminal liability would be inappropriate.

[100] Steven L. Schwarcz, *Compensating Market Value Losses: Rethinking the Theory of Damages in a Market Economy*, 63 FLA. L. REV. 1053, 1060 (2011) at 1060 (quoting WALLACE HUGH WIGMAN ET AL., THE ESSENTIALS OF COMMERCIAL LAW 82 (1913)).

[101] *Id. See generally* Guido Calabresi, *Some Thoughts on Risk Distribution and the Law of Torts*, 70 YALE L.J. 499 (1961) (discussing two justifications for civil liability on the basis of internalizing externalities—loss-spreading and allocation-of-resources—in the law and economics literature).

[102] Calabresi, *supra* note 101, at 514.

[103] *Id.* at 529.

[104] *Id.* (explaining by example that the allocation-of-resources justification would impose costs regardless of foreseeability). Another justification for enterprise liability is loss-spreading, such as where the defendant can insure against the damages or pass them on to buyers of products or services. *Id.*

[105] *Id.* at 529.

social norms, including custom-derived norms. Following these norms should be encouraged because it usually reinforces successful self-regulation of the financial community of which the individual is a member.[106] Therefore, a natural person who follows custom-derived norms based on outdated heuristic-based customs should only be liable for foreseeable damages.

In contrast, financial firms can more effectively reallocate their resources to prevent harm. For example, we already have discussed how firms could engage in more self-aware operational risk management and reporting.[107] Imposing liability for following outdated custom-derived norms, regardless of foreseeability of harm, could be a critical motivator for firms to engage in that risk-management and reporting effort—effectively pushing firms to try to recognize when they are following an outdated norm.[108] That effort is needed because following outdated custom-derived norms no longer would result in "successful" self-regulation.[109] Moreover, under the allocation-of-resources justification of enterprise-liability theory, even unforeseeable harms are a cost of doing business.[110] Therefore, we believe that a financial firm that follows custom-derived norms based on outdated heuristic-based customs should be liable for all damages, whether or not foreseeable.

For example, a financial firm that uses VaR models to assess risk, even after markets have changed to embed credit-default swaps that distort the risk assessments,[111] should be liable for damages to the extent those models under-predict risk and third parties are injured because of that under-prediction. An underwriter that sells ABS CDO securities to investors and discloses the risk on the securities based on those VaR models should thus be liable to the investors for any losses resulting from the under-prediction.[112]

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[106] *See supra* note 18 and accompanying text.
[107] *See* Part V.A, *supra*.
[108] This article does not examine whether there should be a safe harbor from liability for firms that take appropriate due diligence steps in that risk-management and reporting effort. Any such safe harbor would have to take into account, for example, how those steps could be defined and whether they would be likely to lead to an acceptable cost-benefit balance.
[109] *Cf. supra* notes 18 & 106 and accompanying text (discussing successful self-regulation that derives from following custom-derived norms).
[110] *See supra* notes 104-105 and accompanying text.
[111] *See supra* notes 43-46 and accompanying text.
[112] The above is a normative analysis and does not take into account how positive law might impact (such as whether the underwriter might have a due diligence duty or defense under applicable securities laws). *Cf*. MARC I. STEINBERG, UNDERSTANDING SECURITIES LAW 217-18 (5th ed. 2009) (discussing such a duty and possible defense under the federal securities laws in the United States). Also, we contemplate that if positive law were to be changed to follow our normative analysis, that change would occur legislatively. Because of moral conceptions that tend to influence common law judges (*see, e.g.*, Jeremy Waldron, *Do Judges Reason Morally?*2 (2008), available at http://www.ucl.ac.uk/laws/jurisprudence/docs/2008/08_waldron.pdf, finding that "judges tend to take moral issues

We recognize possible counterarguments to such expanded civil liability. Expanded liability may seem unfair, for example, because at least some firms may be unable to purchase insurance or charge higher prices to spread unforeseeable losses.[113] Moreover, expanded liability would penalize conduct that conformed to prevailing societal norms—in our case, a custom-derived norm—at the time performed.[114] Nonetheless, we support expanded civil liability because not compensating third parties for arguably preventable losses caused by a financial firm's profit-making activities would be equally if not more unfair.[115]

(2) *Ex Post Facto Considerations.*

The foregoing analysis has not necessarily taken into account when the law creating the civil liability arises. That calls into question whether civil liability, especially for unforeseeable harm, should be able to be imposed ex post facto—that is, by law that arises (whether by statute or common law) after a party follows an outdated heuristic-based custom.

Imposing ex post facto civil liability on firms that follow outdated heuristic-derived customs should not, on balance, be unfair for the reasons discussed above.[116] Imposing ex post facto civil liability on natural persons that follow outdated heuristic-derived customs likewise should not be unfair. If, as this article argues, natural persons would only be liable for foreseeable harm, they should have been aware of the consequences of following those customs.

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seriously"), judges might be reluctant to extend tort law liability to internalize externalities of actions not morally deemed wrongful. *Cf.* TREBILCOCK, *infra* note 115 (observing that the law does not require all externalities to be internalized).

[113] Calabresi, *supra* note 101, at 529.

[114] We assume that the conduct was neither in bad faith nor, at the time performed, violated a then-existing law. Also, we are not concerned with the easier case of when law need only address parties who all operate within the given custom. For instance, contracts between merchants in which the Uniform Commercial Code applies are interpreted to implicitly adopt a "usage of trade"—a type of custom-derived norm. U.C.C. § 1-205(2); Elizabeth Warren, *Trade Usage and Parties in the Trade: An Economic Rationale for an Inflexible Rule*, 42 U. PITT. L. REV. 515, 515 (1981). However, in that case, only the parties to the contract are affected by the custom-derived norm, while the custom-to-failure cycle addressed in our article may result in harm to third-parties.

[115] *But cf.* MICHAEL J. TREBILCOCK, THE LIMITS OF FREEDOM OF CONTRACT 20 (1993) (asking what types of externalities should be internalized). Imposing liability on banks, which are members of the financial community, for following outdated custom-derived norms also might be inconsistent, to some extent, with cases holding that banks owe no duty to third parties with whom they are not in privity. *See, e.g.*, Brunson v. Affinity Fed. Credit Union, 972 A.2d 1112, 1123 (N.J. 2009) (quoting City Check Cashing, Inc. v. Mfrs. Hanover Trust Co., 764 A.2d 411 (2001)) (citations omitted) (noting that "absent a special relationship, courts will typically bar claims of non-customers against banks"). *But cf.* Patrick v. Union State Bank, 681 So.2d 1364, 1369–70 (Ala. 1995) (holding that banks have a duty for foreseeable harms to third parties and stating, in dicta, that banks further "stand in intimate relation of a fiduciary" to the general public). However, any such inconsistency could easily be resolved by imposing a statutory duty.

[116] *See supra* notes 114-115 and accompanying text (observing that not compensating third parties for arguably preventable losses caused by a financial firm's profit-making activities would be equally if not more unfair).

That assumes, of course, that foreseeability is not (as it should not be) assessed using hindsight bias.

From a constitutional standpoint, imposing ex post facto civil liability should also be acceptable. Unlike criminal liability, ex post facto civil liability is not unconstitutional.[117] Furthermore, courts routinely impose ex post facto civil liability. For example, in applying tort negligence law's "reasonably prudent person" standard of care,[118] a jury "determines what the expected level of conduct in the community should be."[119] Because jury instructions provide little guidance on the proper determination of this standard of care, jurors "must draw on their own understanding of reasonable behavior, based on their experience of the world."[120] In that endeavor, they may call upon their "personal knowledge" of and "community acceptance" of any existing practice and need not confine themselves to the actual actions of community members.[121] Because the jury is effectively defining the community norm at the trial stage and

[117] Although the Ex Post Facto clauses of the Constitution are not expressly limited to laws imposing criminal liability, the Supreme Court has held that these clauses apply only to criminal laws. Johannessen v. United States, 225 U.S. 227, 242 (1912). *See also* ERWIN CHEMERINSKY, CONSTITUTIONAL LAW: PRINCIPLES AND POLICIES 485-86 (3d ed. 2006).

[118] As a positive matter, the reasonably prudent person standard would presumably be applied to members of the financial community in cases of negligence with respect to third parties. The professional standard of care applies in cases involving contracts for services with a client (*i.e.*, cases of privity). *See, e.g.*, Stephens Indus. v. Haskins & Sells, 438 F.2d 357, 359 (10th Cir. 1971). Note, however, that at least one court has held that liability may extend in professional malpractice cases to reasonably foreseeable third party victims for intentional misrepresentation. Rusch Factors, Inc. v. Levin, 284 F. Supp. 85. 90 (D.R.I. 1968).

[119] JOHN L. DIAMOND ET AL., UNDERSTANDING TORTS 47 (3d ed. 2008); VICTOR E. SCHWARTZ ET AL., PROSSER, WADE AND SCHWARTZ'S TORTS 170 (11th ed. 2005). In professional tort negligence cases—those involving "specialized skill and training"—the standard of care is that of the ordinary, competent member of that profession under similar circumstances. DIAMOND ET AL., *supra* at 91. Note that the standard is "ordinary", rather than "average," since "average" would, by definition, would mean half the professionals could not meet the standard. Schwartz et al., *supra* at 170. Because this standard of care expressly references the practices of the community, then-existing community custom is clearly implicated: "The defendant's deviation from custom establishes breach of duty, while the defendant's compliance with the custom of the profession insulates the defendant from negligence liability." Diamond et al., *supra* at 91–92. For example, the standard of care for accountants and auditors is "to exercise that degree of care, skill, and competence exercised by reasonably competent members of the profession," considering "generally accepted accounting principles" and "generally accepted auditing standards." WARREN FREEDMAN, MALPRACTICE LIABILITY IN THE BUSINESS PROFESSIONS: A SURVEY GUIDE FOR ATTORNEYS AND CLIENTS 19 (1995).

[120] Steven Hetcher, *The Jury's Out: Social Norms' Misunderstood Rule in Negligence Law*, 91 GEO. L.J. 633, 654 (2003). For pattern jury instructions, see, e.g., II PENNSYLVANIA BAR INST., PENNSYLVANIA SUGGESTED STANDARD CIVIL JURY INSTRUCTIONS § 13.20 (4th ed. 2010); COMMITTEE ON PATTERN JURY INSTRUCTIONS ASSOC. OF SUPREME COURT JUSTICES, NEW YORK PATTERN JURY INSTRUCTIONS—CIVIL 2:16 (3d ed. 2011); COMMITTEE ON CALIFORNIA CIVIL JURY INSTRUCTIONS, CALIFORNIA CIVIL JURY INSTRUCTIONS 3.10 (2012).

[121] *Id.* at 654. Jurors may consider existing customs of the community, but such customs are "not conclusive" and therefore not binding upon the jury. 3 FOWLER V. HARPER ET AL, HARPER, JAMES AND GRAY ON TORTS § 17.3, at 653–54 (3d ed. 2006). For communities dealing in complex products requiring specialized knowledge—such as the financial community—jurors may also lack the requisite knowledge to consider and assess the customs of those communities. Application of a professional standard of care where reasonableness is judged according to the actions

not necessarily at the time of the alleged tort,[122] civil liability is sometimes imposed based on ex post norms.[123] Indeed, courts and commentators have explicitly acknowledged that evidence of compliance with norms in existence at the time of the alleged tort does not "conclusively establish" lack of breach of duty.[124]

VI. CONCLUSION

In areas of complexity, our limited ability to process information often requires us to simplify reality in order to make decisions. Modern finance, for example, has become so complex that the financial community routinely relies on these types of simplifications, or heuristics. Thus, the financial community routinely determines the creditworthiness of securities by relying on formalistic credit ratings and assesses the risk on financial products by relying on simplified mathematical models. Without this reliance, financial markets could not operate.

When reliance on heuristics becomes routine and widespread within a community, it can develop into a custom. Society benefits as long as such a "heuristic-based custom" reasonably

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of an ordinary community member would avoid such difficulties. John E. Montgomery, *Cognitive Biases and Heuristics in Tort Litigation: A Proposal to Limit Their Effects Without Changing the World*, 85 NEB. L. REV. 15, 41 (2006).

[122] Hetcher, *supra* note 120, at 634 (quoting Mark P. Gergen, *The Jury's Role in Deciding Normative Issues in the American Common Law*, 68 FORDHAM L. REV. 407, 424–25 (1999)) ("The jury has a great deal of normative discretion in deciding what is reasonably prudent conduct.")

[123] Judge Learned Hand noted just this possibility, writing: "It is true that we think of [the duty to act as a reasonably prudent person] as though it were imposed before the event, because it demands only 'reasonable' care; but that does not specify the conduct required and creates a duty incapable of being known in advance, and it is ascertained and imposed only retroactively." Stornelli v. U.S. Gypsum Co., 134 F.2d 461, 462–63 (1943) (dicta). Judge Hand, therefore, ascribed to a formulaic consideration of costs and benefits. U.S. v. Carroll Towing Co., 159 F.2d 169, 173 (1947) (describing his B < PL analysis). The Restatement (Third) of Torts endorses adoption of a balancing of factors akin to a "risk-benefit" test similar to Judge Hand's approach. RESTATEMENT (THIRD) OF TORTS § 3 cmt. e. (2012). However, despite the Restatement (Third) of Tort's position, many jury instructions do not currently instruct the jury to engage in this balancing in determining whether there was a breach. *See, e.g.*, II PENNSYLVANIA BAR INST., PENNSYLVANIA SUGGESTED STANDARD CIVIL JURY INSTRUCTIONS § 13.20 (4th ed. 2010); COMMITTEE ON PATTERN JURY INSTRUCTIONS ASSOC. OF SUPREME COURT JUSTICES, NEW YORK PATTERN JURY INSTRUCTIONS—CIVIL 2:16 (3d ed. 2011); COMMITTEE ON CALIFORNIA CIVIL JURY INSTRUCTIONS, CALIFORNIA CIVIL JURY INSTRUCTIONS 3.10 (2012).

[124] Diamond et al., *supra* note 119, at 67. Deviation from "well-established custom" may similarly be introduced by plaintiff as evidence of breach of duty (lack of care), but does not establish breach on its own. *Id.* at 66; RESTATEMENT (THIRD) OF TORTS § 13 (2012). Product-liability law adopts a similar position with respect to industry standards. David G. Owen, *Proving Negligence in Modern Products Liability Litigation*, 36 ARIZ. ST. L.J. 1003, 1019–20 (2004); Dominick Vetri, *Order Out of Chaos: Products Liability Design-Defect Law*, 43 U. RICH. L. REV. 1373, 1455 (2009). *But see* Vetri, *supra* at 1454 (quoting Frazier v. Cont'l Oil Co., 568 F.2d 378, 382 (5th Cir. 1978)) (citations omitted) (noting some cases suggest deviation from industry standards is "persuasive proof of design defect" because such standards "carry the approval of a significant segment of the industry"). The disproportionate impact afforded deviation from industry standard relative to conformity with industry standard seems incongruous: The industry standard either reflects best practices of the industry or it does not.

approximates reality. In the financial sector, however, rapid changes in markets and products have disconnected some of these customs from reality, leading to massive failures. Increasing financial complexity is also accelerating the rate of change, threatening future failures.

This article examines this "custom-to-failure cycle," analyzing how law can help to manage the cycle and mitigate its failures. The article argues that law should require financial firms to engage in more self-aware risk management and reporting, in order to periodically reevaluate their heuristic-based customs. The article also engages the fundamental but more difficult question of whether law should impose liability for unforeseeable harm caused by conduct that conformed to prevailing societal norms—in our case, a custom-derived norm for which the underlying heuristic has become outdated—at the time performed. It explains why civil liability should be appropriate to help deter reliance on outdated heuristic-based customs and to internalize the harm that can occur when parties follow those outdated customs. It also shows why financial firms should be liable for all associated harm, whereas natural persons should be liable only for foreseeable harm.