The Modern Process of Financial Innovation and the Regulation of OTC Derivatives[*]

OTC Derivatives: Modernizing Oversight to Increase Transparency and Reduce Risks

U.S. Senate Banking Committee - Subcommittee on Securities, Insurance, and Investment

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I. Introduction

Mr. Chairman and members of the Subcommittee, thank you for the invitation of June 15 to testify. My name is Henry Hu and I hold the Allan Shivers Chair in the Law of Banking and Finance at the University of Texas Law School. In the interest of full disclosure, I recently agreed to begin working soon at the Securities and Exchange Commission. I emphasize that I am currently a full-time academic, have been so for more than two decades, and, after this forthcoming government service, will return to my normal academic duties. My testimony reflects solely my preliminary personal views and does not reflect the views of the SEC or any other entity. The below testimony has not been discussed with, or reviewed by, the SEC or any other entity. I ask that this written testimony also be included in the record.

This is a seminal time as to the regulation of credit default swaps and other over-the-counter derivatives.[1] Speaking on March 26, Treasury Secretary Timothy Geithner stated that

[1] As Subcommittee members are already aware, a "derivative," at least in the classical sense, is an agreement that allows or obligates at least one of the parties to buy or sell an asset. Fluctuations in the asset's value would affect

the markets for OTC derivatives will be regulated "for the first time." Last Wednesday, as a key element in a "new foundation for sustained economic growth," President Barrack Obama proposed the "comprehensive regulation of credit default swaps and other derivatives that have threatened the entire financial system." All OTC derivatives dealers and other firms whose activities create large exposures would be subject to "robust" prudential supervision. "Standardized" OTC derivatives would be required to be cleared through regulated central counterparties. Recordkeeping and reporting requirements would apply to both "standardized" and "customized" OTC derivatives. New steps to better ensure that OTC derivatives are not marketed inappropriately to unsophisticated parties would be adopted. Regulated financial institutions would be encouraged to make greater use of regulated exchange-traded derivatives.

Key government officials central to developing the President's proposal are testifying today. It is my understanding that the Subcommittee thought that, rather than similarly

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the agreement's value: the agreement's value *derives* from the asset's value, whether the asset is a stock, commodity, or something else. Many derivatives trade on organized exchanges; people using such "exchange-traded derivatives" generally need not worry about who is on the other side of the transaction. The exchange's "clearinghouse" is effectively the buyer to every seller and the seller to every buyer. These products typically have standardized contractual terms and exchange-traded derivatives markets have been active in the U.S. since the 19th century.

In contrast, the market for "OTC derivatives" arose in the late 1970s. These agreements are individually negotiated, such as between financial institutions or between financial institutions and their corporate, hedge fund, or other institutional customers. In the 1970s, a conceptual revolution in finance helped financial institutions to price derivatives, hedge associated risks, and develop new products. At least in the past, there were generally no clearinghouse arrangements. Each participant relies on the creditworthiness (and sometimes the collateral) of the party it deals with.

"Credit default swaps" are one kind of OTC derivative. At their simplest, they involve bets between two parties on the fortunes of a third party. A protection buyer might, for instance, have lent money to the third party and be concerned about repayment. For a fee (or stream of fees), the protection seller will pay the protection buyer cash upon a specified misfortune befalling the third party. A derivatives dealer enters into such bets with its customers, as well as with other dealers.

For more background, see, e.g., Henry T. C. Hu, *Swaps, the Modern Process of Financial Innovation and the Vulnerability of a Regulatory Paradigm*, 138 **University of Pennsylvania Law Review** 333 (1989) [hereinafter Hu, *Modern Process*]; Henry T. C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 **Yale Law Journal** 1457 (1993) [hereinafter Hu, *Misunderstood Derivatives*].

discussing the specific components of the proposal, I might offer a more general perspective on the regulation of OTC derivatives, based on some of my past writings. In this context, perhaps the four questions set forth in the Subcommittee's June 15 invitation revolve around a basic issue: *what's special about regulating OTC derivatives, in terms of transparency, risk, international coordination, or other matters?*

In this respect, I am reminded of something that Woody Allen once said:

> I took a speed reading course and read *War and Peace* in twenty minutes. It involves Russia.

OTC derivatives are no less complex that Napoleonic Russia. In the next few minutes, I will try to offer some thoughts on how to frame the regulatory task that lies ahead. Because I have had to review the Administration proposal and prepare this testimony in the space of only a few days, these thoughts are preliminary and incomplete.

I suggest that it would be useful to consider not just the characteristics of individual OTC derivatives, but also the underlying process of modern financial innovation through which products are invented, introduced to the marketplace, and diffused. This process perspective may further the identification of some issues that are important as a regulatory matter.

I start with two contrasting visions that have animated regulatory attitudes ever since the emergence of the modern financial innovation process in the late 1970s. ***(Part II)*** This may help ensure that, as the Administration's proposal is reviewed or fine-tuned with respect to such matters as "encouraging" a migration to exchange-traded derivatives and distinguishing "standardized" from "customized" OTC derivatives, consideration is given not only to the private and social costs of OTC derivatives, but to their private and social benefits as well.

I will then turn to how the financial innovation process results in decision-making errors, even at the biggest financial institutions. ***(Part III.A)*** In a **Yale Law Journal** article published

in 1993, I suggested that, because of compensation structure, cognitive bias, human capital, "inappropriability," and other factors characteristic of that innovation process, "sophisticated" financial institutions can misunderstand—or act as if they misunderstand—the risks of derivatives and other complex financial products.[2] Analyzing how these errors occur may be helpful as the Administration seeks to undertake, for instance, the prudential supervision of derivatives dealers and reforms relating to compensation disclosures and practices, internal controls, and other corporate governance matters, at such dealers and perhaps at publicly held corporations generally.

The innovation process also leads to informational complexities well beyond the usual "transparency" issues, and to related difficulties.[3] ***(Part III.B)*** Regulator-dealer informational asymmetries can be extraordinary—e.g, regulators may not even be aware of the existence of certain derivatives, much less how they are modeled or used. These asymmetries are especially troubling because of the ease with which the financial innovation process allows for the gaming of traditional classification-based legal rules (e.g. "cubbyholes"). Responding to these complexities is difficult. As an example, beginning in 1993, I have argued for the establishment of a centralized, continuously-maintained, *informational* clearinghouse as to all OTC derivatives activities and outlined some of the key questions that must be answered in creating such an informational clearinghouse. Especially in the wake of the disasters in 2008, regulators have begun working vigorously with derivatives dealers and others to establish data-gathering systems with respect to credit default swaps and other OTC derivatives.

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[2] Hu, *Misunderstood Derivatives, supra* note 1.

[3] As to the issues outlined in this paragraph, see Hu, *Modern Process*, supra note 1; Hu, *Misunderstood Derivatives*, supra note 2; *cf.* Matthew Leising, *Wall Street to Clear Client Credit Swaps by Dec. 15*, Bloomberg, June 2, 2009 (on recent interactions between the Federal Reserve Bank of New York and financial institutions).

Finally, I turn briefly to a particular example of the financial innovation process, one that can help shape governmental responses to credit default swaps (CDS) and securitized products, another financial innovation that is sometimes also considered a derivative. ***(Part IV)*** The process of what can be called "decoupling" or, more specifically, its "debt decoupling" form, can undermine the ability of individual corporations to stay out of bankruptcy and can contribute to systemic risk. I discuss "empty creditor" and "hidden non-interest" issues. I will leave aside "empty voter" and "hidden (morphable) ownership" issues on the "equity decoupling" side.[4]

II. Two Contrasting Visions of the Financial Innovation Process

From the beginning of the explosive growth of the derivatives market in the early 1980s, two visions have animated the debate over the regulation of derivatives and new financial products generally.

The first vision is that of science run amok, of a financial Jurassic Park. In the face of relentless competition and capital market disintermediation, big financial institutions have hired financial scientists to develop new financial products. Typically operating in an international wholesale market open only to major corporate and sovereign entities–a loosely regulated paradise hidden from public view—these scientists push the frontier, relying on powerful computers and an array of esoteric models laden with incomprehensible Greek letters.

But danger lurks. As financial creatures are invented, introduced, and then evolve and mutate, exotic risks and uncertainties arise. In its most fevered imagining, not only do the

[4] As to the issues outlined in this paragraph, *see, e.g.*, Henry T. C. Hu & Jay Westbrook, *Abolition of the Corporate Duty to Creditors*, 107 **Columbia Law Review** 1321, 1402 (2007); Henry T. C. Hu & Bernard Black, *Equity and Debt Decoupling and Empty Voting II: Importance and Extensions*, 156 **University of Pennsylvania Law Review** 625, 728-735 (2008); Henry T. C. Hu & Bernard Black, *Debt, Equity and Hybrid Decoupling: Governance and Systemic Risk Implications*, 14 **European Financial Management** 663, 663-66, 679-94 (2008), draft available at http://ssrn.com/abstract=1084075; Henry T. C. Hu, *'Empty Creditors' and the Crisis*, **Wall Street Journal**, April 10, 2009, at A13; *CDSs and bankruptcy – No empty threat*, **The Economist**, June 18, 2009..

trillions of mutant creatures destroy their creators in the wholesale capital market, but they escape and wreak havoc in the retail market and in economies worldwide.

This first vision, that of Jurassic Park, focuses on the chaos that is presumed to result from financial science. This chaos is at the level of the entire financial system—think of the motivation for Federal Reserve's intervention as to Long Term Capital Management *(perhaps inappropriately named)* in 1998 or as to American International Group in 2008– or at the level of individual participants—the bankruptcy of Orange County in 1994 or the derivatives losses at Procter & Gamble *(perhaps appropriately named)* in 1994.

The second vision is the converse of the first vision. The focus is on the order—the sanctuary from an otherwise chaotic universe—made possible by financial science. The notion is this: corporations are subject to volatile financial and commodities markets. Derivatives, by offering hedges against almost any kind of price risk, allow corporations to operate in a more ordered world. As the innovation process goes on, the "derivative reality" that corporations can buy becomes ever richer in detail.

If the first vision is that of a Jurassic Park gone awry, the second vision is of the soothing, perfect hedges found in a formal English or Oriental garden. There are certainly private and social costs associated with derivatives besides the chaos derivatives sometimes bring. Similarly, there are private and social benefits beyond the risk management possibilities of derivatives.[5]

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[5] As to some of the other benefits of derivatives, see Darrell Duffie & Henry T. C. Hu, *Competing for a Share of Global Derivatives Markets: Trends and Policy Choices for the United States*, preliminary June 8, 2008 draft available at http://ssrn.com/abstract=1140869 (the views in said draft are solely those of the authors and do not reflect those of anyone else).

Similarly, beyond OTC derivatives and looking at the regulation of capital markets and institutions overall, the minimization of systemic risk, short- or long-term, should not be the sole touchstone for regulatory policy. In the interests of the proper allocation of resources and long-term American economic growth, care must be taken that our

I make a basic point here. In a financial crisis, especially one with deep derivatives roots, it is too easy to focus solely on the dark side of OTC derivatives. Directly encouraging regulated financial institutions to migrate to exchange-traded derivatives has benefits as well as costs. Similarly, the differing regulatory regimes for "standardized" and "customized" OTC derivatives will trigger differing burdens. As to these and other decisions, careful consideration of the net impact of regulatory efforts will be necessary.

III. The Financial Innovation Process: Decision-making Errors and Informational Complexities

A. Decision-making Errors

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. But as for financial institution decision-making with respect to derivatives, much more than a gap between shareholder- and social-optimality is involved. There is a repeated pattern of outright mistakes, harmful to shareholders and societies alike, even at "sophisticated" entities.

Why? In the 1993 *Misunderstood Derivatives* article, I argued that several of the factors stemmed from the underlying process of modern financial innovation. These factors may cause even the best financial institutions and rocket scientists to misunderstand (or behave as if they misunderstand) derivatives. I also offered some possible responses, both in terms of disclosure (including enhanced compensation disclosure) and in terms of substantive measures (including measures to encourage proper consideration of legal risks).

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capital markets not only remain firmly rooted in full and fair disclosure, but are perceived to be so rooted by investors worldwide.

One factor is cognitive bias in the derivatives modeling process. Humans often rely on cognitive shortcuts to solve complex problems; sometimes these shortcuts are irrational.

For instance, one of the cognitive biases undermining derivatives models is the tendency to ignore low probability-catastrophic events. 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 towards tornados, safety belts, and earthquake insurance. My 1993 article indicated that in the derivatives context, financial 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.

Certain public AIG statements are arguably consistent with the operation of this cognitive bias, though they do not necessarily prove the existence of the bias. For example, in August 2007, the head of the AIG unit responsible for credit default swaps stated:

> It is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar in any of those [credit default swap] transactions.[6]

Then again, perhaps he was right. AIG didn't lose *one* dollar; it lost *billions*.

Similarly, AIG's Form 10-K for 2006 stated:

> The threshold amount of credit losses that must be realized before AIGFP has any payment obligation is negotiated by AIGFP for each transaction to provide that the likelihood of any payment obligation by AIGFP under each transaction is remote, even in severe recessionary market scenarios.

Another factor flows from the inability of financial institutions to capture—to "appropriate"—all the benefits of their financial research and development. This

[6] Gretchen Morgenson, *Behind Insurer's Crisis, Blind Eye to a Web of Risks*, N.Y. Times, Sept. 28, 2008, at A1.

"inappropriability" can lead to the failure to devote enough resources to fully understand the risks and returns of these products. (This has implications for responding to securitization that have not been considered. As to asset-backed securities, inappropriability may well have contributed to the sacrificing of due diligence in favor of excessive reliance on ratings agencies.)

One of the other factors flows from the incentive structures in the innovation process. In the derivatives industry, the incentive structure can be highly asymmetric. 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.

I do not know if any of AIG's current or past employees succumbed to any such behavior, by reason of the incentive structure or otherwise. That said, it is a matter that would be worth looking into. According to the testimony of Martin Sullivan, the former CEO of AIG, until 2007, many employees at AIG Financial Products (AIGFP) (the subsidiary generating the losses leading to the AIG bailout) were being paid higher bonuses than he was. The head of AIGFP, Joseph Cassano, apparently made $280 million over eight years. And when Mr. Cassano left AIG in February 2008, he was given, among other things, a contract to consult for

AIG at $1 million a month – at least, if memory serves, until a pertinent Congressional hearing came along.

The foregoing factors characteristic of the modern financial innovation process should be considered with respect to regulatory reforms. This applies not only with respect to how the Administration should engage in the prudential supervision of derivatives dealers but perhaps as well to such matters as the federal role as to compensation disclosure and practices at publicly held corporations generally. These issues are quite complex, perhaps especially with respect to substantive (as opposed to disclosure) aspects of compensation: questions abound for any particular dealer or corporation, as well as for the proper role of the federal government in respect to those questions. How and when should "profits" on trades be calculated? What are the proper models for valuing complex derivatives and determining profits? How are risks and returns on particular types of instruments to be quantified? How should compensation be risk-adjusted?

B. Informational Complexities and the Creation of an Informational Clearinghouse

As noted earlier, a variety of informational complexities stem from the financial innovation process. One of the complexities stems from the fact that, historically, neither the introduction of new OTC derivative products nor individual OTC derivative transactions were required to be disclosed to any regulator. The informational predicate for effective regulation is absent.

In *Misunderstood Derivatives*, I suggested the creation of an *informational* clearinghouse involving the centralized and continuous gathering of product information and outlined some of the key questions as to nature and scope that would need to be answered in actual implementation. Market participants would provide specified transaction-specific data in

computerized form. Although providing actual market prices (transactional terms) may be sensitive, providing theoretical pricing models are sometimes likely to be far more so. The models the derivatives dealers use can be complex and proprietary. And market prices may depart substantially from valuations predicted by models.

Especially after the CDS-related AIG debacle in September 2008, regulators have been moving aggressively to work with derivatives dealers and others to improve OTC derivatives data-gathering, particularly as to CDS. Perhaps there is a possibility of a fully centralized informational clearinghouse. This would necessitate international coordination well beyond the U.S.-U.K.-centric process that culminated in the pioneering 1988 Basel Accord for capital adequacy. A properly designed centralized informational clearinghouse must consider the extent to which proprietary information should really be required and, if or when required, reflect extensive safeguards. Moreover, complicated decisions lie ahead as to what information provided to regulators should be made available to the public.

IV. The "Decoupling" Process

I now turn briefly to a particular example of the financial innovation process, consideration of which should help guide policy decisions with respect to CDS, securitized products, and other derivatives. Certain issues relating to CDS and to securitizations have become quite familiar. For example, everyone is by now aware of how American International Group's CDS activities helped cause AIG's near-collapse in September 2008. And, especially with President Obama's Wednesday speech and its reference to the need for "skin in the game," most of us are familiar with the moral hazard, ratings agency, principal-agent, and other issues which cause securitized products to be mispriced or missold. And, in Part III.A, I have discussed how "inappropriability" issues in the financial R&D process should begin to be considered with

respect to such matters as the inadequate due diligence done (and excessive reliance on ratings agencies) in connection with securitizations.

Instead, I will focus here on the process that can be called "debt decoupling." In August 2007, I began suggesting that the separation of control rights and economic interest with respect to corporate debt through swaps can cause a variety of substantive and disclosure problems, problems that become especially troublesome when economic times are bad. This debt decoupling analysis has been further developed and I rely on this analysis to illustrate these issues.

Ownership of debt usually conveys a package of economic rights (to receive payment or principal and interest), contractual control rights (to enforce, waive, or modify the terms of the debt contract), other legal rights (including the rights to participate in bankruptcy proceedings), and sometimes disclosure obligations. Traditionally, law and real world practice assume that the elements of this package are generally bundled together. One key assumption is that creditors generally want to keep a solvent firm out of bankruptcy and (apart from intercreditor matters) want to maximize the value of an insolvent firm.

These assumptions can no longer be relied on. Credit default swaps and other credit derivatives now permit formal ownership of debt claims to be "decoupled" from economic exposure to the risk of default or credit deterioration. But formal ownership usually still conveys control rights under the debt agreement and legal rights under bankruptcy and other laws.

There could, for instance, be a situation involving what, in 2007, I termed an "empty creditor": a creditor may have the control rights flowing from the debt contract but, by simultaneously holding credit default swaps, have little or no economic exposure to the debtor. The creditor would have weakened incentives to work with a troubled corporation for the latter

to avoid bankruptcy. And if this empty creditor status is undisclosed, the troubled corporation will not know the true incentives of its creditor as the corporation attempts to seek relief in order to avoid bankruptcy. Indeed, if a creditor holds enough credit default swaps, it may simultaneously have control rights and a *negative* economic exposure. With such an extreme version of the empty creditor situation, the creditor would actually have incentives to cause the firm's value to fall. Debt decoupling could also cause substantive (empty creditor) and disclosure ("hidden non-interest" and "hidden interest") complications for bankruptcy proceedings.

Have CDS-based empty creditor situations actually happened in the real world? Yes. 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 it had turned over to Goldman $7 billion of the federal bailout funds AIG received.

Perhaps this could be referred to as "*The Curious Incident of the Bank That Didn't Bark.*" As I suggested in an op-ed in the April 10 **Wall Street Journal**, one reason Goldman Sachs did not express alarm in September is 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 the 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. (I do not in any way suggest that Goldman did anything improper. Moreover, Goldman had obligations to its own shareholders.)

Debt decoupling issues relating to multiple borrowers can also affect the economy. In the securitization context, servicing agents have little or no economic interest in the debt (and

limited rights to agree to loan modifications) while senior tranche holders typically have most of the control rights (but, in contrast to junior tranche holders, little incentive to agree to modifications). As a result, the relationships between debtors and creditors tend to be "frozen": difficulties in modifying the debtor-creditor relationship can contribute to systemic risk. Front page headlines suggest the importance of loan modification difficulties in the securitization context; analyzing how debt decoupling contributes to these difficulties may be helpful in considering governmental policies as to asset-backed securities.

The foregoing involves "debt decoupling." "Equity decoupling" also occurs. Ownership of shares traditionally conveys a package (economic, voting, and other rights) and obligations (including disclosure). Law and contracting practice assumed that the elements of this equity package are generally bundled together. But outside investors and others can now decouple this link between voting (as well as other) rights on shares and economic interest in those shares. Financial innovations like equity derivatives and familiar tools like share borrowing used for decoupling purposes have affected core substantive and disclosure mechanisms of corporate governance. But today, I will leave aside analysis of "empty voting," "hidden (morphable) ownership," and related matters.

V. Conclusion

The President's proposal appears to offer a good starting point for review, with respect to OTC derivatives and otherwise. I make a modest claim: considering the special nature of the modern process of financial innovation can be helpful in the road ahead.

Thank you.