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# Systemic Risk and Financial Innovation Toward a “Unified” Approach

Henry T. C. Hu

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## Introduction

Three econometricians were on a hunting trip in the wilds of Canada. It was close to lunchtime, and they were getting hungry.

The first econometrician shoots, but misses, one meter to the left.

The second econometrician shoots, but misses, one meter to the right.

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Copyright © 2012 by Henry T. C. Hu. All rights reserved. This chapter represents solely my own views as an academic and does not necessarily represent the views of the SEC, individual Commissioners, or the Commission staff. The chapter is in the loose, informal style of my keynote address at the National Bureau of Economic Research–Federal Reserve Bank of Cleveland Research Conference on Quantifying Systemic Risk (November 2009, Cambridge), delivered solely in my academic capacity. My thanks go to Dr. Joseph Haubrich, Professor Andrew Lo, Professor James Poterba, and conference participants. The chapter is also in part based on Congressional testimony prior to my arrival at the SEC (House Agriculture Committee, October 2008, and Senate Banking Committee, June 2009) and pre-SEC presentations at, among other places, the ABA Section of Business Law Spring Meeting (April 2009, Vancouver); Commissione Nazionale per le Società e la Borsa Seminar on Disclosure of Cash-Settled Derivatives (May 2009, Rome); Duisenberg School of Finance Business Law and Innovation Conference (May 2009, Amsterdam); George Washington Law School Conference on the Panic of 2008 (April 2009, Washington); Harvard Law School–Sloan Foundation Corporate Governance Research Conference (February 2009, Cambridge); INSOL Eighth World Quadrennial Congress (June 2009, Vancouver—via video); International Finance Corporation SOS Conference (April 2009, Istanbul); PLI—Corporate Governance: A Master Class (February 2009, New York); University of Sydney Law School’s Ross Parsons Address (June 2009, Sydney); and the Vanderbilt Law School Conference on Future of Federal Regulation of Financial Markets, Corporate Governance and Shareholder Litigation (March 2009, Nashville). This chapter speaks in part as of the time of the Cambridge conference, with some updating as of late 2010/early 2011, and, as to footnote 1, as of June 2012. For acknowledgments, sources of research support, and disclosure of the author’s material financial relationships, if any, please see <http://www.nber.org/chapters/c12053.ack>.

The third econometrician doesn't shoot at all, but shouts "We got it! We got it!"<sup>1</sup>

It can be difficult to come up with a good model, much less a model that actually puts food on the table. This is certainly true for coming up with good models relating to "systemic risk," a widely-used term that remains resistant to well-accepted operational meaning.<sup>2</sup> Given this foundational looseness, the *quantification* of systemic risk—the theme of this conference—is a daunting task indeed. A better understanding of the relationship between systemic risk and modern financial innovation may facilitate the task.

Here, there is an overarching question: *What is the proper approach for understanding this critical relationship?* This keynote address revolves around that question. I do so almost exclusively from the narrow perspective of the past writings of an academic who had been peering through the window of the candy store. Then, very briefly, I do so from the perspective of someone who had been let into that store, and become a government regulator.

I make two basic claims. First, the approach must fully consider the underlying *process* of modern financial innovation through which new financial products and strategies are invented, introduced to the marketplace, and diffused. The process has significance independent of the specific products and strategies.

1. See, e.g., <http://orion.it.luc.edu/~twren/econioke.htm>. As noted in the introduction, this chapter's call for a "unified" approach to evaluating the relationship between financial innovation and systemic risk involves two basic themes: one involving the underlying process of financial innovation and the other involving eclecticism in terms of academic disciplines and "local knowledge" of marketplace realities. Hu (2012) analyzes, among other things, the relationship between financial innovation and the disclosure paradigm that has animated the US Securities and Exchange Commission since its creation. This 2012 article shows that financial innovation has substantially undermined that disclosure paradigm, thereby affecting investor interests, corporate governance, market efficiency, and systemic risk. It also offers ways forward. The 2012 article discusses in substantially greater depth a number of the themes briefly noted in this chapter. (Among other things, the 2012 article uses the JPMorgan Chase Chief Investment Office derivatives losses that started coming to light in May 2012, as well as asset-backed securities matters, to illustrate some of that article's ideas.)

2. The International Monetary Fund has noted that:

"Systemic risk" is a term that is widely used, but is difficult to define and quantify. Indeed, it is often viewed as a phenomenon that is there "when we see it," reflecting a sense of a broad-based breakdown in the functioning of the financial system, which is normally realized, ex post, by a large number of failures of FIs (usually banks). Similarly, a systemic episode may simply be seen as an extremely acute case of financial instability, even though the degree and severity of financial stress has proven difficult, if not impossible, to measure. Systemic risk is also defined by the breadth of its reach across institutions, markets, and countries.

See International Monetary Fund (2009, 116), and Bliss and Kaufman (2005, 16, stating that "[n]o single generally-agreed definition of what constitutes systemic risk exists"). Recently, Billio et al. (2010) referred to systemic risk as:

A concept originally intended to describe bank runs and currency crises, but which now applies to any broad-based breakdown in the financial system. Systemic risk can be realized as a series of correlated defaults among financial institutions, occurring over a short time span and triggering a withdrawal of liquidity and widespread loss of confidence in the financial system as a whole. (1)

Second, the approach must be highly eclectic in nature, in terms of academic disciplines and in terms of “local knowledge” of marketplace realities. The academic disciplines of economics and finance may offer the central theoretical insights, but other disciplines, such as law and psychology, as well as cross-fertilization across disciplines, can be surprisingly informative. Academic disciplines, no matter the range and the cross-fertilization, may fail to provide proper directions. Indeed, the baselines may have become obsolete. In financial innovation, local knowledge, an understanding of actual marketplace practices and institutions, may shed light on the limitations of academic learning and guide that learning along more promising paths.

In short, the approach must be highly inclusive—one that comprehends the underlying innovation process and an eclecticism as to academic and local knowledge. There is need for this very rich kind of interdisciplinary analysis—what can be characterized as a “unified” approach.

I use some of my academic writings to illustrate such a unified approach in relation to financial innovation and systemic risk. First, the innovation process itself can have significance for the nature of the regulatory response to the systemic risks posed by new financial products and strategies. For instance, the innovation process can quickly overwhelm the classification-based, “cubbyhole” technique so commonly used in law and regulation, including that used in the pioneering 1988 international response to the systemic risks posed by the derivatives revolution (1989, 1991, and 1993; see next section).

Second, the unified approach can contribute to a richer understanding of the financial innovation process and the systemic risks that can arise from the process. This unified approach, for instance, nearly two decades ago yielded reasons to believe that big, “sophisticated” financial institutions may well take excessive risks and make other mistakes as to derivatives and other complex financial products. Such factors as the “inappropriability” of benefits associated with financial RTD, banker incentive structures, cognitive biases, and the peculiar nature of “financial science can undermine bank and investor decision making and lead to systemic risk.” (1993; see subsection “Understanding the Innovation Process and Its Role in Systemic Risk”).

Third, one particular type of innovation process—“decoupling”—has put stress on the foundational architecture of corporate governance and debt governance. This new phenomenon has consequences for corporations, individual and corporate borrowers, and possibly for the stability of the financial system at large (2006–2009; see subsection “The ‘Decoupling Process’”).

I conclude this address with a few very brief comments on my current role. In September 2009, Securities and Exchange Commission (SEC) Chairman Mary Schapiro appointed me the inaugural Director of the “Division of Risk, Strategy, and Financial Innovation.” The first new division at the SEC in nearly four decades, “Risk Fin,” was created to provide sophisticated interdisciplinary analysis across the entire spectrum of SEC activities. This

fresh interdisciplinary approach, and the new academic and local knowledge skill-sets Risk Fin brought in have been used, for instance, in helping the SEC respond to, and implement the landmark 2010 Congressional legislation that finally brought OTC (over-the-counter) derivatives squarely into the regulatory fold (see “Concluding Thoughts” section).

### **Academia: The Unified Approach and Systemic Risk**

#### The Innovation Process and the Use of Classifications in Law and Regulation

The usual approach to addressing regulatory matters relating to financial innovation is to look at specific new financial products. Beginning in 1989, I have emphasized that modern financial innovation consists of two components: the products, and the underlying process of financial innovation through which such products are invented, introduced to the marketplace, and diffused.<sup>3</sup> At its most impressive, the process has many of the characteristics commonly associated with science-based industries like biotechnology. There is heavy reliance on PhDs with highly quantitative backgrounds—called “quants,” “lightbulb heads,” “rocket scientists,” or something entirely different when there are big losses—and a reliance on formal models laden with incomprehensible Greek letters. The process is also institutionalized, central to the competition among major financial institutions. Tinkering by generalist bankers and the occasional introduction of new financial products have given way.

In 1989, the path-breaking (first) Basel Accord governing the capital adequacy of major banks worldwide had just been adopted. Currency and interest rate swaps, the first OTC derivatives, had emerged about a decade earlier and bank exposure to such derivatives was rising rapidly. Motivated in large part by the systemic risks posed by such exposure, the Basel Accord relied on the classification-based technique so characteristic of regulation and law. Regulators, at least in the first instance, decide mechanistically the capital required to be allocated to any given derivative by applying simple rules to a limited number of facts. The amount of capital presumptively required on account of a swap is simply determined by whether it is an interest rate or a currency swap, its maturity, its notional amount, and the general nature of the swap counterparty.

My 1989 article, “Swaps, the Modern Process of Financial Innovation and the Vulnerability of a Regulatory Paradigm,” suggested that this “cubbyhole” approach was bound to fail in the face of the modern process of financial innovation. As with any classification-based system, there will be an incentive to “walk the line,” to try to use the rules to one’s own advantage.

3. See Hu (1989).

But the financial innovation process itself causes a far more fundamental problem—administrative and political realities prevented a more complex classification system and since the diversity of financial products will grow as financial innovation continues, the system will assign improper regulatory prices with increasing frequency. The institutionalization of change, as well as the operation of a highly dynamic marketplace, will cause serious problems of regulatory obsolescence.

In theory, updating the cubbyholes in response to changing products was the answer. However, “Regulatory Paradigm” pointed out numerous obstacles, including the extraordinary informational asymmetry between regulators and derivatives dealers. Among other things, banks generally may develop an OTC derivative without any clearance from or registration with banking authorities: a regulator may not even be aware of the existence of a swap, much less how to model its risk characteristics.

To address this informational asymmetry, in a 1993 article (and in testimony before the Senate Banking Committee in June 2009, prior to arrival at the SEC), I suggested the creation of a public informational clearinghouse relating to OTC derivatives with systematic data collection and analytical responsibilities.<sup>4</sup> Due in large part to the lobbying efforts of the Committee to Establish the National Institute of Finance, the Dodd-Frank Wall Street Reform and Consumer Protection Act (the Dodd-Frank Act), signed on July 21, 2010, provides for the creation of an Office of Financial Research within the Treasury Department, with various informational clearinghouse and other responsibilities.<sup>5</sup>

The same financial innovation process that undermined the cubbyhole approach in the bank regulatory context can undermine other areas of law. For instance, noted scholars and practitioners showed the applicability of this process-cubbyhole analysis to tax law.<sup>6</sup> And in a 1991 article, I showed its applicability to corporate law, in particular the difficulties posed by the process to fiduciary duties owed by directors to those who are classified as “shareholders.”<sup>7</sup>

The concluding paragraph of “Regulatory Paradigm” argued that:

Financial regulators must develop a mechanism to deal explicitly with this underlying process. The difficulties involved in devising such a mechanism are daunting. A brief overview of one of the simplest, most incremental of possible mechanisms suggests the dimensions of the task. Unless we begin now to intensify our efforts, incremental changes may ultimately

4. See Hu (1993, 1503–08); 2009a.

5. Dodd-Frank Act, Pub. L. No. 111-203, §§ 151–153 (2010). Although said committee was kind enough to include Hu (1993) and Hu (2009b) in the listing of “Documents and Readings” on the committee’s website, the author was never affiliated with the committee. See Committee to Establish the National Institute of Finance—CE-NIF Documents, <http://www.ce-nif.org/background-readings>.

6. See, e.g., Strnad (1994, 570, n. 2).

7. See Hu (1991, 1292–300, 1311–12).

prove insufficient to ensure the continued stability of the world financial system. (435)

It is now more than twenty years after the initial Basel Accord. The challenges identified in the 1989 article remain. In discussing reform proposals advanced in 2010, *The Economist* stated as follows:

The proposals have already been dubbed “Basel 3”—which tells you regulators have been here twice before. Alas, the record of bank capital rules is crushingly bad. The Basel regime (European and American banks use either version 1 or 2) represents a monumental, decades-long effort at perfection, with minimal capital requirements calculated from detailed formulae. The answers were precisely wrong.<sup>8</sup>

### Understanding the Innovation Process and Its Role in Systemic Risk

Financial institutions focused solely on shareholder interests would generally take on more risk than would be socially optimal. At least in the past, governments typically constrained risk-taking at financial institutions, but not elsewhere. This stemmed, of course, from concerns over the especially large negative externalities associated with financial institutions.

In 1993, I suggested that much more than a gap between shareholder- and social-optimality would likely be involved when it came to financial institution risk taking with respect to derivatives and other complex financial products. In “Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism,”<sup>9</sup> I argued that a pattern of outright mistakes, harmful to shareholders and societies alike, was likely to occur even at major, presumptively “sophisticated” entities.

Why? From the standpoint of psychology, I discussed how cognitive biases might explain underproduction of information relevant to certain kinds of risks, especially legal ones. From the standpoints of marketplace realities and principal-agency theory, I showed how analysis that would normally imply excessive managerial aversion to risk taking could, when applied to the specific OTC derivatives context associated with complex banking organizations, lead to excessive risk taking even from the standpoint of diversified shareholders. From the standpoint of the law and economics of technological change, I applied “inappropriability” and other theories pertaining to commercial scientific research to illuminate allocative problems arising from the financial innovation production process. From the standpoint of traditional scientific norms, I showed how departures of financial “science” from such norms undermined decision making. I offered some possible responses.

I argued that one factor contributing to mistakes is cognitive bias in the derivatives modeling process. Humans often rely on cognitive shortcuts to solve complex problems. Sometimes these shortcuts are irrational.

8. See *The Economist* (2010a).

9. Hu (1993, *supra* note 4).

For instance, one of the cognitive biases undermining derivatives models is the tendency to ignore low-probability catastrophic events.<sup>10</sup> Psychologists theorize that individuals do not worry about an event unless the probability of the event is perceived to be above some critical threshold. The effect may be caused by individuals' inability to comprehend and evaluate extreme probabilities, or by a lack of any direct experience. This effect manifests itself in attitudes toward tornadoes, safety belts, and earthquake insurance.

The 1993 article suggested that in the derivatives context, rocket scientists are sometimes affirmatively encouraged, as a matter of model design, to ignore low-probability states of the world. I also showed how this tendency, along with other cognitive biases, may cause risks of a legal nature to be ignored. Rocket scientists are expert in all manner of financial risks and their quantification. Law itself is unfamiliar turf, and no rich tradition of incorporating legal risks into derivatives modeling exists. Under such circumstances, "expert" and "availability" effects are given a free hand to inhibit proper consideration of legal risks.

The foregoing relates to irrational behavior in connection with the innovation process that can contribute to decision-making errors. Behavior that is fully rational on the part of the humans involved in the process—responding to the incentive structure actually in the marketplace—contributes as well.

I also showed how the complexities associated with a bank's organization can cause excessive risk taking. One contributing factor is the fact that the incentive structure can be highly asymmetric in the derivatives industry.<sup>11</sup> True success—or the perception by superiors of success—can lead to enormous wealth. Failure or perceived failure may normally result, at most, in job and reputational losses. Thus, there may be serious temptations for the rocket scientist to emphasize the rewards and downplay the risks of particular derivatives activities to superiors, especially since the superiors may sometimes not be as financially sophisticated (and loathe to admit this). Moreover, the material risk exposures on certain derivatives can sometimes occur years after entering into the transaction. Given the turnover in the derivatives industry, the "negatives" may arise long after the rocket scientist is gone. The rocket scientist may have an especially short-term view of the risks and returns of his activities. Principal-agent issues within the bank organization abound here, and can lead to *too much* risk-taking from the standpoint of diversified shareholders, rather than *too little*, as may be the general case in normal situations.

The 1993 article also considered the inability to capture—to fully appropriate the benefits of their financial research and development.<sup>12</sup> The nature of the intellectual property law regime, and related legal and marketplace

10. *Ibid.*, 1487–92. This 1993 discussion of this cognitive bias and its applicability to finance substantially predated writings of the related matter of "black swans."

11. Hu (1993, *supra* note 4, 1492–94 and 1512–13).

12. *Ibid.*, 1481–87.

factors, effectively precluded this. This inappropriability could lead to the failure to devote enough resources to fully understand the risks and returns of these products.

More importantly, the peculiar nature of financial science at the heart of the innovation process also contributes to difficulties, for both financial institutions themselves as well as for regulators.<sup>13</sup> This matter goes beyond the “precisely wrong” tendency of financial science to fail exactly when it may matter most: in chaotic market conditions, the liquidity and other assumptions underlying the models do not hold.

Among other things, financial science departs radically from violations of the traditional scientific norm of “universalism.” This raises profound questions as to the “true” value of complex financial products. Robert K. Merton, the great sociologist, suggested that “universalism” is that the truth of claims should be determined through the application of impersonal criteria without regard to the source’s personal, social, or other attributes. As an example, Merton stated that “The Haber process cannot be invalidated by a Nuremberg decree nor can an Anglophobe repeal the law of gravitation” (1973, 270).

“Misunderstood Derivatives” suggested that the universalism imperative did not entirely apply to financial science. The predictive power of any model depends on who is doing the thinking and on what others actually think of the thinker. This lack of universalism may be especially troublesome when a bank is a substantial factor in an esoteric product. For instance:

If a derivatives dealer who dominates the market for a given derivative thinks a particular model is suitable for valuing that derivative, then his identity is relevant. Even if the model is seriously flawed as a theoretical matter, his importance alone makes the model at least temporarily relevant. Moreover, should the dealer decide to withdraw from the market for that derivative, liquidity may dry up and the pure “theoretical” value may be particularly irrelevant. There is no Mertonian universalism here. The impact of this is likely to be especially severe as to the more arcane instruments and products dominated by a few dealers and in chaotic market conditions.<sup>14</sup>

In view of my present role at the SEC, I will only sketch in very broad terms some of the ways in which the 1993 article may relate to, or explain, some subsequent developments in the real world. Others have been kind enough to intimate that the overarching thesis that “sophisticated” capital market participants were prone to make mistakes as to derivatives and other complex products foreshadowed the 1998 collapse of Long Term Capital Management<sup>15</sup> and matters associated with the current global financial crisis, including the near-collapse of the American International Group (AIG) in

13. *Ibid.*, *supra* note 5, 1476–81 and 1496–502. See also Lo and Mueller (2010).

14. Hu (1993, *supra* note 4, 1501).

15. Roger Lowenstein was kind enough to use an extract from “Misunderstood Derivatives” as the epigraph to his classic book, *When Genius Failed: The Rise and Fall of Long-Term Capital Management* (2000).

2008.<sup>16</sup> And matters such as the inappropriability problem may be a factor in the excessive reliance on credit ratings in securitizations and inadequate due diligence.<sup>17</sup> Cognitive biases such as the tendency to ignore low probability/catastrophic events appear to have been demonstrated repeatedly during the global financial crisis. Departures from Mertonian universalism may help make more understandable current controversies over distinctions among mark-to-market, mark-to-model, and mark-to-myth.<sup>18</sup> In 2010, the points made in the incentive structure analysis in “Misunderstood Derivatives” were characterized by financial academics as “hardly mainstream” in 1993, but “[n]ow . . . arguably define the ground on which the debate takes place.”<sup>19</sup> Concerns over banker incentive structures have motivated disclosure and substantive regulatory responses worldwide over the past year, including in the Dodd-Frank Act.

### The “Decoupling” Process, the Foundational Architecture of Corporate Governance and “Debt Governance,” and Systemic Risk

The foundational architecture of corporate law and finance—equity and debt—used to be clear.

Ownership of equity conveyed a package of economic rights, voting rights, and other rights. Such ownership also carried with it various obligations, such as disclosure obligations.

Similarly, ownership of debt conveyed a package of rights and obligations. A holder of debt had, for instance, economic rights (such as the right to principal and interest), the control rights given by contract (such as in the loan agreement or the bond indenture), and other legal rights (such as those flowing from bankruptcy, corporate, and securities law).

That is, classic understandings of *equity* and *debt* contemplated bundled packages of rights and obligations.

In a series of articles where I was the lead or sole author, I suggested that a new “decoupling” process had emerged. Because of rocket scientists, hedge funds, and other factors, one can easily break up these equity and debt packages, quickly and on a massive scale. And beyond equity decoupling and debt decoupling, there could also be hybrid decoupling across equity and debt categories.<sup>20</sup>

Consider, first, the decoupling process on the equity side, the simplest of these three basic types, and the subject of the initial May 2006 article.<sup>21</sup> And

16. See, e.g., Scannell (2010a, C1). For a brief, pre-SEC analysis of the possible applicability of cognitive bias and other factors identified in Hu (1993) might apply to AIG, see Hu (2009b, *supra* note 5).

17. For a pre-SEC analysis of this, see Hu (2009b, *supra* note 5).

18. As to the distinctions, see, e.g., Mizen (2008) and Sunder (2009).

19. See Bolton, Kogut, and Puschra (2010, 5).

20. See Hu and Black (2008a), available at [http://www.efmaefm.org/eufm\\_450\\_corrected.pdf](http://www.efmaefm.org/eufm_450_corrected.pdf).

21. See Hu and Black (2006), available at <http://ssrn.com/abstract=904004>. Subsequent articles focusing on the equity decoupling side include: Hu and Black (2007), nearly final draft available at <http://ssrn.com/abstract=874098>; Hu and Black (2008b), available at <http://ssrn.com/abstract=1030721>.

I will just focus on one example of equity decoupling, the example the article dubbed “empty voting.” I leave aside other examples of equity decoupling, including an example dubbed “hidden (morphable) ownership.”<sup>22</sup>

Corporate governance, at almost all companies, is based on a proportional relationship between the number of shares held and shareholder voting rights. In other words, one share-one vote. All existing theories of corporate governance are based on this coupling of economic interest and voting power.

Today, however, the voting rights you have no longer need to depend on the economic stake you have. There is a variety of techniques for accomplishing this.<sup>23</sup> One way is to simply buy a lot of shares, and then hedge that exposure. You can buy 1,000,000 shares, and thus have 1,000,000 votes. Simultaneously, you can buy lots of put options. You still have 1,000,000 votes, but you may only have the economic equivalent of, say, 200,000 shares. This type of voter, we called an “empty voter”: the votes have been emptied of a corresponding economic interest.<sup>24</sup>

Or consider an extreme type of empty voter. If you buy enough put options, you may actually have a *negative* economic interest. You could literally have a situation where the person who holds the highest number of votes could have a negative economic interest. That person may not use his votes as a monitoring device to make sure that the company does well, but may try instead to use his votes so that the company does badly. He may want to vote Inspector Clouseau or Maxwell Smart to the board.

The decoupling process on the debt side is more directly related to systemic risk matters that are the focus of this conference.<sup>25</sup> Let’s begin with debt decoupling in the context of individual corporate borrowers.

Here the issues correspond to those on the equity decoupling side. On the equity decoupling side, I just referred to an “empty voter.” That is, a shareholder by, for instance, buying equity derivatives, can have control rights—the vote—and yet have relatively little or no economic exposure.

Similarly, a creditor, by buying credit derivatives, can have control rights and also have little or no economic exposure. In August 2007, I coined the term “empty creditor” to refer to this scenario.

22. This hidden (morphable) ownership issue was first litigated in the United States in *CSX Corp. v. Children’s Investment Fund Management*, 562 F. Supp. 2d 511 (S.D.N.Y. 2008), *aff’d in part, vacated in part, and remanded in part*, 654 F.3d 276 (2d Cir. 2011). See, e.g., Norris (2008, C1). For examples of types of equity decoupling other than empty voting and hidden (morphable) ownership, see Hu and Black (2008b, *supra* note 21, at Part V).

23. For instance, in the United Kingdom, Laxey, a hedge fund, used the stock lending market to engage in empty voting in relation to British Land. See Hu and Black (2006, *supra* note 21); and Scannell (2007, A1).

24. Although perhaps counterintuitive, as the decoupling articles cited in *supra* note 21 suggest, empty voting can, under certain circumstances, improve corporate governance.

25. Some of the key articles that address decoupling on the debt side are Hu and Westbrook (2007) available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=977582](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=977582), Hu and Black (2008b, *supra* note 21); Hu and Black, (2008a, *supra* note 20); Hu (2009a, A13), online version available at <http://online.wsj.com/article/SB123933166470307811.html>.

One simple way of becoming an empty creditor is to take the long side of a credit default swap. But there are other coupled assets that the creditor could use. For instance, it could engage in strategies involving a company's shares (such as buying put options on the shares or taking the short side of equity swaps) or use related nonhost asset strategies (such as holding long or short positions in the shares or the debt of the company's competitors).

On the equity side, one can have an empty voter-with-a-negative-economic-interest. Similarly, on the debt side, creditors can also have control and legal rights, and yet have net negative economic exposure to the firm. For instance, a creditor could hold \$100 million in loans or bonds, but have a credit default swap in the notional amount of \$200 million.

What might some of the systemic risk effects be? Let me discuss a few. Both loan agreements as well as bankruptcy laws are premised on the assumption that creditors have an economic interest in the company's success and will behave accordingly. Thus, a troubled borrower may anticipate that its creditor may well agree to waive certain debt covenants because of the creditor's interest in the borrower's survival.

But empty creditors may act in ways inconsistent with these assumptions. A creditor with a negative economic ownership may have incentives that correspond to their equity counterparts. These creditors may seek to reduce the value of the debt class they hold as a formal matter. These creditors may oppose an out-of-court restructuring because they might prefer that the company fail (and thus trigger payments on its credit default swap positions). Even a creditor with zero, rather than negative, economic ownership may want a bankruptcy filing because such a filing may trigger an immediate contractual payoff in its credit default swap position.

Under such circumstances, the weakened incentives to help a debtor stay out of bankruptcy may contribute to systemic risk. This is to be distinguished from the issue of the overall impact of credit default swaps on the lending market or on systemic risk, matters beyond the intended scope of the analysis.

And if empty crediting is hidden, the problem gets worse. There is a problem of hidden nonownership or hidden noninterest. Outside of bankruptcy, a struggling company is in the dark as to the true incentives of its lender.

And in bankruptcy, disclosure and substantive complications can arise as well. In bankruptcy, when the voting rights of creditors depart from their economic exposure, proper decision making can sometimes be undermined. This gap can happen when the creditor's true economic stake is unclear. Problems with the efficient resolution of companies in bankruptcies can, in turn, sometimes pose systemic risk concerns.

In sum, debt decoupling, both in its substantive and disclosure aspects, can thus undermine what one can refer to as debt governance—the relationship between creditors and debtors, both in and outside of bankruptcy proceedings. This can raise systemic risk concerns.

Consider, for instance, the possibility of an empty creditor issue having

occurred in connection with one of the signal events of the current global financial crisis—the bailout of AIG.

In an April 2009 *Wall Street Journal* op-ed, written prior to my arrival at the SEC,<sup>26</sup> I pointed to what may be referred to as *The Curious Incident of the Bank That Didn't Bark*. On September 16, 2008, as AIG was being bailed out, Goldman Sachs said its exposure to AIG was “not material.” But on March 15, 2009, AIG disclosed that it had turned over to Goldman \$7 billion of the federal bailout funds that AIG received.

The op-ed suggested that one reason Goldman Sachs did not express alarm in September was that it was an empty creditor. Having hedged its economic exposure to AIG with credit default swaps from “large financial institutions,” Goldman had lessened concerns over the fate of AIG. Yet Goldman had control rights associated with the contracts that it had entered into with AIG (including rights to demand collateral). Perhaps not surprisingly, Goldman was apparently aggressive in calling for collateral from AIG—withstanding the possible impact on AIG’s solvency and the consequences for systemic risk.<sup>27</sup>

Recently, both Sheila Bair, the Chairman of the Federal Deposit Insurance Corporation, and Gary Gensler, Chairman of the Commodity Futures and Trading Commission Chairman, explicitly raised concerns as to empty creditor incentives.<sup>28</sup> In contrast, the International Swaps and Derivatives Association is more skeptical.

The foregoing debt decoupling discussion relates to the single borrower situation.

But debt decoupling relating to the multiple borrower context may also

26. Hu, 2009a, *supra* note 25. I emphasize that I have not here attempted to update the analysis in the op-ed. I do not mean to suggest here in any way the accuracy of the April 2009 op-ed, or other matters relating to the Goldman-AIG relationship, including subsequent reports such as Morgenson and Story (2010, A1).

27. I did not in any way suggest that Goldman did anything improper, and noted that Goldman had obligations to its own shareholders.

28. Chairman Bair stated:

Well, I think this is, the empty creditor issue. . . . What kind of skewed incentives does the CDS market, the credit default swap market in particular, have [on] creditors of institutions when they start to get into trouble? Traditionally, if an institution starts to get into trouble, their creditors will work with them to restructure the debt, to stabilize them, to keep them out of bankruptcy.

But if you have a large CDS position, even you might have some debt exposure, if you're to make more on our CDS if the institution fails, it can create very skewed incentives. (Bair 2010)

Chairman Gensler stated:

Bondholders and creditors who have CDS protection that exceeds their actual credit exposure may thus benefit more from the underlying company's bankruptcy than if the underlying company succeeds. These parties, sometimes called “empty creditors,” might have an incentive to force a company into default or bankruptcy. (Gensler 2010)

For views of others, see, e.g., *The Economist* (2009) and Mengle (2009).

raise systemic risk concerns. Consider the securitization process. By 2008, the moral hazard, informational asymmetry, modeling risk, and credit ratings agency concerns associated with securitization, and the consequent impact on systemic risk, had become familiar. Associated terms such as “skin in the game” came to be commonly used.

However, at that time, the role of debt decoupling as an additional way securitization might perhaps contribute to systemic risk was not part of the dialogue.<sup>29</sup> Consider the days before securitization. If a homeowner is having financial difficulties, he can approach his local banker—picture Jimmy Stewart in the film *It's a Wonderful Life*—and seek to renegotiate the terms of his mortgage. In many situations, such a loan modification may be better both for the borrower and for the creditor. There is a dynamic relationship between debtors and creditors, one sensitive to changing financial conditions and individual circumstances.

If, however, a loan has been securitized, such a dynamic debt governance system becomes difficult. The servicing agent holds the control rights, but has limited rights to modify the loan. In addition, since servicers typically have almost no ownership stake, they may have very little incentive to do so. The tranche holders usually have decision rights, but the economic interests of the tranches can differ widely. Tranche warfare is inevitable.

Thus the relationship between debtors and creditors may tend to get “frozen”; readjustments of the relationship between debtors and creditors may be difficult. If this issue involves just one or two debtors and creditors, there are no systemic risk concerns. But if there are thousands of debtors and creditors, the undermining of flexible “debt governance” through debt decoupling might contribute to systemic risk.

### **Concluding Thoughts: Risk Fin, Financial Innovation, and Systemic Risk**

The SEC had long operated in large part through four “Divisions”: the Division of Corporation Finance (handling such matters as public offerings), the Division of Enforcement (handling such matters as insider trading and fraud cases), the Division of Investment Management (handling such matters as mutual funds and closed-end frauds), and the Division of Trading and Markets (handling such matters as the stock exchanges and broker-dealers).<sup>30</sup> Substantially all of the professional staff at these divisions, as at the SEC as a whole, are traditional lawyers. At the initiative of then-Chairman Roderick Hills, the first professional economists of the modern era arrived at the SEC in the mid-1970s. As of August 2009, the SEC’s economists were in organizational units called the

29. How the debt decoupling aspects of securitization may contribute to systemic risk was first set out in Hu & Black, 2008a, *supra* note 20.

30. This section relies in part on Hu (2011).

Office of Economic Analysis (OEA) and the Office of Risk Assessment (ORA).

In September 2009, the SEC created the Division of Risk, Strategy, and Financial Innovation, the first new division since 1972. Chairman Schapiro was kind enough to ask me to be Risk Fin's inaugural director. Concurrent with its creation, OEA and ORA became components of Risk Fin and so all staff at these two units (including the SEC's Chief Economist) immediately became part of my Risk Fin staff. With Risk Fin's subsequent adoption of an organizational structure consistent with its broad mandate, the OEA and ORA units disappeared, having been fully merged into the division. Shortly afterward, Risk Fin welcomed all of the financial data processing and analysis (e.g., "EDGAR") experts at the SEC's Office of Interactive Disclosure.

Risk Fin's overarching goal is to provide sophisticated, interdisciplinary analysis across the entire spectrum of SEC activities. In its think tank and other roles, Risk Fin is involved in policymaking, rule-making, enforcement, and examinations. Its responsibilities cover three broad areas: risk and economic analysis, strategic research, and financial innovation.

The SEC had excellent economists. But because of Risk Fin's broad, ambitious mandate, it needed to add to existing skill sets and try to deepen the bench. And, importantly, it had to do so within very severe SEC budgetary constraints. Risk Fin hired individuals who had financial, quantitative, and transactional experience in (i.e., local knowledge of) corporate governance, derivatives, risk management, and trading at major hedge funds, investment banks, and law firms. Moreover, Risk Fin hired individuals with advanced academic training in additional disciplines, including mathematics. Some Risk Fin staff had both local knowledge and a PhD. Some outside observers appear to have noticed the changes. *The Economist*, for example, has stated that this new division is "packed with heavyweight thinkers."<sup>31</sup>

To further cross-fertilization within Risk Fin, collaboration across disciplines and work experiences were encouraged. And, in terms of the SEC as a whole, Chairman Schapiro has talked about the division's role in "bor[ing] through the silos that for too long have compartmentalized and limited the impact of [the SECs] institutional expertise" and stated that Risk Fin "already is proving crucial to the mission of the agency, and will continue to do so."<sup>32</sup>

Risk Fin has been involved in a wide variety of matters relating to financial innovation and systemic risk. Most notably perhaps, Risk Fin has been actively involved in connection with the landmark Congressional efforts to bring the largely unregulated OTC derivatives market into the regulatory fold.<sup>33</sup> Though the OTC market only emerged about thirty years ago, at \$490

31. See *The Economist* (2010b); Norris (2010, B1); Scannell (2010a, *supra* note 16).

32. See Schapiro (2010).

33. See, e.g., Hu (2009c).

trillion dollars in notional amount terms (as of June 2009), the market is no longer a sideshow. Now that the Dodd-Frank Act has passed, Risk Fin has been working closely with others at the SEC in trying to implement the legislative mandates. Matters such as clearinghouses for OTC derivatives, the regulation of OTC market participants, and hedge fund regulation, are central to the future of financial innovation and systemic risk.

Risk Fin has also been heavily involved in financial innovation and systemic risk matters outside of this derivatives legislation context. These include efforts relating to the asset-backed securities, hedge funds, and money market funds that help make up the “shadow banking system” at the root of many current systemic risk concerns. Its computer, economic, quantitative, and local knowledge expertise contributed to analysis of securitization matters, even prior to the Dodd-Frank Act.<sup>34</sup> Risk Fin and our SEC colleagues have worked closely with the UK Financial Services Authority with respect to hedge funds, including the gathering and sharing of information.<sup>35</sup> Risk Fin has worked with our Division of Investment Management colleagues on recent disclosure and substantive reforms with respect to regulation of money market funds.<sup>36</sup>

Risk Fin has also been involved in other matters that some believe implicate systemic risk issues. These include pension funding, disclosure, and other issues relating to the state of municipal securities markets.<sup>37</sup> Issues relating to high frequency trading and other innovative trading strategies have been decidedly more high tech in nature; Risk Fin staff contributed to a pertinent “concept release” issued on January 21, 2010,<sup>38</sup> and to both of the joint CFTC-SEC (Commodity Futures Trading Commission-Securities and Exchange Commission) reports issued in the wake of the subsequent May 6 “flash crash.”

Some financial innovation issues do not have obvious systemic risk implications, but are nevertheless important. Risk Fin has contributed to the SEC’s most comprehensive review of the shareholder voting infrastructure in thirty years, especially with respect to the review’s “empty voting”-related aspects.<sup>39</sup> In the enforcement context, it has worked on such matters as credit derivatives-based insider trading litigation.

Both those in academia and those in government have problems coming up with good models. As an academic, I have been interested in the multi-dimensional relationship between financial innovation and systemic risk. As a government technocrat, I am enormously appreciative of Chairman

34. See, e.g., Securities and Exchange Commission (2010a).

35. See, e.g., SEC (2010f), available at <http://www.sec.gov/news/press/2010/2010-17.htm>.

36. See, e.g., SEC (2010e).

37. See, e.g., SEC (2010g), transcript, available at [http://www.sec.gov/spotlight/municipal\\_securities/092110transcript.txt](http://www.sec.gov/spotlight/municipal_securities/092110transcript.txt).

38. SEC (2010b).

39. See, e.g., SEC (2010c); Scannell (2010b, C3).

Schapiro having been kind enough to say that, with Risk Fin, the SEC has been set “on a new path,” and that “[i]nterdisciplinary thinking is no longer a novelty at the SEC.”<sup>40</sup>

I believe that a very comprehensive form of interdisciplinary approach, what I’ve referred to as the “unified approach,” is necessary in approaching issues involving financial innovation and systemic risk, in academic thinking as well as in governmental regulation. Risk Fin is, and hopefully will always be, a work in progress, one as dynamic as today’s capital markets.

Let’s go back to those three hunters in the wilds of Canada. With either the academic or governmental hat on, if you ever hear me shouting, “We got it! We got it!”, I ask that you approach me with the appropriate degree of skepticism.

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40. See SEC (2010d), available at <http://www.sec.gov/news/press/2010/2010-226.htm>, on my anticipated return to academia in 2011; and Campbell (2011, 132).

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