Derivatives: A Twenty-First Century Understanding

Timothy E. Lynch*

Derivatives are commonly defined as some variation of the following: financial instruments whose value is derived from the performance of a secondary source such as an underlying bond, commodity, or index. This definition is both over-inclusive and under-inclusive. Thus, not surprisingly, even many policy makers, regulators, and legal analysts misunderstand them. It is important for interested parties such as policy makers to understand derivatives because the types and uses of derivatives have exploded in the last few decades and because these financial instruments can provide both social benefits and cause social harms. This Article presents a framework for understanding modern derivatives by identifying the characteristics that all derivatives share.

All derivatives are contracts between two counterparties in which the payoffs to and from each counterparty depend on the outcome of one or more extrinsic, future, uncertain event or metric and in which each counterparty expects (or takes) such outcome to be opposite to that expected (or taken) by the other counterparty. The framework presented in this Article will facilitate the development of more rational and comprehensive derivatives regulations, including (i) those required under the recently enacted Wall Street Reform and Consumer Protection Act of 2010 (the "Dodd-Frank Act") and (ii) those addressing the particular risks associated with "purely speculative derivatives" (those in which neither party is hedging a pre-existing risk).

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INTRODUCTION

Imagine that Steve and Patrick bet on the outcome of the 2011 Super Bowl. Steve predicted that the Pittsburgh Steelers would win, and Patrick predicted that the Green Bay Packers would win. Each was confident enough of his prediction that they agreed to wager $10 on the outcome of the game. Steve promised to pay Patrick $10 if the Packers won, and in return, Patrick promised to pay Steve $10 if the Steelers won. As we now know, the Packers in fact won the game 31–25,[1] thus obligating Steve to pay Patrick $10. Patrick's net payoff was $10; Steve's net payoff was negative $10.

We can think of more complex bets Steve and Patrick could have made with regard to this Super Bowl. Imagine that Patrick was confident that the Packers would win by a large margin. Knowing that Patrick was so confident, Steve could have asked Patrick to pay him $5. In return, Steve would promise to pay Patrick, if the Packers won, $1 for each point by which the Packers won. In this case, if Patrick had accepted the bet, Steve would have pocketed the $5 at the time the bet was made, but upon the game's final whistle, he would have owed Patrick $6. In such a case, Patrick's net payoff would have been $1, and Steve's net payoff would have been negative $1. (Note that if the Steelers had won—by any margin—Steve's net payoff would have been $5, and Patrick's would have been negative $5.)[2]

We can go further. Steve could have promised to pay Patrick $10 unless there was a rare safety scored, in which case Patrick would pay him $100. Since there was no safety scored by either team, Patrick would have received a payoff of $10 and Steve negative $10. If there had been a safety scored, Steve would have received $100, and Patrick would have lost $100.[3] Or Steve could have paid Patrick $10 before the game in return for the right to collect $100 from Patrick if a team scored a safety, provided that Patrick would pay Steve an additional $25 at the end of the game.[4] Again, since no team scored a safety, Patrick would have received a payoff of $10 and Steve negative $10. If there had been

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1. *Titletown Again!*, MILWAUKEE J. SENTINEL, Feb. 7, 2011, at A1.

2. Readers might recognize this bet to be in the form of, and indeed to actually be, a derivatives contract known popularly as an "option" (with an exercise price of $0). For an explanation of options, see *infra* note 74 and accompanying text.

3. Readers might recognize this bet to be in the form of, and indeed to actually be, a derivative known popularly as a "forward." For an explanation of forwards, see *infra* note 75 and accompanying text.

4. Readers might recognize this bet to be in the form of, and indeed to actually be, a derivative known popularly as an "option." For an explanation of options, see *infra* note 74 and accompanying text.

a safety, in contrast to the previous bet, Steve would have received a net payment of $65 (-$10 - $25 + $100), and Patrick would have lost $65.[5]

Let's imagine an even more complex bet. Patrick, confident that over the next ten years Super Bowl games would not on average be tightly contested, offered to pay Steve $1500 each year for the next ten years in return for Steve's promise to pay Patrick $300 for each point above three points by which that year's championship team wins the Super Bowl. Let's assume that Steve, contrary to Patrick's prediction, was confident that there would be many tightly contested Super Bowls over the course of the next decade and was enticed by the offer. Steve might fear, however, that he would face financial catastrophe if a particularly large blowout occurred in any Super Bowl. Fearing such a catastrophe, Steve might get Patrick to agree to cap Steve's potential yearly gross payment at $6300.[6] Let's imagine that they formally agree to swap their respective payments (if any, in the case of Steve), but they also agree that whoever owes the other the larger sum of money could simply make a single net payment to the other, i.e., "settle" their accounts, on the Monday immediately after each year's Super Bowl. In 2011, since the Packers won by six points, Patrick would have paid Steve $600 (which is $1500 minus (6 - 3)($300)). Steve's net payoff would be $600 and Patrick's would be negative $600. They would then wait for the outcome of the next nine Super Bowls to calculate the net payment for each of those years.[7]

It could be even wiser for Patrick to offer this exact bet to many people but actually make the bet only with those willing to accept relatively low fixed annual payments. Indeed, if he offered this bet to many potential takers, the annual payment average could be seen as a market price for investing in this bet. In other words, he could use the marketplace of potential sports gamblers to "price" this bet.[8]

Indeed, as should be readily apparent, the kinds of bets that Patrick and Steve could have made in relation to the 2011 Super Bowl were limited only by their imaginations. Welcome to the world of

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5. Assuming negligible transaction costs, we can assume that Steve would have exercised his option and paid the additional $25 in order to claim the $100 from Patrick because it was economically rational to do so.

6. This would equate to a 24-point victory; a wider margin of victory would not result in any additional payoff to Patrick.

7. Readers might recognize this bet to be in the form of, and indeed to actually be, a derivatives contract known popularly as a "swap" agreement. For an explanation of swap agreements, see *infra* note 76 and accompanying text.

8. Indeed, *any* element of this complex bet could act as a variable, which the gambling market could use to determine the "price" of the rest of the elements of the bet.

derivatives.   Each one of these bets is a derivative, even if not commonly understood as such.[9]

Derivatives have been a popular topic of conversation in recent years.[10] And, indeed, they should be. The presence of derivatives in the global financial industry has grown enormously in the last two decades.[11]   Many different categories of derivatives have grown enormously too, some of which did not exist twenty years ago.

For example, the notional amount[12] of derivatives contracts outstanding globally in 1990 was approximately $6 trillion,[13] but by the

9. In his book *Infectious Greed*, Professor Partnoy recounts stories of sports-related derivatives offered by the bank Société Générale during its annual Super Bowl parties and other sporting event parties. "Traders could buy options that the Washington Redskins would win by 10 points, or futures on the Buffalo Bills leading at a particular time. French employees wearing striped referee shirts explained the rules, options traders wore red, white, and blue smocks; and futures traders wore pink." FRANK PARTNOY, INFECTIOUS GREED: HOW DECEIT AND RISK CORRUPTED THE FINANCIAL MARKETS 227–28 (2003).

10. *See, e.g.*, Norman Menachem Feder, *Deconstructing Over-the-Counter Derivatives*, 2002 COLUM. BUS. L. REV. 677, 678–80 (2002) (discussing over-the-counter derivatives); Thomas Lee Hazen, *Rational Investments, Speculation or Gambling?—Derivative Securities and Financial Futures and Their Effect on the Underlying Capital Markets*, 86 NW. U. L. REV. 987, 988 (1992) (exploring the extent to which regulatory philosophy, which is based on an efficiency model that has sanctioned the proliferation of derivatives, is over-reliant on the premise of market rationality); Peter H. Huang, et al., *Derivatives on TV: A Tale of Two Derivatives Debacles in Prime Time*, 4 GREEN BAG 257 (2d ed. 2001) (discussing the presentation of derivatives on CBS's *60 Minutes* and PBS's *Frontline*); Lynn A. Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701, 709 (1999) (discussing how to maximize derivatives' benefits while minimizing their costs); Mark C. Bricknell, *In Defense of Over-the-Counter Derivatives*, WALL ST. J., May 14, 2010, at A19 (arguing that legislation that targets over-the-counter derivatives will not help achieve the goal of financial stability); *Credit Derivatives: The Great Untangling*, ECONOMIST, Nov. 8, 2008, at 85 (discussing credit default swap market regulation); Michiko Kakutani, *Greed Layered on Greed, Frosted with Recklessness*, N.Y. TIMES, June 16, 2009, at C1 (reviewing books that discuss how derivatives contributed to the global financial meltdown); Joe Nocera, *A Wall Street Invention Let the Crisis Mutate*, N.Y. TIMES, Apr. 17, 2010, at B1 (discussing derivatives' rising popularity); Lynn A. Stout, *Insurance or Gambling? Derivatives Trading in a World of Risk and Uncertainty*, 14 BROOKINGS REV. 38, 38 (Winter 1996) (discussing certain risks associated with derivatives trading); *Frontline*: *The Warning* (PBS television broadcast Oct. 20, 2009), *available at* http://www.pbs.org/wgbh/pages/frontline/warning/view/ (featuring various discussions about the derivatives market and its role in the 2008 financial collapse).

11. PHILIP MCBRIDE JOHNSON & THOMAS LEE HAZEN, DERIVATIVES REGULATION vii (2004) ("The entire area [of derivatives] has experienced exponential growth, with no signs of exhaustion.").

12. The "notional amount" of a derivatives contract is a fixed amount of money recorded in the derivatives contract (or occasionally a calculable amount of money based upon a formula fixed in the contract) against which actual payments will be calculated. Often this amount is also referred to as the "notional principal" or the "face value" of the contract. For example, if the notional amount of an interest rate swap is $10 million and Counterparty A must pay Counterparty B 3% of the notional amount, then Counterparty A must pay Counterparty B $300,000. Additionally, the value of the contract to each counterparty will be based only in part on the notional amount. Using the notional amount to determine the size of any derivatives market (or the value of a derivatives contract) is problematic since the notional amount is not

end of 2009, this amount was estimated at $691 trillion,[14] a one-hundredfold increase. The notional amount of outstanding credit default swaps, which were non-existent as of 1990,[15] is estimated to have been as high as $58 trillion in recent years.[16] The notional amount of outstanding interest rate swaps at the end of 1990 was an estimated $2.3 trillion,[17] but by 2009, this figure had increased to an estimated $349 trillion.[18] For foreign exchange derivatives, the figure in 1990 was $578 billion,[19] but by 2010, it had grown to $49 trillion.[20]

The markets for exchange-traded options and futures derivatives have also grown. As of June 2010, the outstanding notional amount of exchange-traded futures contracts was $23 trillion (with a quarterly turnover of $384 trillion),[21] and the figures for options were comparable.[22] More than 10 million oil derivatives contracts are traded each month on derivatives exchanges. In fact, this market is so large that the daily turnover on the International Petroleum Exchange of

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necessarily the value of the contract to either of the counterparties, nor the amount of money that will eventually change hands between the two derivatives contract counterparties over the life of the contract. Furthermore, unless contracts are cleared, each contract that passes along a particular risk from one party to another increases the outstanding notional amount—much like a series of contracts for the sale of a particular good between the original producer, a series of middlemen, and then the ultimate consumer would result in several obligations to sell that single item. JOHN HULL, OPTIONS, FUTURES AND OTHER DERIVATIVES 786 (7th ed. 2009) (explaining that a notional amount in an interest rate swap can be defined as the amount "used to calculate payments in an interest rate swap. The principal is 'notional' because it is neither paid nor received"); *see also* Peter Wallison, *Comment*, REG., Fall 2009, at 35–38 (commenting on Lynn A. Stout, *Regulate OTC Derivatives by Deregulating Them*, REG., Fall 2009, at 30) ("[B]ig notional numbers do not always add up to systemic risk.").

13. The $6 trillion figure is the sum of the following estimates made by the Bank for International Settlements: the outstanding over-the-counter ("OTC") currency derivatives as of December 1990, the outstanding OTC interest rate derivatives as of December 1990, and the outstanding exchange-traded futures and options from 1991 to 1996. *Statistical Annex*, BIS Q. REV., Nov. 1996, at 50–51, 54, *available at* http://www.bis.org/publ/r_qa9611.pdf.

14. *Statistical Annex*, BIS Q. REV., Sept. 2010, at A121, *available at* http://www.bis.org/publ/qtrpdf/r_qa1009.pdf. An estimated $615 trillion was comprised of outstanding over-the-counter derivatives, the balance being exchange-traded derivatives.

15. Charles Smithson & David Mengle, *The Promise of Credit Derivatives in Nonfinancial Corporations (and Why It's Failed to Materialize)*, 18 J. APPLIED CORP. FIN. 54, 54 (2006).

16. *Statistical Annex*, *supra* note 14, at A121 (reporting an estimate of the outstanding notional amount of over-the-counter credit default swaps as of December 2007); *see also* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-397T, SYSTEMIC RISK: REGULATORY OVERSIGHT AND RECENT INITIATIVES TO ADDRESS RISK POSED BY CREDIT DEFAULT SWAPS 5 (2009) (discussing notional amounts of credit default swap contracts in 2008).

17. *Statistical Annex*, *supra* note 13, at 50.

18. *Statistical Annex*, *supra* note 14, at A121.

19. *Statistical Annex*, *supra* note 13, at 50.

20. *Statistical Annex*, *supra* note 14, at A121.

21. *Id.* at A126.

22. In June 2010, the outstanding notional amount of exchange-traded options was $53 trillion; turnover during the second quarter of 2010 was $171 trillion. *Id.*

futures contracts on Brent crude, an oil extracted only from the North Sea, approximates twice the daily *global* production of oil.[23]

Additionally, derivatives are not necessarily innocuous things. Recent history is rife with examples of firms and municipalities suffering severe and sometimes disastrous economic losses as a result of losing their derivatives bets.[24] For example, Metallgesellschaft, formerly one of Germany's largest industrial conglomerates, lost approximately $1.4 billion in 1993 speculating in oil futures.[25] Barings Bank went bankrupt in 1995 after losing approximately $1.3 billion in speculative derivatives, approximately half of those bets on the level, volatility and direction of the Nikkei 225 stock index.[26] In the mid-nineties, Orange County, California lost $1.7 billion of taxpayer money on speculative derivatives,[27] and the Sumitomo Corporation lost an estimated $2.6 billion on speculative derivatives, many of them copper futures.[28] The hedge fund Long-Term Capital Management lost approximately $1.3 billion in 1998 speculatively selling options, most referencing European stock indices.[29] More recently, IKB Deutsche

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23. DMITRIS CHORAFAS, INTRODUCTION TO DERIVATIVE FINANCIAL INSTRUMENTS: OPTIONS, FUTURES, FORWARDS, SWAPS, AND HEDGING 277 (2008).

24. This is not to suggest that derivatives cannot be beneficial. Derivatives often serve a very useful purpose. For example, many, if not most, derivative counterparties use derivatives to successfully hedge against or eliminate previously-existing risk. *See infra* Part II.C.1–2.

25. Franklin R. Edwards & Michael S. Canter, *The Collapse of Metallgesellschaft: Unhedgeable Risks, Poor Hedging Strategy, or Just Bad Luck?*, 15 J. FUTURES MARKETS 211, 211 (1995).

26. HELGA DRUMMOND, THE DYNAMICS OF ORGANIZATIONAL COLLAPSE: THE CASE OF BARINGS BANK at xvi (2008); PARTNOY, *supra* note 9, at 240–43.

27. PARTNOY, *supra* note 9, at 114–21. Other government-related entities have lost very large derivatives bets. The Louisiana State Pension Fund lost $50 million. *Id.* at 121. City Colleges of Chicago lost $96 million. *Id.*

28*. Id.* at 244; Suzanne McGee & Stephen E. Frank, *Metal Detection: Sumitomo Debacle is Tied to Lax Controls by Firm, Regulators*, WALL ST. J., June 17, 1996, at A1; Sheryl WuDunn, *Sumitomo Increases Size of Copper-Trade Loss to $2.6 Billion*, N.Y. TIMES, Sept. 20, 1996, at 3D.

29. For a comprehensive summary of the Long-Term Capital Management collapse, see PRESIDENT'S WORKING GRP. ON FIN. MARKETS HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT 10–22 (1999); PARTNOY, *supra* note 9, at 1–2, 251–62; John E. Marthinsen, *Derivatives Scandals and Disasters*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT 313 (Robert W. Kolb & James A. Overdahl eds., 2010). In the mid-1990s, Proctor & Gamble lost approximately $157 million on speculative derivatives, most of which were sales of put options referencing various U.S. and European interest rates. PARTNOY, *supra* note 9, at 53–59; Carol J. Loomis, *Untangling the Derivatives Mess*, FORTUNE, Mar. 20, 1995, at 50. Gibson Greetings, one of the world's largest greeting card companies, lost approximately $20 million in the early 1990s speculating in interest rate swaps. Although Gibson's losses are not comparable to other notable losses, Gibson's transactions gained notoriety because the company sued its counterparty, Banker's Trust, alleging deception and fraud. James Overdahl & Barry Schachter, *Derivatives Regulation and Financial Management: Lessons from Gibson Greetings*, 24 J. FIN. MGMT. 68, 68 (1995); Michael Quint, *Gibson Suit on Trades is*

Industribank lost approximately $4 billion in 2007, much of it speculating in derivatives referencing American subprime mortgages.[30] In 2008, Société Générale reported that it had lost approximately $7 billion in large part due to derivatives trading.[31] And AIG, through its subsidiary AIG Financial Products, speculatively sold hundreds of billions of dollars of credit default swaps insuring its counterparties against, among other things, losses that might be incurred as a result of a collapse in the U.S. housing market and the collapse of their third-party contractual counterparties.[32] AIG found itself on the brink of collapse when the housing market and the economy moved against it.[33]

Settled, N.Y. TIMES, Nov. 24, 1994, at D1. For a discussion of many entities that lost large amounts of money in the 1980s and 1990s as a result of speculative derivatives trading, see FRANK PARTNOY, F.I.A.S.C.O.: BLOOD IN THE WATER ON WALL STREET 257 (2009); PARTNOY, *supra* note 9, at 261–62.

30. As a result of its losses, the German government and a consortium of private German banks provided it with an $8 billion bailout. Complaint, SEC v. Goldman Sachs & Co., No. 10-CV-3229 (S.D.N.Y. Apr. 15, 2010); Elisabeth Atzler et al., *Germany's First Big Subprime Victim Rescued*, FIN. TIMES (London 2d ed.), Aug. 2, 2007, at 1; Carter Dougherty, *German Government Backs IKB Bailout*, N.Y. TIMES (Feb. 13, 2008), http://www.nytimes.com/2008/02/13/business/worldbusiness/13iht-ikb.4.10008109.html (noting that IKB had tapped out the €5.65 billion rescue fund and reporting on the third round of government bailout since July 2007); Ivar Simensen, *Subprime Woes Take their Toll in Germany*, FIN. TIMES (London ed.), July 31, 2007, at 20.

31. Nicola Clark & David Jolly, *French Bank Says Rogue Trader Lost $7 Billion*, N.Y. TIMES, Jan. 25, 2008, at A1; Nicola Clark, *Rogue Trader at Société Générale Gets 3 Years*, N.Y. TIMES, Oct. 6, 2010, at B1. Trader Jérôme Kerviel, who was responsible for making the losing trades, was later convicted of breach of trust and forgery by a French court. *Id.*

32. William K. Sjostrom, Jr., *The AIG Bailout*, 66 WASH. & LEE L. REV. 943, 957 (2009) (estimating that at the end of 2007, AIG had collateral debt obligation protection commitments equal to a net notional amount of $547 billion); Adam Davidson, *How AIG Fell Apart*, REUTERS, Sept. 18, 2008, *available at* http://www.reuters.com/article/2008/09/18/us-how-aig-fell-apart-idUSMAR85972720080918? ("Credit default swaps written by AIG cover more than $440 billion in bonds.").

33. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 16, at 5, 14, 27 (reporting that when AIG's credit rating was downgraded, AIG was required to post more collateral in favor of its derivatives counterparties, which contributed to the company's liquidity crisis, decreasing its creditworthiness even further). The precipitating event of the housing bubble bursting pushed AIG into a situation where thousands of derivatives contracts with their contingent margin requirements jeopardized the existence of AIG. The U.S. government deemed AIG's imminent collapse as a threat to the entire financial system and was prompted to bail it out with $182.5 billion in financing. *Id.* at 27 ("[T]he volume and nature of [AIG's] CDS business made it such a large counterparty that its difficulty in meeting its CDS obligations not only threatened the stability of AIG but of the entire financial system as well."); Joint Press Release, Bd. of Governors of the Fed. Reserve Sys. & U.S. Dep't of Treasury, U.S. Treasury and Federal Reserve Board Announce Participation in AIG Restructuring Plan (Mar. 2, 2009), http://www.federalreserve.gov/newsevents/press/other/20090302a.htm; Robert O'Harrow, Jr. & Brady Dennis, *Downgrades and Downfall*, WASH. POST, Dec. 31, 2008, at A1; Hugh Son, *AIG's Trustees Shun "Shadow Board," Seek Directors*, BLOOMBERG (May 13, 2009), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aaog3i4yUopo&refer=us.

Furthermore, derivatives, particularly credit default swaps and various "synthetic" securities, have been identified as culprits contributing to the current global financial crisis.[34] Warren Buffet famously referred to derivatives as "time bombs" and "financial weapons of mass destruction."[35]

As a result of their growth and apparent dangers, American and foreign government officials have recently turned their attention to better regulating derivatives.[36] Unfortunately, regulatory, policy, and even legal discussions of derivatives are often muddled and demonstrate persistent misunderstandings of what derivatives are. Many people who probably should be conversant with derivatives shy away from rigorous discussion about them because they are allegedly so "complex" and "exotic."[37]

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34. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 16, at 5 ("[S]ome market observers identified CDS as one of several financial products they believed had contributed to the overall tightening in the credit markets following the bankruptcy of Lehman Brothers and the near-collapse of American International Group (AIG), which was a major CDS seller."); *A Look at Wall Street's Shadow Market*, CBSNEWS.COM (Jan. 22, 2010), http://www.cbsnews.com/stories/2008/10/05/60minutes/main4502454_page2.shtml?tag=contentMain;contentBody ("Asked what role the credit default swaps play in this financial disaster, Frank Partnoy tells Kroft, 'They were the centerpiece, really. That's why the banks lost all the money.'"); *Frontline: The Warning*, *supra* note 10 (arguing that the lack of regulation of the OTC derivatives market contributed to the financial crisis); *see also Credit Derivatives: The Great Untangling*, *supra* note 10 (stating that credit default swaps accelerated the financial crisis); Nocera, *supra* note 10, at B1 ("[S]ynthetic C.D.O.s made the crisis worse than it would otherwise have been.").

35. BERKSHIRE HATHAWAY INC., 2002 ANNUAL REPORT 15, *available at* http://www.berkshirehathaway.com/2002ar/2002ar.pdf.

36. For example, the American Congress passed the Wall Street Reform and Consumer Protection Act in 2010, which revised derivatives regulations. *See* U.S. DEP'T. OF TREASURY, BLUEPRINT FOR A MODERNIZED FINANCIAL REGULATORY STRUCTURE 201 (Mar. 2008) (providing recommendations to improve the U.S. regulatory structure); Press Release, Fin. Stability Bd., Financial Stability Board Releases Report on Improving OTC Derivatives Markets (Oct. 25, 2010), http://www.financialstabilityboard.org/press/pr_101025.pdf (responding to calls by G20 Leaders to improve the functioning, transparency and regulatory oversight of over-the-counter derivatives markets); Press Release, U.S. Dep't of Treasury, Administration's Regulatory Reform Agenda Reaches New Milestone: Final Piece of Legislative Language Delivered to Capitol Hill (Aug. 11, 2009), http://www.financialstability.gov/latest/tg261.html (describing the Treasury's proposals to regulate OTC derivatives); G20, Communiqué: Meeting of Finance Ministers and Central Bank Governors, Busan, Republic of South Korea 2 (Jun. 5, 2010), http://www.g20.org/Documents/201006_Communique_Busan.pdf (declaring the G20 nations' commitment "to accelerate the implementation of strong measures to improve transparency, regulation and supervision of . . . OTC derivatives"); John Kiff, *Centralized Derivatives Clearing Would Aid Financial System*, IMF SURV. MAG., Apr. 13, 2010, http://www.imf.org/external/pubs/ft/survey/so/2010/POL041310B.htm (discussing the benefits of a systematic risk reduction mechanism).

37. *See* Huang, et al., *supra* note 10. Derivatives are often described as being "exotic" or "complex." *E.g.*, DARELL DUFFIE ET AL., FED. RESERVE BANK OF N.Y., POLICY PERSPECTIVES ON OTC DERIVATIVES MARKET INFRASTRUCTURE 1 (Mar. 2010); JOHNSON & HAZEN, *supra* note 11, at vii; Christine Hurt, *Regulating Public Morals and Private Markets: Online Securities Trading, Internet Gambling, and the Speculation Paradox*, 86 B.U. L. REV. 371, 404 (2006);

A derivative is invariably described in words to the following effect: "a financial instrument whose value depends on or is derived from the performance of a secondary source such as an underlying bond, currency, or commodity,"[38] or "a financial instrument whose value depends on (or derives from) the value of other, more basic, underlying variables."[39] This is the definition that is almost always used in legal

Derivatives: Options Have a Future, ECONOMIST, Nov. 14, 2009, at 57 (referring to "the complex nature of derivatives"); Loomis, *supra* note 29, at 50; Ben Stein, *In Financial Food Chains, Little Guys Can't Win*, N.Y. TIMES, Sept. 28, 2008, at BU2 (describing credit default swaps as "exotic bets"). And indeed they can be. Consider the following hypothetical Super Bowl bet: Patrick and Steve could have agreed to swap money at the end of each quarter in amounts based on the points scored each quarter. Patrick could have agreed to pay Steve the number of dollars that equals the number of points the Steelers would score in the first quarter, and Steve could have agreed to pay Patrick the number of dollars that equals the number of points the Packers would score in the first quarter. They could have promised to make similar monetary swaps based on the number of points scored by each team in the second, third, and fourth quarters, respectively, but multiply each individual amount swapped by a factor of 1.5 at the end of the second quarter, 2.0 at the end of the third quarter, and 2.0 at the end of the fourth quarter. Because the Steelers scored 0, 10, 7, and 8 points in the first, second, third, and fourth quarters, respectively, and the Packers scored 14, 7, 0, and 10 points, Patrick's net payoff would have been $14 after the first quarter, negative $4.50 after the second quarter, negative $14 after the third quarter, and $4 after the fourth quarter (totaling negative $0.50). Steve's net payoff would have been negative $14, $4.50, $14 and negative $4 (totaling $0.50).

Or consider the following: Let's let "*r*" equal the points scored by the winning team. Let "*s*" equal the points scored by the losing team. Let "*t*" equal the jersey number of the game's most valuable player. Let "*u*" equal the official attendance figure. Let "*v*" equal the temperature at the stadium at the moment of the second half kickoff. Let "*w*" equal the sum of the ages (in years) of all players on the losing team who made an interception. Let "*x*" equal either 0 or 1, depending on the results of the popularity of the TV commercials aired during the game. It would equal "0" if the most popular commercial was for a product whose manufacturer's name began with a letter between the letters F and Q, and would equal "1" otherwise. Let "*y*" equal the estimated amount of corn chips measured in tons, sold nationally during the Saturday immediately prior to Super Bowl Sunday. Let "*z*" equal 1 or negative 1 depending on the flavor of Gatorade dumped on the head of the winning coach. It would be 1 if lemon-lime Gatorade is dumped and negative 1 otherwise. An option transaction could be constructed in which someone, the option buyer, could purchase the right to receive the following payoff from the option seller:

$$\left(\frac{wz(2s-r)\pi}{0.378u}\right) + \sqrt{\frac{u^t x}{3u^{\frac{4}{3}}}}$$

Note that the variables included in the payoff calculations are limited to those related, however distantly, to a Super Bowl. Variables related to *any* event or *any* metric, however, could be included to form even more "exotic" and "complex" derivatives.

38. BLACK'S LAW DICTIONARY 475 (8th ed. 2004).

39. HULL, *supra* note 12, at 1. For other formulations of the definition of "derivatives," see, e.g., ROBERT W. KOLB & JAMES OVERDAHL, FUTURES, OPTIONS AND SWAPS 1 (5th ed. 2007) ("A derivative instrument is one whose principal source of value depends on the value of something else, such as an underlying asset, reference rate, or index."); Ian Bell & Petrina Dawson, *Synthetic Securitization: Use of Derivative Technology for Credit Transfer*, 12 DUKE J. COMP. & INT'L L. 541, 547–48 ("A 'derivative' is a contract where the payment obligations of the parties are derived from another set of assets or liabilities."); Hurt, *supra* note 37, at 382–83 ("[T]he term 'derivative' encompasses a wide array of financial products in which the actual conditions of return are based on an underlying stock, commodity, financial benchmark, stock index, or other grouping of assets."); Patrick Rains & Charles G. Leathers, *Financial Derivative*

scholarship and in policy discussions.[40]   But for legal and policy analysis purposes, this definition is inadequate—it is imprecise, incomplete, and fails to capture the nature and scope of modern derivative transactions.[41]   The common definition is both over- and

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Instruments and Social Ethics, 13 J. Bus. Ethics 197, 197 (1994) ("Financial derivatives are contracts whose values are dependent upon the values of the underlying financial assets which trade separately."); Stout, *Insurance or Gambling?*, *supra* note 10, at 38, 39 (1996) (defining "derivatives" as "private contracts for payments determined by the performance of interest rates, currencies, equities, or indexes"); *Id.* at 39 ("Although the term derivatives encompasses a bewildering variety of contractual arrangements, derivatives are in essence agreements that do not involve any immediate payment or transfer of assets, but only the exchange of mutual promises to pay some amount of money determined by the performance of a currency, interest rate, commodities price, stock, or stock index. In other words, derivatives are bets on the future performance of some underlying rate or price."); Stout, *Why the Law Hates Speculators*, *supra* note 10, at 704 (defining derivatives as "contracts for the payments determined by the changing price of some underlying commodity or financial instrument"). Respected popular financial reporting is particularly imprecise with the definition of derivatives. *E.g.*, Jonathan Karp, *In Beverly Hills a Meltdown Mogul is Living Large: Jeff Green Buys 'Palazzo,' Scores $500 Million Gain; Erotica and Bowling Lanes*, Wall St. J., Jan. 15, 2008, at A10 (defining derivatives merely as "contracts whose value shifts with some other asset's value"); Andrew Ross Sorkin, *When Wall Street Deals Resemble Casino Wagers*, N.Y. Times, Apr. 20, 2010, at B1 ("[The synthetic CDOs] were a bet on the value of mortgages that investors didn't even own. (That's why it is called a derivative.)").

40. The vast majority of legal articles describe derivatives by doing some variation on the following: giving a very brief definition (like one provided above), classifying derivatives as one of several types—typically options, futures, forwards, swaps, credit derivatives, and perhaps hybrid and miscellaneous ones—and then describing each of these particular classes. *E.g.*, Kolb & Overdahl, *supra* note 39, at 1 (defining "derivative" and listing the types); Frank Partnoy, *Financial Derivatives and the Costs of Regulatory Arbitrage*, 22 J. Corp. L. 211, 216 (1997) ("It is easier to categorize financial derivatives than to define them. As a result the term 'derivative' often is not particularly useful. Below, I describe the basic classes and uses of derivatives . . . . The two most basic classes of contingent claims are forwards and options."); Feder, *supra* note 10, at 678–79. Some articles note that the term "derivatives" refers to a broad array of contractual arrangements, but then expressly limit its discussion to traditionally or commonly known derivatives. *E.g.*, Lynn Stout, *Betting the Bank: How Derivatives Trading Under Conditions of Uncertainty Can Increase Risks and Erode Returns in Financial Markets*, 21 J. Corp. L. 53, 53 n.2 (1995) ("[T]his Article uses the word ["derivative"] primarily to refer to various options, futures, and forwards."). However, derivatives of each of these categories can be constructed from derivatives of the other classes, resulting in equivalent economic consequences. For example, a swap agreement can be recast as a series of forward contracts or as a series of option contracts and provide equivalent economic outcomes. A futures contact can be recast as a combination of options. Additionally, the number of categories and the complexity of derivatives have exploded in the last couple of decades, obliterating any clean difference between options, forwards, and swaps.

41. It is notable that the term "derivative" is not defined in the Commodity Exchange Act, the Securities Exchange Act, or the Wall Street Reform and Consumer Protection Act—the most significant pieces of legislation regulating derivatives in the United States. The Securities Exchange Commission (SEC) does, however, provide a definition for "Eligible OTC Derivatives Instrument" within its regulations. 17 C.F.R. § 240.3b-13 (2010). The SEC also provides a definition for "derivatives securities," a definition that merely addresses derivatives in which the underlying is corporate equity interests. *Id.* § 240.16a-1(c); *see also* Johnson & Hazen, *supra* note 11, at 7–9 (choosing not to define the word "derivatives" and instead describing the different forms of derivatives articulated by the Commodity Exchange Act).

under-inclusive in that it encompasses investments that are obviously not derivatives, such as stocks and bonds, while excluding others that clearly are, such as event derivatives, insurance policies, and Super Bowl bets. As a result, policy makers and legal analysts are often less than fully informed as compared to derivatives industry groups, who often do understand their true nature.[42]

A persistent misunderstanding of derivatives hampers our ability to differentiate between socially useful and socially harmful derivatives. The framework offered in this Article facilitates this valuable differentiation.[43]

A persistent misunderstanding of derivatives also prolongs the use of an outdated derivatives regulatory scheme. Derivatives regulation in the United States involves a multiplicity of state and federal laws, as well as the administrative and regulatory functions of many state and federal agencies.[44] The federal derivative legislative process is overseen by various congressional commissions, primarily (of all things!) the Senate Committee on Agriculture, Nutrition and Forestry and the House Agricultural Committee.[45] This hodge-podge of a regulatory structure reflects the evolution of derivatives over time, appearing first as simple futures and options on agricultural commodities used for hedging purposes by producers and consumers of

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42. One of the reasons there is so much public misunderstanding about derivatives is that it is very difficult to talk about them in a way that is precise and does not simultaneously use extensive jargon. As a result, as with many topics, for outsiders and non-experts, the jargon obscures what is really occurring and may permit insiders and experts to engage in abusive and deceptive practices. *See generally* PARTNOY, *supra* note 9 (discussing the fall of financial markets due to corruption and deceit); PARTNOY, *supra* note 29, at 153 (describing ways that the derivatives groups of Wall Street investment banks have been able to sell clients derivatives products (i.e., entice clients to enter into a derivatives contracts) that they did not fully understand).

43. This is the first of a series of three papers undertaken to examine the need for better derivatives regulations, the issues surrounding purely speculative derivatives, and the evaluation of the Dodd-Frank Act's success—and lack of success—in addressing derivatives. The second article uses the framework identified in this Article to identify and single out PSD contracts and to subject them to particular scrutiny. Timothy E. Lynch, *Gambling by Another Name? The Challenge of Purely Speculative Derivatives*, 17 STAN. J.L. BUS. & FIN. (forthcoming 2011). The third article will assess how PSD contracts are, or might be, treated under the Dodd-Frank Act and how they present certain challenges to government authorities tasked by Congress to regulate them.

44. Derivatives are primarily regulated by the Commodity Exchange Act ("CEA"), certain provisions in the Securities Exchange Act, the Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act"), federal and state gambling laws, federal and state banking laws, state insurance laws, the regulatory functions of the Commodity Futures Trading Commission ("CFTC"), the Securities Exchange Commission ("SEC"), the U.S. Department of the Treasury, and various state and federal banking and insurance regulators.

45. For a comprehensive discussion of the CEA, the CFTC and the role of the SEC in regulating derivatives, see generally JOHNSON & HAZEN, *supra* note 11.

these commodities but morphing into such truly exotic beasts as synthetic collateral debt obligations that reference sets of credit default swaps, which themselves reference tens or hundreds of thousands of American subprime mortgages.[46] As the scope and scale of derivatives evolved, mere patches and band-aids were placed on the then-existing regulatory scheme, the latest band-aid being the Dodd-Frank Act.[47] At times, extensive deregulation occurred, leading to eras of explosive derivatives evolution, leaving the regulatory apparatus struggling to keep up. As a result, we are left with a derivatives regulatory regime that often appears confusing, incomplete, contradictory, greatly subject to interpretation, incapable of addressing derivatives innovation, and even at times, simply irrational or incomprehensible.[48] The framework presented in this Article will facilitate the process of developing a modern, comprehensive derivatives regulatory regime.

46*. Id.* at vii (providing the following reason for changing the title of their treatise from "Commodities Regulation" to "Derivatives Regulation": the subject matter of the treatise "is now more commonly referred to as 'derivatives' in order to capture not only the futures contracts, options and other structured instruments offered by organized markets but also a wide variety of exotic and hybrid financial products that are vended privately by banks and investment houses.").

47. The Dodd-Frank Act is the popular short name for the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat 1376 (2010). The Dodd-Frank Act amends, among other Acts, the CEA and the Securities Exchange Act, the two federal legislative Acts that primarily regulate derivatives in the United States.

48. None of the main derivatives statutes or regulations even reference or define the term "derivative." At times, the regulatory apparatus can seem curious indeed. For example, the CEA definition of "commodity" seems to include literally everything except, expressly, onions and movie box office receipts. Commodities Exchange Act of 1936, 7 U.S.C. § 1a(4) (2006), *amended by* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 721(a)(2), 124 Stat. 1376, 1658 (2010). The CEA refers to the following types of derivatives: (i) "contracts of sale of a commodity for a future delivery," (ii) "options," (iii) "swaps," (iv) "foreign exchange forwards," (v) "foreign exchange swaps," (vi) "security futures," (vii) "security futures products," and (viii) "security-based swaps." *Id.* The term "contract of sale of a commodity for future delivery" is not defined. However, "commodity" is defined in a way that may be interpreted to include all goods, articles, services, rights, and interests, except, as noted above, onions and motion picture box office receipts. *Id.* Because of its expansiveness, the definition of "commodity" may be the only tool for interpreting the CEA in a way that would encompass the derivatives framework presented in this Article. *See* JOHNSON & HAZEN, *supra* note 11, at 129 ("The debate between 'good' investing and 'bad' speculation is persistent. It may grow even more intense as futures and other derivatives are created based on fortuities, contingencies, and unpredictable events as the term *commodity* is acknowledged by the Act to embrace."). "Future delivery" is also defined, but is defined by describing what it is not. 7 U.S.C. § 1a(19) ("The term 'future delivery' does not include any sale of any cash commodity for deferred shipment or delivery."). An "option" is defined tautologically. 7 U.S.C. § 1a(26) ("The term 'option' means an agreement, contract, or transaction that is of the character of, or is commonly known to the trade as, an 'option', 'privilege', indemnity', 'bid', 'offer', 'put', 'call', 'advance guarantee', or 'decline guarantee.'"). The definition of "swap" is over 1500 words long. 7 U.S.C. § 1a(32). "Security futures," "security futures products" and "security-based swaps" refer to futures, options, and swaps where the underlying commodity is a debt, equity security, or a narrow-based security index, and are derivatives for which the SEC (not the CFTC) is the primary regulator. 7 U.S.C. § 1a.

Most pressingly, a persistent misunderstanding of derivatives hampers regulators' attempts to develop rational, desirable, optimal derivatives regulation as required by the recently enacted Dodd-Frank Act. In Dodd-Frank, Congress significantly altered derivatives regulations but was unable to wrestle successfully with many of the difficult issues embedded within the modern derivatives industry. Congress, therefore, left much of the difficult regulatory line-drawing to the Commodity Futures Trading Commission ("CFTC"), the Securities and Exchange Commission ("SEC"), and the Treasury Department. Each of these agencies has recently started a prolonged process of addressing these difficult issues. The framework described in this Article will facilitate Dodd-Frank rulemaking.[49]

Furthermore, members of the financial industry have come to appreciate the true nature of derivatives, as well as their flexibility and manipulability, which has enabled them to develop new and innovative derivatives over the course of the last two decades. This Article, therefore, attempts to close the gap between legal academics and policy makers, on the one hand, and financial academia derivatives scholars and Wall Street derivatives "wizards" on the other.

So what exactly is a derivative? At the risk of oversimplifying, all derivatives are contracts between two counterparties[50] in which the payoffs to and from each counterparty depend on the outcome of one or more extrinsic, future, uncertain events or metrics. This means that they are "aleatory contracts"[51] in which each counterparty expects the outcome to be opposite to that expected by the other counterparty. Recall the Super Bowl derivatives in which both Steve and Patrick took opposite sides of a transaction. As an initial step, it is expedient to understand that derivatives provide, in the aggregate, zero-sum payoffs to the counterparties. In the Super Bowl bets, the money won by one counterparty was the same amount of money lost by the other. There are specific ways, however, that a derivatives contract can create non-monetary value—e.g., by providing one or both counterparties a consumer or producer surplus, hedging value or entertainment value, or by creating certain positive externalities such as improved price

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49. *See* Lynch, *supra* note 43 (identifying purely speculative derivatives within the context of the framework presented here and describing their problematic nature).

50. For a discussion of the uses of the terms "contract" and "agreement," see *infra* note 57.

51. An aleatory contract may be defined as a "contract in which at least one party's performance depends on some uncertain event that is beyond the control of the parties involved." BLACK'S LAW DICTIONARY, *supra* note 38, at 342. The word "aleatory" is derived from the Latin *aleator*, "gambler," which itself comes from the Latin word *alea*, meaning "the throwing of dice." *Id.* at 78.

discovery.   Understanding these value-creating scenarios will help refine our definition.

Part I of this Article presents the basic framework for understanding derivatives by identifying and describing the characteristics or elements all derivatives share, i.e., the defining elements of a derivative. It then describes how this framework more precisely captures what derivatives are and shows how the old, common definition is both over- and under-inclusive.

Part II presents some additional characteristics that derivatives contracts and counterparties may, but need not, possess, such as deliverability, risk-hedging, and entertainment values. Some of these characteristics are mistakenly presented as defining elements of derivatives.[52] Some have been disproportionately emphasized, not only by industry insiders seeking industry-friendly regulation,[53] but also by legislators, regulators, and the courts. Although these characteristics should not be overemphasized, they are nonetheless relevant in any attempt to fully understand derivatives and to design optimal derivatives regulation.

Finally, Part III suggests that both insurance contracts and gambling contracts ought to be considered derivatives and therefore, that comprehensive derivatives regulatory reform should incorporate what are commonly known as insurance law and gambling law.

I. DERIVATIVES DEFINED

As stated above, a derivative is invariably described in words to the following effect: "a financial instrument whose value depends on or is derived from the performance of a secondary source such as an underlying bond, currency or commodity,"[54] or "a financial instrument whose value depends on (or derives from) the value of other, more basic, underlying variables."[55]   These commonly used definitions,

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52. *See, e.g.*, DONNA KLINE, FUNDAMENTALS OF THE FUTURES MARKET 14 (2001) (suggesting that the futures market is fundamentally different from gambling since the futures market is used for hedging pre-existing risks); Mark C. Brickell, *In Defense of Over-the-Counter Derivatives*, WALL ST. J., May 14, 2010, at A19 (implying that all derivatives are used for hedging pre-existing risks). Even knowledgeable commentators can inadvertently be ambiguous. *See, e.g.*, Huang et al., *supra* note 10, at 262 ("[B]uying certain derivatives is like buying insurance against an accident, while not buying those derivatives is essentially betting on the accident not happening.").

53. *See, e.g.*, Brickell, *supra* note 52, at A19 (implying that all derivatives are used for hedging pre-existing risks).

54. BLACK'S LAW DICTIONARY, *supra* note 38, at 475.

55. *See supra* note 39 and accompanying text (discussing various formulations of the definition of the term "derivative"). While the term "derivative" is not defined in the CEA, the Securities Exchange Act, or the Dodd-Frank Act, the Internal Revenue Code defines a

although not necessarily inaccurate, are incomplete, ambiguous, over-inclusive, and typically fail to capture the nature and scope of derivative transactions.   To fully understand derivatives transactions, it is necessary to understand what characteristics all derivatives transactions share and what characteristics they might, but need not, possess.[56]

A. Contracts Between Two Counterparties

   Like the Super Bowl derivatives described in the Introduction, all derivatives share particular characteristics. First, they are agreements or contracts between two counterparties.[57]   The value of a derivatives contract stems primarily from the rights to which one is entitled and the obligations one owes to one's contractual counterparty. Derivatives are not, for example, equity rights in any assets, tangible or intangible; creditor rights arising from having lent something of value in return for a loan repayment; or rights obtained under a service contract wherein services are provided for some fee.

B. Contracts are Aleatory

   Derivative agreements are aleatory.[58]   The payments due under a derivatives contract depend in part on some unknown future contingency, typically referred to as an "underlying," specifically: (i)

"commodities derivative financial instrument" as:

> a commodities contract or other financial instrument for commodities (other than a share of corporate stock, a beneficial interest in a partnership or trust, a note, bond, debenture, or other evidence of indebtedness, or a section 1256 contract) the value or settlement price of which is calculated or determined by reference to . . . any one or more or any combination of (I) a fixed rate, price, or amount, or (II) a variable rate, price, or amount, which is based on any current, objectively determinable financial or economic information with respect to commodities which is not within the control of any of the parties to the contract or instrument and is not unique to any of the parties' circumstances.

26 U.S.C.A. § 1221(b)(1)(B) (West 2005).

   56. This Article identifies the incompleteness in the "common understanding" of what we call derivatives. Its argument turns on the distillation identifying the "essential characteristics" of derivatives.   I should acknowledge, however, that if we were to come up with a more idiosyncratic set of characteristics (perhaps to include seemingly irrelevant characteristics), we could create a definition for "derivatives" that better maps onto what we commonly understand as "derivatives." I leave it to the reader to ascertain whether my definition is more functional than a more idiosyncratic definition.

   57. The use of the phrase "agreements or contracts" as opposed to simply "contracts" is motivated by the fact that certain derivative agreements will not be enforced by the courts and hence are not "contracts" in the sense that contracts are, by many definitions, legally enforceable agreements. *See, e.g.*, BLACK'S LAW DICTIONARY, *supra* note 38, at 341 ("contract, n. 1. An agreement between two or more parties creating obligations that is enforceable or otherwise recognizable at law in a binding contract"). Nevertheless, this Article will frequently use the term "contract" to describe any derivatives agreement, legally enforceable or not.

   58. For a definition of "aleatory," see *supra* note 51.

the outcome of an event or events, (ii) the future value of some asset or set of assets, (iii) some future metric or metrics, or (iv) some combination of these. All of these future contingencies are extrinsic to the derivatives contract and to the counterparties in the sense that the counterparties have no, or very limited, ability to control the outcomes of the contingencies.[59]

In the case of the Super Bowl derivatives described above, the underlyings were all related to the outcomes of the football game or events related to the game, all of which were beyond the control of Patrick and Steve. In contrast, a contest pitting the two counterparties against each other, where the winner is entitled to some form of payment from the loser, would not be considered a derivatives contract since the counterparties themselves, by design, control or greatly influence the outcome; the outcome is not extrinsic to themselves. Similarly, a contract where the performance of one party is contingent on the successful performance by his counterparty is not a derivatives contract since the contingency is, by design, not extrinsic to the parties themselves.[60]

Nonetheless, the counterparties to some derivatives contracts may have, in certain limited and specific circumstances, perhaps because of happenstance, some control over the outcome of the contingency. For example, a corporate executive holding stock options in her company may be able to influence the future stock price because of her professional position. A creditor holding a credit default swap

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59. Derivatives have sometimes been called "contingent claims." HULL, *supra* note 12, at 1. This characteristic, that the value of a derivatives contract is derived from an asset or value extrinsic to the contract, is the characteristic that led to the coining of the term "derivative." *S.E.C. Rule Change Study*, N.Y. TIMES, May 5, 1993, at D22 ("Derivatives are unconventional securities linked to or "derived" from typical stocks, bonds and commodities."). It seems that prior to the 1980s there was no widely used term to describe what we categorize today as derivatives. *See* John Cox & Stephen A. Ross, *A Survey of Some New Results in Option Pricing Theory*, 31 J. FIN. 383, 383 (1976) (referring to "derivative financial assets" and "derivative assets"); Saul Hansell, *Derivatives as the Fall Guy: Excuses, Excuses*, N.Y. TIMES, Oct. 2, 1994, at 31 (stating in 1994 that the term "derivative" was "coined by the financial engineers of Wall Street and London a few years ago"). This author and his research assistants have not been able to find a use of "derivative" (in its financial sense) in the New York Times archive prior to 1987. *See* Burton G. Malkiel, *Business Forum: Big Moves, New Instruments; But Markets Only Seem More Volatile*, N.Y. TIMES, Sept. 27, 1987, at F3 (using the term "derivative" in a discussion about the securities market). *But see 1999 Derivatives Hall of Fame*, DERIVATIVESSTRATEGY.COM, http://www.derivativesstrategy.com/magazine/archive/1999/0399 fea1.asp (last visited Aug. 15, 2011) (quoting Merton Miller as stating "[The term derivatives] was invented in New York to be disparaging about the Chicago people, as if meant to say, 'We are the real market; you are merely the derivatives. You're the mistletoe wound around the oak, sucking out our life's juices.' It was intended to be a term of opprobrium.").

60. *See also* Hurt, *supra* note 37, at 378 (using "speculation" to refer to activities in which skill (investing or otherwise) plays only a limited role).

referencing a debtor entity may, especially through refusing to modify the debt terms or through harshly enforcing default provisions in the debt contract, have some control over whether or not that debtor entity will experience a credit event under the credit default swap. A wheat farmer with a forward contract on his wheat may affect the market price of wheat if he produces so much wheat that its market price declines. However, whatever control a derivatives counterparty may have over the underlying is independent of the derivative contract. It is only in the special case in which one or both of the counterparties to a derivatives contract *happen* to be positioned to influence a contingency that the contingency is not wholly extrinsic to the counterparties' actions.[61] Furthermore, while a counterparty may have some influence on the underlying, these contracts are premised on the expectation that such influence will be negligible. Further still, this kind of limited control is qualitatively different than where the outcome of the contingency is, by design, or is expected to be, in the control of one or both of the counterparties.[62]

C. Counterparties Take Opposite Sides

Counterparties to a derivatives contract agree to take the opposite sides of the same underlying event(s), value(s), or other metric(s). In other words, one counterparty expects "A," the other expects "not-A." Recall the Super Bowl bets where Steve bet that the Steelers would win, while Patrick bet on the Packers.

D. Zero-Sum Transactions

Derivatives are often said to provide "zero-sum" payoffs in the sense that there is no net gain or loss of overall *monetary* wealth as a result of the transaction.[63] Steve's net "payoff" exactly equals Patrick's net loss;

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61. More intentional manipulation of the underlying will void an aleatory contract and may even be illegal, as in the case of cornering the market on a particular commodity in order to profit from one's long position or committing arson in the hopes of receiving the proceeds of a home insurance policy.

62. A recently available option contract provides another noteworthy example. Intrade.com, an Irish-based online derivatives exchange, recently offered an option contract where the payoff to the option buyer depended on whether or not U.S. Congressman Anthony Weiner would resign from Congress by a certain date. Congressman Weiner could have taken a position in such an option and would then have been in a position to control whether or not he won or lost his derivatives bet. *Will Anthony Weiner Resign from the House of Representatives?*, INTRADE.COM, http://www.intrade.com/v4/markets/contract/?contractId=749843 (last visited Aug. 22, 2011).

63. Hazen, *supra* note 10, at 1006–07 ("Futures and options markets represent a zero-sum game . . . for every winning contract, there must be a correlative losing one. Futures and options contracts are . . . noteworthy in that they do not produce wealth, but instead merely involve the transfer of wealth."); Stout, *Insurance or Gambling?*, *supra* note 10, at 40 ("[D]erivatives transactions are, by their very nature, zero-sum games . . . one derivatives trader's gain is

a derivatives contract merely redistributes pre-existing wealth. In this narrow sense, all derivatives are indeed zero-monetary-sum transactions.

In a broader sense, however, it is not the case that derivatives contracts are always zero-sum transactions; they can, and often do, create value. If a counterparty hedges a pre-existing risk with the use of a derivatives contract, he obtains insurance value from the derivative.[64] If the parties effectuate the physical delivery of an underlying asset, the contract is not a zero-sum transaction since a consumer surplus and a supplier surplus is presumably generated.[65] Furthermore, if engaging in a derivatives contract creates entertainment utility for one or both of the counterparties, it may not be a zero-sum transaction.[66] The existence of derivatives markets also can generate some positive social externalities, such as price discovery and economic activity for the intermediaries and facilitators of derivatives contracts.[67]   Part II.C of this Article will discuss risk hedging, physical delivery, entertainment utility, price discovery, and associated economic activity at greater length.

E. Current Definitions are Under-Inclusive

The common definitions of the term derivatives are typically under-inclusive. First, they almost always only refer to underlying assets or metrics or index, but rarely to events.[68] But payments due under what we understand to be derivatives are often triggered by the occurrence, or non-occurrence, of some event.[69] Furthermore, common definitions of derivatives will often refer to derivatives' value being derived from such things as the performance of a secondary source such as underlying bonds, currencies, or commodities;[70] from the changing price of some underlying commodity or financial instrument;[71] or from

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necessarily balanced by another's loss.").

64. For a more detailed discussion of hedging, see *infra* Part II.C.2.

65. For a more detailed discussion of such commercial transactions, see *infra* Part II.C.1.

66. For a more detailed discussion of entertaining derivatives contracts, see *infra* Part II.C.4.

67. Lynch, *supra* note 43.

68. For a criticism of relevant definitions found in the CEA, see *supra* note 44 and accompanying text.

69. *See* Robert W. Kolb, *Exotic Options*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 143, 147–49 (discussing event-based derivatives and event markets such as the Iowa Electronic Market, the Policy Analysis Market, and the Hollywood Stock Exchange). For example, credit default swaps list credit events that are at times actual events such as the filing of bankruptcy of the reference entity. *See infra* note 76 (discussing swap agreements). Election derivatives often have underlyings that are simply whether or not a particular candidate won an election. *See infra* note 90 (discussing election derivatives).

70. HULL, *supra* note 12, at 1.

71. Stout, *Why the Law Hates Speculators*, *supra* note 10, at 704.

a set of assets or liabilities.[72] Such definitions fail to acknowledge the whole panoply of imaginative metrics, which currently underlie what we currently understand to be derivatives. The increasingly common inclusion of events and non-traditional metrics as the basis for derivatives challenges the popular notion of what a derivative is, but at the same time, it makes it easier to establish a more coherent framework for understanding derivatives.[73]

Within common parlance, derivatives are typically referred to as options,[74] forwards,[75] or swaps[76] (or hybrids of each), and each of these is most often associated with some commodity, financial asset (such as

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72. Bell & Dawson, *supra* note 39, at 547.

73*. See supra* note 48 (discussing the ever-widening scope of the term "commodity" in the CEA).

74. An option is "a contract between two parties—a buyer and a seller—in which the buyer purchases from the seller the right to buy or sell an asset at a fixed price." DON M. CHANCE & ROBERT BROOKS, INTRODUCTION TO RISK MANAGEMENT 22 (8th ed. 2010); *see also* G.D. Koppenhaver, *Derivative Instruments: Forward, Futures Options, Swaps, and Structured Products*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 3, 13–16 (discussing option contracts); Jeffrey H. Harris & L. Mick Swartz, *Equity Derivatives*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 103, 104–08 (discussing stock options). However, more generally, an option can be understood as a transaction in which Counterparty A gives value to Counterparty B, and in consideration Counterparty B is obligated to give Counterparty A, at some time in the future, value whose size is contingent, in part, on the outcome of one or a set of extrinsic events or metrics and, depending on the outcome of those contingencies, the value owed to Counterparty A may be zero.

75. A forward contract is often described as "an agreement between two parties, a buyer and a seller, that calls for the delivery of an asset at a future point in time [at] a price agreed upon today." CHANCE & BROOKS, *supra* note 74, at 254. A futures contract is a type of forward contract that is traded on an organized exchange and subject to exchange rules and clearing procedures. *Id.* at 252; *see also* Joan C. Junkus, *Agricultural and Metallurgical Derivatives: Pricing*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 77 (explaining future contracts); Koppenhaver, *supra* note 74, at 3, 7–11 (discussing future contracts). However, more generally, a forward contract can be understood to mean an agreement between two counterparties pursuant to which either: (i) one counterparty purchases an asset and actually takes delivery of that asset in the future from the other counterparty for a price determined at the execution of the contract, or (ii) a one-time payment of money is made at the expiration of the contract based on a negotiated formula in which at least one variable is an extrinsic event or metric. In either case, only a single monetary payment is made between the counterparties over the lifetime of the contract.

76. A swap agreement is one in which two parties agree to exchange (or "swap") at least two identified sets of cash flows. In other words, one person will make a series of payments to the second person at specific times in the future, and in return, the second person will make a series of payments to the first. Although the exact cash flows from one party may be calculable upon entering into the contract, the cash flows in at least the other direction cannot be calculated until the time that some underlying variable is observed and then used in an agreed-upon formula to calculate the amount of cash to be exchanged at that time as a part of that cash flow series. Another way to understand swaps, however, is to view them as a series of forward contracts, where each swap episode represents the transaction of a single forward contract. Any swap agreement can easily be reframed as an economically equivalent series of forward contracts. CHANCE & BROOKS, *supra* note 74, at 405; *see also* Koppenhaver, *supra* note 74, at 11 (discussing swap agreements).

stocks, bonds, foreign currency), or other limited list of values or events. Examples of transactions commonly referred to as derivatives in the marketplace include commodities future contracts (whose payoffs are determined by—or derived from—the future value of commodities, such as wheat, pork bellies, or orange juice concentrate),[77] stock options (whose payoffs are derived from future stock prices),[78] interest rate swaps (whose payoffs are derived from the future value of selected interest rates, such as the London Interbank Offer Rate ("LIBOR")),[79]

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77. For example, two persons can enter into a futures contract for 100 ounces of palladium for $50,000 in which the palladium is to be delivered by the seller to the buyer in one year. If, at the delivery date, the market price of 100 ounces of palladium is $55,000, and if the buyer and the seller elect not to actually deliver the palladium, they can settle the contract whereby the seller gives the buyer $5000, an amount that represents the market value of the palladium over the contract price. Or if the market price of 100 ounces of palladium were to be below $50,000 on the delivery date, let's say $47,000, the buyer and seller could settle the contract by having the buyer pay the seller the difference, in this case, $3000. If the underlying of a futures contract is for something that is impossible to deliver, a cash settlement is the only way to conclude the contract. For a more complete discussion of delivery and settlement, see *infra* notes 118–34 and accompanying text.

78. For example, two persons can enter into an agreement in which one person, the option buyer, pays $95 to the second person, the option seller, in return for the right to sell to the option seller ten shares of IBM stock in six months for $1300. If in six months, the market price of ten shares of IBM stock is $1200, and if the option buyer and the option seller elect not to actually deliver ten shares of IBM stock, they can settle the contract whereby the option seller gives the option buyer (that is, the holder of the put option, or the right to sell to the option seller) $1000, an amount that represents the market value of ten IBM shares over the predetermined stock sales price. In such a case, the net payoff of the option buyer would be $905 and the net payoff of the option seller would be negative $905. Or if the market price of ten shares of IBM stock were to be above $1300, the holder of the put option would have no economic reason for exercising his put rights since it would be cheaper for him to acquire ten shares of IBM stock in the public markets than to pay the option seller $1300 for ten IBM shares. The put option right would simply expire unexercised. In such a case, the option seller's net payoff would be $95, and the option buyer's net payoff would be negative $95. The underlying of an option contract can even be for something that it is impossible to deliver, settlement being the only way to conclude the contract. For a more complete discussion of delivery and settlement, see *infra* notes 118–34 and accompanying text.

79. In an interest rate swap, at least one underlying variable is a chosen interest rate. For example, two parties may enter into an interest rate swap wherein Counterparty A agrees to pay Counterparty B $400 on the first of every month for the next calendar year, and in consideration Counterparty B agrees to pay Counterparty A on the first of every month for the next calendar year the product of (i) $10,000 and (ii) the sum of 1.0% and then-current 1-Month LIBOR. If LIBOR is 2.0% on the first of the next calendar month, on that date, Counterparty A would owe Counterparty B $300 and Counterparty B would owe Counterparty A $200. These respective payments can be netted out so that only one payment, $100, needs to paid, and that would be paid by Counterparty A to Counterparty B. If, on the first of the following month, LIBOR were to rise to 3.5%, Counterparty B would make a net payment of $50 to Counterparty A. *See* Ian Lang, *Interest Rate Derivatives*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 135, 139–40 (discussing both exchange-traded and over-the-counter interest rate derivatives). Debt obligations whose interest rates over the life of the debt obligation are at least in part a function of an extrinsic value, such as the then-prevailing LIBOR rate, have a derivative component. Such notes are sometimes referred to as structured notes in that they are designed or

foreign exchange swaps (whose payoffs are derived from future exchange rates between two currencies),[80] and credit default swaps (whose payoffs are derived from the occurrence or non-occurrence of a "credit event" of some reference entity or entities, such as the bankruptcy of an identified corporation, a debt default by some foreign government, or the third default within a basket of bonds).[81]

"structured" such that principal and interest amounts due thereunder are in part dependent on the future value of an index or some future event. *See, e.g.*, Partnoy, *supra* note 40, at 220 (describing typical attributes of structured notes).

80. In a foreign exchange swap, two cash flows are exchanged, but Counterparty A pays in one type of currency, and Counterparty B pays in a different currency. The amounts to be swapped, in either direction, may be fixed or calculated based on some variable, typically the then-current exchange rate between the two currencies. CHANCE & BROOKS, *supra* note 74, at 421–30; *see also* Robert Kolb, *Foreign Exchange Derivatives*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 115, 119–21 (discussing foreign exchange swaps). For example, a firm may enter into a currency exchange swap with its bank in which the firm agrees to pay the bank €200,000 every six months for two years. In return, the bank might agree to pay the firm every six months for the next two years an amount in U.S. dollars equal to the product of €190,000 and the then-prevailing USD-to-Euro exchange rate. In this case, netting might not occur if the bank wants to receive actual euros and the firm wants to receive actual U.S. dollars. Economic losses and gains are then measured relative to the Euro/USD exchange rate— the extrinsic variable in the case of this derivative—over the course of those two years. (In practice, currency exchange rate swaps typically include the exchange of "notional principal" amounts between the two counterparties at the beginning of the contractual term and then a return of the same amount at the termination of the contract. The other payments made during the course of the contract are similar to paying interest on the nominal amounts initially received.)

81. A credit default swap ("CDS") operates very much like an insurance policy, wherein one party, the CDS "purchaser" (or "protection buyer"), agrees to pay a second party (or "protection seller") a series of payments in return for that second party agreeing to make a payment(s) to the CDS purchaser in the event that a third entity or a debt instrument (or a basket of entities and/or debt instruments) experiences one or more events that suggest that its creditworthiness has decreased. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 16, at 4–6. For example, a person may agree to pay ABC Corporation $10,000 every six month for ten years in return for the right to receive $10 million from ABC Corporation if a reference entity, let's say the Government of France, defaults on its sovereign debt or experiences a credit rating downgrade from Standard and Poor's or Moody's. If, over the course of those ten years, France does not default on its sovereign debt and is not subject to a ratings downgrade, the net payoff to ABC Corporation would be $200,000 and the net payoff to its counterparty, the CDS purchaser, would be negative $200,000. If France were to default after three years and seven months, i.e., shortly after the CDS purchaser made its seventh $10,000 payment to ABC Corporation, the net payoff for the CDS purchaser (assuming the swap agreement terminates after any credit event and ABC's $10 million payment) would be $9.93 million, and the net payoff for ABC Corporation would be negative $9.93 million. For a general overview of credit default swaps, see generally Frank Partnoy & David A. Skeel, Jr., *The Promise and Perils of Credit Derivatives*, 75 U. CIN. L. REV. 1019 (2007); Bell & Dawson, *supra* note 39, at 551–55.

In addition to credit default swaps, credit derivatives include: (i) credit spread derivatives, in which the underlying is the difference between (a) the cost of capital of a reference entity or the market yield of some reference obligation and (b) some benchmark rate, and (ii) total rate of return swaps, in which the underlyings include the actual interest and principal paid on a reference debt obligation, the market value of the reference obligation, and a floating reference interest rate. Bell & Dawson, *supra* note 39, at 553–56; *see also* Partnoy & Skeel, *supra*, at 1021–22 (discussing the major categories of credit derivatives). A credit-linked note, often

Rarely is the term "derivative" popularly associated with something as mundane as the outcome of the Super Bowl or even sports gambling generally.[82]   Nevertheless, under the framework for understanding derivatives presented here, any gamble whose payoff depends on the outcome of any event or metric, including sporting events, is indeed a derivative. To illustrate this, it may be useful to reframe such bets as options, swaps, or other transactions that are universally considered derivatives contracts. For example, we could reframe the simple $10 bet on the outcome of the Super Bowl using a combination of two option contracts. In the first option contract, Patrick could sell Steve, for let's say $5, an option to receive $12 from Patrick if the Steelers win, and Steve could pay Patrick an "exercise price" of $2. Simultaneously, Steve could sell Patrick, for the same $5 premium, an option to receive $12 from Steve if the Packers win, provided Patrick pays an exercise price of $2. The net economic result is a simple $10 bet on the game. Indeed, we could frame this $10 bet as any two options as long as the premiums and other relevant terms are the same (except, of course, that one option pays if the Steelers win and the other if the Packers win). For example, Steve could receive from Patrick an option to obtain $10 from Patrick in the event that the Steelers won the Super Bowl for an exercise price of $0. The premium Steve would pay for obtaining this right is not cash, but rather the granting of a valuable option in favor of Patrick. To win, Patrick would pay Steve a premium in the form of an option to obtain $10 from Patrick in the event the Packers win the game at an exercise price of $0. Or we could frame this bet as a swap agreement wherein Patrick and Steve agree to swap payments at the end of the Super Bowl; Steve could pay Patrick $10, and Patrick could pay Steve $20, but only if the Steelers win. The $10 "bet," the "swap agreement," and the combination of the two "options"

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referred to as a credit derivative, is in fact a debt security with a derivatives component. The derivatives component, however, may be the overwhelmingly dominating characteristic of the debt instrument. For example, in a common credit linked note, Counterparty A (also known as the "protection buyer") buys a debt security from Counterparty B (also known as the "protection seller") for a price related to the price of a reference obligation. Prior to maturity, Counterparty A receives from Counterparty B interest equal to the interest payable under the reference obligation, and at maturity, Counterparty A receives from Counterparty B a principal payment in the amount equal to the principal actual paid under the reference obligation. If the issuer of the actual reference obligation defaults or there is some other credit event interrupting interest payments, Counterparty B stops paying interest to Counterparty B but makes a final payment equal to the market value of the reference obligation (or delivers to Counterparty B the reference obligation itself). Bell & Dawson, *supra* note 39, at 554.

   82. There appears to be no written record before this Article of a derivatives contract in which the underlying relates to the flavor of Gatorade dumped on the head of a winning football coach.

each results in economically equivalent transactions. Similar reframing can be done with all the Super Bowl bets discussed above.[83]

Indeed, the types of derivatives that can exist are limited only by the imagination of the prospective counterparties.[84] As a result, the types of derivatives in existence have greatly expanded in recent years. Today, one can invest in weather derivatives,[85] freight derivatives,[86] emissions derivatives,[87] inflation derivatives,[88] catastrophe derivatives,[89] election

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83. *See* Hazen, *supra* note 10, at 1017–19 (suggesting persuasively that the difference between gambling and transactions commonly understood to be gambling is merely a matter of form). The way that current law might perceive and enforce—or not enforce—each form of this sports-based bet is beyond the scope of this Article. The Professional and Amateur Sports Protection Act of 1992 might prevent the creation or enforcement of sports-related derivatives. 28 U.S.C.A. § 3701 (West 1992).

84. Stout, *Insurance or Gambling?*, *supra* note 10, at 39 ("[T]he term derivative encompasses a *bewildering* variety of contractual arrangements." (emphasis added)).

85. Weather derivatives are contracts in which the net payoffs of the counterparties are a function of future weather events, such as rainfall or temperature. *See* Randy Myers, What Every CFO Needs to Know about Weather Risk Management, *available at* http://www.cmegroup.com/ trading/weather/files/WeatherRisk_CEO.pdf (discussing ways to manage and mitigate weather risk). For a list and an explanation of the many weather derivatives traded on the Chicago Mercantile Exchange, see CME GROUP, http://www.cmegroup.com/trading/weather/ (last visited Aug. 15, 2011). UBS has developed a Global Weather Index, UBS-GWI, which is an index based on the temperatures of a select set of cities around the world and which can be used as the underlying in a weather derivatives contract. UBS Press Release, UBS Investment Bank is pleased to announce the launch of the UBS Global Warming Index (UBS-GWI) (Apr. 24, 2007), *available at* http://www.ubs.com/1/e/media_overview/media_global/search1/search10?newsId= 117789. Snowfall derivatives are contracts wherein the payoffs to the counterparties are determined by snowfall amounts. For example, the CME Group offers an exchange-traded futures contracts in which the underlying metric is the amount of snow that falls in New York City's Central Park between December 1 and January 31 of the following year. *Snowfall Futures and Options*, CME GROUP (2009), http://www.cmegroup.com/trading/weather/files/snowfall-fact-card.pdf.

86. Freight derivatives are contracts in which the net payoffs of the counterparties are a function of future shipping rates and/or freight shipping costs indexes. MARTIN STOPFORD, MARITIME ECONOMICS 193 (3rd ed. 2009); Donald J. Kennedy & Richard Califano, *Client Advisory, Forward Freight Agreements*, CARTER LEDYARD & MILLBURN LLP (May 17, 2006), http://www.clm.com/publication.cfm/ID/85.

87. Emissions derivatives are contracts in which the net payoffs of the counterparties are a function of future prices for permits to emit certain gases (such as greenhouse gases, sulfur dioxide and nitrogen dioxide) in industries subject to emission cap and trade systems. RICHARD F. KOSOBUD ET AL., EMISSIONS TRADING: ENVIRONMENTAL POLICY'S NEW APPROACH 64–71 (2000); Press Release, International Swaps and Derivatives Ass'n, ISDA Publishes U.S. Emissions Allowance Transaction Annex (Dec. 21, 2006), *available at* http://www.isda.org/press/ press122106.html. *See generally* TOM JAMES & PETER C. FUSARO, ENERGY AND EMISSIONS MARKETS: COLLISION OR CONVERGENCE? (2006) (providing a general overview of emissions trading). In the United States, the Green Exchange, a derivatives trading exchange designated by the CFTC as a contract market, provides a market for entering into and trading emissions derivatives. GREEN EXCHANGE, http://nymex.greenfutures.com/ (last visited Aug. 5, 2011).

88. Inflation derivatives are contracts in which the net payoffs of the counterparties are a function of some inflation index, such as CPI. *See* Steve Swidler, *Emerging Derivatives Instruments*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at

derivatives,[90] terrorism derivatives,[91] airline seat derivatives,[92] motion

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221–22 (discussing inflation derivatives); *see also* Jeroen Kerkhof, *Inflation Derivatives Explained*, LEHMAN BROTHERS, 3 (July 2005), http://www.scribd.com/Lehman-Brothers-Kerkhof-Inflation-Derivatives-Explained-Markets-Products-And-Pricing/d/19601807 (explaining the purpose of inflation derivatives). Inflation-adjusted bonds can be considered plain debt instruments with an inflation derivative component, typically transferring inflation risk from the bond buyer to the bond issuer.

89. Earthquake derivatives and hurricane derivatives are in a class of derivatives that are often termed "catastrophe" derivatives. Other catastrophes include tsunamis, pandemics, and wildfires. A catastrophe derivative is a contract where the payoff of the counterparties is determined by some fact associated with a pre-designated catastrophe—for example, whether or not the catastrophe occurred, by the size of the catastrophe or the amount of property damage, or insurance company losses resulting from it. Most commonly, a catastrophe derivative is found embedded in a "catastrophe bond" wherein an insurance company (or a reinsurance company) issues an interest-paying bond, but the insurance company and the bond holder(s) agree that all or some of the principal and interest is deferred or forfeited if insurance company losses resulting from a particular catastrophe exceed certain thresholds. Such bonds effectively transfer the risk of insuring against a major catastrophe from the issuing insurance company to the bond investors. Sarah Hills, *Insurers Revive Catastrophe Bond Market*, REUTERS, June 22, 2010, *available at* http://uk.reuters.com/article/2010/06/22/uk-insurance-catbonds-idUKLNE65K01120100622; Jennifer Hughes, *Catastrophe Bonds Set for Resurgence*, FIN. TIMES, Aug. 20, 2010, at 19; *see also* A. Mita & H. Tamura, *Insurance Derivatives for Buildings to Reduce the Damage Due to Large Earthquakes*, *in* WORLD FORUM ON SMART MATERIALS AND SMART STRUCTURES TECHNOLOGY 220 (Spencer et al. eds., 2008) (proposing derivatives to maintain and improve the safety of buildings and to provide a risk hedge instrument for owners); *Carvill Sees Rising Interest in Trading for Hurricane Derivative Products*, INS. J. (July 17, 2008), http://www.insurancejournal.com/news/national/2008/07/7/91961.htm (reporting that the market for hurricane derivatives continues to grow); Press Release, Nomura Group, Nomura to Provide Catastrophe Risk Hedging Solutions (Oct. 17, 2007), *available at* http://www.nomuraholdings.com/news/nr/nsc/20071017/20071017.html (reporting that Nomura Securities arranged an earthquake derivative between East Japan Railway Company (the protection buyer) and Munich Re (the protection seller) and that Munich Re transferred this risk to the capital markets through issuance of a catastrophe bond); *see generally* Michael Lewis, *In Nature's Casino*, N.Y. TIMES MAG., Aug 26. 2007, at 26 (discussing catastrophe bonds). Exchange-traded hurricane derivatives are available on the Chicago Mercantile Exchange. CME, http://www.cmegroup.com/trading/weather/ (last visited Aug. 5, 2011); *see also* Jeremy J. Repanich, *Hedgers Brace for Hurricane Season*, MEDILL REP. CHI. (June 4, 2009), http://news.medill.northwestern.edu/chicago/news.aspx?id=133481 (reporting the increasing popularity of exchange-traded hurricane derivatives).

90. Election derivatives are event derivatives where the payoffs of the counterparties are determined by the outcome of political elections. For example, the Iowa Electronic Markets, a non-profit derivatives exchange operated by the University of Iowa College of Business, offered eight standardized derivatives contracts relating to the outcome of the 2010 Florida Senate election. In four of these contracts, the underlying metric was the vote share received by four particular "candidates" (the Democratic nominee, the Republican nominee, Charlie Crist, and all other candidates), and in the other four, the underlying metric was whether or not a particular candidate (of these four) won the election. IOWA ELECTRONIC MARKETS, 2010 FLORIDA U.S. SENATE ELECTION MARKETS, http://tippie.uiowa.edu/iem/markets/florida10.html (last visited Aug. 15, 2011). Intrade, an on-line exchange, offers a large volume of election derivatives, including one in which the underlying is whether or not Sarah Palin will run for U.S. President in 2012 and another in which the underlying is whether or not Wyclef Jean will be elected the President of Haiti. INTRADE: THE PREDICTION MARKET, http://www.intrade.com/ (last visited Aug. 15, 2011); *see also* Kolb, *supra* note 69, at 143, 147–49 (discussing event-based derivatives and event markets such as the Iowa Electronic Market, the Policy Analysis Market and the

picture box office receipt derivatives,[93] Albert Pujols free agency

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Hollywood Stock Exchange).

91. The U.S. Department of Defense proposed a terrorism future as a way to use the market's wisdom and ability to ferret out information to help predict and thwart terrorist attacks. This proposed derivative would have been a contract in which the net payoff would have been a function of whether or not and when a terrorist attack occurred. Although the Defense Department cancelled this project just days after its existence became popularly known (resulting in widespread public outrage) and before the details of how the terrorism future market would operate, it appears that the market price of a terrorism future—that is, the amount of money the buying counterparty would receive in the event of a terrorist attack—would be indicative of the market's predictions. Carle Hulse, *THREATS AND RESPONSES: PLANS AND CRITICISMS; Pentagon Prepares a Futures Market on Terror Attacks*, N.Y. TIMES, July 29, 2003, at A1; D.J. Tice, *'Terror Market' Debate Exposed Roots of Many Economic Disagreements*, ST. PAUL PIONEER PRESS, Aug. 6, 2003, at A10; Justin Wolfers & Eric Zitzewitz, *The Furor over 'Terrorism Futures,'* WASH. POST, July 31, 2003, at A19; *DARPA FutureMAP*, INFORMATION AWARENESS OFFICE, http://infowar. net/tia/www.darpa.mil/iao/FutureMap.htm (last visited Aug. 5, 2011). The CEA, as amended by the Dodd-Frank Act, explicitly singles out terrorism event derivatives as contracts that the CFTC may determine are contrary to the public interest and thus prohibited from being listed or made available for clearing or trading on or though any registered entity. 7 U.S.C. § 7a-2(c)(5)(C) (2006). As a result, although terrorist attacks would seem to be an event against which one might reasonably want to hedge, one may not be able to do this through the derivatives market. *See* Thomas Lee Hazen, *Disparate Regulatory Schemes for Parallel Activities: Securities Regulation, Derivatives Regulation, Gambling, and Insurance*, 24 ANN. REV. BANKING & FIN. L. 375, 379 (2005) (asking rhetorically, "[H]ow different is a terrorism future from taking out insurance against acts of war?"); *see also* Kolb, *supra* note 69, at 143, 148 (noting that one reason the Pentagon contemplated a market to aggregate intelligence was because traders use real money to back their opinions, which gives them an incentive to use "cold, hard, honest logic and reliable information to base their trades"); Micah Schwalb, *Exploit Derivatives & National Security*, 9 YALE J.L. & TECH. 162, 166 (2007) (arguing in support of cyber security derivatives).

92. Airline seat derivatives are contracts wherein the payoffs to the counterparties are a function of the amount of airline seats sold by an airline for a particular flight. *See* U.S. Patent Application No. 10,006,654 (filed Dec. 10, 2001) (describing a business method patent—"Systems and Methods for Using Derivative Financial Products in Capacity-Driven Industries"—for certain airline seat derivatives).

93. Motion picture box office receipt derivatives are contracts wherein the payoffs to the counterparties are determined by reference to movie box office receipt totals over a pre-determined period of time, typically during the first few days or weeks of a movie's opening. *See* Colin Packham, *Movie Futures Controversy Thrashed out before CFTC*, FOW (May 24, 2010), http://www.fow.com/Article/2577189/Issue/26557/Movie-futures-controversy-thrashed-out-before-CFTC.html (discussing futures and binary options linked to movie receipts). The CFTC recently approved a set of motion picture box office receipt derivatives contracts for trading on two exchanges. These derivatives contracts included contracts referencing the revenues of the movies *Takers* and *The Expendables*. Press Release, CFTC, CFTC Approves Box Office Receipt Contracts Submitted by Media Derivatives (June 14, 2010), *available at* http://www.cftc.gov/PressRoom/PressReleases/pr5834-10.html; Press Release, CFTC, CFTC Approves Domestic Box Office Receipts Futures Contracts Submitted by Cantor Futures Exchange (Jun. 28, 2010), *available at* http://www.cftc.gov/PressRoom/PressReleases/pr5846-10.html. The Dodd-Frank Act, however, excluded movie box office receipts from the definition of "commodities" under the CEA. 7 U.S.C. § 1a(4), *amended by* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 721(a)(2), 124 Stat 1376, 1658 (2010); *see also* HOLLYWOOD STOCK EXCHANGE, www.hsx.com (last visited Aug. 15, 2011) (providing an on-line exchange where, for entertainment purposes, traders using fictitious money can enter into film- and television-related

derivatives,[94] Higgs Boson derivatives,[95] and various so-called "synthetic" securities such as synthetic collateral debt obligations[96] and synthetic stocks.[97]

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derivatives contracts).

94. Intrade.com offers a set of option contracts in which the payoffs depend on which team baseball player Albert Pujols plays for on opening day of the 2012 U.S. Major League Baseball season. INTRADE, *supra* note 90. For example, buying a single option on the contract relating to the Chicago Cubs would entitle the option holder to receive $10 from the seller if on opening day Albert Pujols plays for the Cubs. INTRADE: THE PREDICTION MARKET, http://www.intrade.com/jsp/intrade/contractSearch/ (last visited Aug. 5, 2011). Intrade.com offers over a hundred derivatives contracts on events relating to such things as politics, science, buildings, entertainment, finance, weather, technology, terrorism, and Roman Polanski's potential extradition to the United States. *Id.*

95. Intrade.com offers a set of option contracts in which the payoffs depend on whether or not the observation of a Higgs Boson particle is published in a major scientific journal by a given date. INTRADE: THE PREDICTION MARKET, http://www.intrade.com/v4/markets/ (last visited Aug. 15, 2011). For example, buying an option on a contract labeled HIGGS.BOSON.DEC15 would entitle the option holder to receive $10 from the seller if before December 31, 2015, such an observation is published. *Id.*

96. A synthetic security is a derivatives contract in which payments to and from each counterparty mimic, simulate, or are a function of the costs and returns of an actual security or a pool of securities. For example, a synthetic collateralized debt obligation ("synthetic CDO") is a derivatives contract in which the payoffs between the counterparties are based on how a pool of reference CDOs, mortgage-backed securities, and/or other debt instruments actually perform. The mechanical process of translating the performance of these debt instruments into a synthetic CDO is typically accomplished by first creating one or more credit derivatives, such as credit default swaps, each referencing one or more debt instruments, and then pooling these credit derivatives into a collateralized debt obligation. In other words, the underlying of a synthetic CDO is typically a single, or a pool of, credit derivatives and thus, a credit derivative itself. Synthetic securities can also serve as the underlying of higher-level synthetic securities, and so on ad infinitum. For a description of credit derivatives, see *supra* note 74. *See also* Bell & Dawson, *supra* note 39, at 549 ("A 'credit derivative' is a contract where one party's obligation to pay is conditioned on the occurrence of a credit event (usually a default) on another, sometimes notional, contract."); Partnoy & Skeel, *supra* note 81, at 1019 (analyzing the benefits and risks of credit derivatives). In the years before credit derivatives such as synthetic CDOs were created, the amount of risk existing in the marketplace resulting from holding debt could not exceed the amount of actual debt in the marketplace. With the creation of derivatives that referenced debt securities not necessarily held by the CDO seller, it was possible for the risks associated with debt holdings to magnify to an unlimited degree. Many of the hedge funds that made large sums of money by shorting the U.S. housing market immediately prior to the recent subprime crisis did so by entering into synthetic CDOs with counterparties who bought synthetic CDOs and then either forfeited their principal or were obligated to make large contingency payments when the underlying mortgage-related securities failed to perform well. *See* Complaint, *supra* note 30, at ¶¶ 10–43, 60, 66 (describing ABACUS 2007-AC1, a synthetic CDO "sold" by the hedge fund Paulson & Co., Inc., and "purchased" by the IKB Deutsche Industriebank and ACA Capital resulting in approximately $1 billion of losses to the purchasers (and ABN Amro, which had assumed the credit risk posed by ACA Capital) and a payoff to the Paulson fund of an equivalent amount (less fees to intermediaries)); MICHAEL LEWIS, THE BIG SHORT 72–79 (1st ed. 2010) (describing the use of synthetic CDOs by several hedge funds to short the U.S. housing market); GREGORY ZUCKERMAN, THE GREATEST TRADE EVER: THE-BEHIND-THE-SCENES STORY OF HOW JOHN PAULSON DEFIED WALL STREET AND MADE FINANCIAL HISTORY 85–87, 176, 273 (1st ed. 2009) (explaining how investors profited by betting against synthetic mortgages).

97. An economic interest in stock ownership can be synthetically created by the use of a

Furthermore, given these elements of a derivative, it would be correct to conclude that what we normally refer to as "insurance" contracts and "casino gambling" are also derivatives. Part III will further discuss insurance contracts and casino gambling.

F. Current Definitions are Over-Inclusive

The common formulations of the definition of derivatives, which define derivatives in terms of how they are valued or priced, are over-inclusive. That something's value or price is derived from, or contingent on, one or more other things is not in itself sufficient to deem that something a derivative. In reality, the value of *every* asset depends in part on something else.

To say that derivatives are "instruments whose value or price is derived from" some underlying thing is like describing a corporate bond as an "instrument whose value is based on its face value, its coupon rate, current market interest rates, the value of any collateral, and the perceived creditworthiness of the issuer." Or it is like describing corporate stock as "an instrument whose value is derived from the market's expectation of the size and timing of the corporation's future dividend distributions." Or like describing an interest in a mutual fund as "something whose value is derived from the value of securities held by that mutual fund." Or that a painting is "an asset whose value is derived from the market's demand for such a painting and the acclaim of the painter." Or that cash is "an asset whose value is derived from the trust people have in cash."[98]

None of these statements is incorrect, but they do not provide a comprehensive or fundamental understanding of what a bond, an equity security, a mutual fund interest, a painting, or cash is. Furthermore, a vague description of the mechanism by which something is priced or valued does not provide policy makers and regulators valuable insights about how that thing might be best regulated.

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derivatives contract wherein Counterparty A pays Counterparty B some sum of money, and afterwards, for the duration of the contract, Counterparty B pays Counterparty A sums equal to any dividend payments made to actual stockholders, and both parties periodically settle their accounts based on the changing market price of the stock. (Of course, ancillary rights associated with stock ownership, such as voting rights and the right to a fiduciary relationship with the officers and board, are not created under this derivative.) *See* Partnoy & Skeel, *supra* note 81, at 1019, 1037–38 (discussing how Citibank extensively engaged in "selling" synthetic stocks and stock options to clients in the 1990s).

    98. When cash is convertible into gold, the value of cash is derived from the value of gold, which itself is derived from some primitive or emotional connection people have with gold. *See* Jonathan T. Macey, *Derivative Instruments: Lessons for the Regulatory State*, 21 J. CORP. L. 69, 70 (1995) (discussing the derivative value of cash).

To be clear, loan agreements, corporate stocks and bonds, interests in mutual funds, artworks, and cash are not derivatives. Each lacks at least one of the defining elements of derivatives. In the case of a typical loan agreement, the obligation of the debtor to pay the creditor is not conditional on some outside occurrence. Instead, the obligation exists,[99] and the lender and borrower have similar, not opposite, expectations that the loan proceeds will be lent and that principle and interest will be paid back. In the case of stocks, mutual funds, and works of art, investors purchase and own such assets and have certain rights attendant with ownership; the form of the investment is equity, not contractual. Although there may be a contract between an investor on one hand, and either a mutual fund, a corporate equity issuer, or an artist on the other, expanding, limiting, or creating ownership rights, these contracts are incidental to the assets themselves.[100] Of course, cash is not contractual.

Securities such as mortgage-backed securities ("MBSs"), collateralized debt obligations ("CDOs"), and other structured debt obligations backed by anticipated cash flows are often referred to as derivatives.[101] Formally, however, these are *not* derivatives; they are debt securities whose principal and interest payments are secured by—and only by—a designated anticipated revenue stream, such as the anticipated revenue stream from a pool of residential mortgages, corporate bonds, credit card accounts receivables, auto loans, or other structured securities.[102] The common practice of calling these securitized securities "derivatives" seems to result from the fact that these securitized instruments almost completely derive their values from their respective collaterals' values, i.e., the perceived likelihood and the extent that the cash flows scheduled or anticipated to be paid under the pool of underlying debt obligations will actually be paid by, for example, mortgage borrowers or credit card debtors.

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99. Although a debtor's obligations under a loan agreement may be excused through some process of law or otherwise, and the loan agreement may have a derivatives component that might make repayment conditional, loan agreements are not aleatory.

100. Furthermore, such contracts would not normally be aleatory and the counterparties would not have opposing expectations.

101. *E.g.*, Partnoy & Skeel, *supra* note 81, at 1019; Dennis K. Berman, *The Game: Why Street Bankers Get Away With Repeating Old Mistakes*, WALL ST. J., Nov. 6, 2007, at C1; Gretchen Morgenson, *Summer School For Investors Is in Session*, N.Y. TIMES, July 29, 2007, at BU1; Floyd Norris, *They Sold the Derivative, but They Didn't Understand It*, N.Y. TIMES, July 20, 2001, at C1; Henny Sender, *Ahead of the Tape*, WALL ST. J., June 1, 2005, at C1; *The Subprime Meltdown, Continued: Bearish Turns*, ECONOMIST, June 23, 2007, at 81–82.

102. CHANCE & BROOKS, *supra* note 74, at 493–94; Partnoy & Skeel, *supra* note 81, at 1019, 1022. The process of combining loans into portfolios and then selling debt instruments with claims on the portfolios is typically referred to as "securitization." CHANCE & BROOKS, *supra* note 74, at 493.

The under-inclusiveness and over-inclusiveness of the common formulations of the definition of derivatives render the common formulations largely useless for legislators and policy makers and are best addressed by simply abandoning these common formulations altogether and replacing the common definition with a more precise definition. Such a precise definition will lead to a better regulatory regime.

II. POSSIBLE DERIVATIVE CHARACTERISTICS

To be classified as a "derivative," a transaction must possess each of the elements described above. However, there are other characteristics that derivatives contracts or derivatives contract counterparties *may*—but need not—possess characteristics that are important to discuss in order to have a satisfactory understanding of derivatives. The existence of some of these possible characteristics has caused much confusion in the policy discussion on how to regulate derivatives. The most relevant of these characteristics are: (i) whether or not a derivative is exchange-traded, (ii) whether or not the underlying is a possible asset, (iii) whether or not the underlying can be, or indeed will be, physically delivered, (iv) whether or not a derivatives counterparty is using his derivatives position to hedge against a pre-existing risk, and (v) whether or not the derivatives transaction offers entertainment utility.

A. Exchange-Traded and Cleared Derivatives vs. Over-the-Counter Derivatives

Some derivatives contracts are entered into on exchanges. Examples of exchanges include the Chicago Board of Trade ("CBOT"), the Chicago Mercantile Exchange, the Minneapolis Grain Exchange, the London Metals Exchange, and the Tokyo International Financial Futures Exchange.[103] An exchange lists a finite number of standardized contracts, each of which has at least one term that is not standardized but is left to be negotiated between potential counterparties.[104] Typically, the negotiable term is the price term of a futures contract or an option contract, or it might be a term in a swap agreement that is an

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103. The Chicago Board of Trade, for example, primarily offers futures and options in grains, oilseeds, ethanol, broad equity securities indexes, and U.S. Treasury debt securities. The London Metals Exchange offers futures and options contracts on such commodities as copper, aluminum, zinc, gold, steel, tin, nickel, molybdenum, and plastics. As of 2008, there were well over fifty major futures exchanges around the world. CHANCE & BROOKS, *supra* note 74, at 260.

104. Generally, for an exchange to offer a particular derivatives contract among its menu of derivatives offerings, market demand for the contract product must be great enough to generate enough revenue to pay the exchange's costs associated with setting up, offering, and supporting the contract. DUFFIE ET AL., *supra* note 37, at 9.

element in determining the amount of cash to be periodically delivered from one counterparty to the other. For example, among its menu of standardized contracts, the CBOT currently lists a futures contract for the sale of 5000 bushels of "Number 2 Heavy Oats" that are to be delivered to the buyer between September 4, 2012, and September 18, 2012.[105] The price for these bushels is the negotiated term.

   A person interested in entering into such a futures contract, let's say as the party who would sell future oats (i.e., the "short" position), would solicit bids ("ask"), either on the floor of the exchange or through an electronic system, from those persons interested in entering into a contract to buy future oats (or the "long" position).[106] Simultaneously, persons interested in buying future oats make offers in the hopes of attracting a willing seller. It is in this process of soliciting and offering bids by which compatible buyers and sellers find each other. In the CBOT example, a person might ask for $3.65 per bushel but be satisfied with any offer equal to or greater than $3.55 per bushel. He would take the highest offer made by a potential counterparty provided that that offer was at least $3.55. Once the buyer and the seller complete their negotiation, set the final term of the contract, and complete administrative formalities, they are then counterparties to a new "exchange-traded" futures contract.

   Most often, especially in large retail-oriented exchanges, intermediaries hired by the counterparties agree upon the derivatives contracts. Each counterparty to an exchange-traded contract, therefore, usually does not know who his opposite counterparty actually is and what counterparty risk he might pose.[107] Exchanges, as for-profit enterprises motivated to attract as many fee-paying derivatives traders as possible, have an incentive to demonstrate that those who trade on their exchanges do not face significant counterparty risks. Largely to reduce counterparty risk (and, for some, to be in compliance with regulatory requirements),[108] many exchanges require that derivatives

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105. *Agricultural Products: Oats Futures*, CME GROUP, http://www.cmegroup.com/trading/agricultural/grain-and-oilseed/oats_product_calendar_futures.html#prodType=undefined (last visited Aug. 15, 2011) (this particular product has the code OU12; for more details on the contract terms click on the "Contract Specifications" hyperlink above the table).

106. A person soliciting bids or offering prices might do this himself if he is a member of the exchange or through one or more intermediaries. For a detailed explanation of the mechanics of the bidding process, see CHANCE & BROOKS, *supra* note 74, at 34–35.

107. "Counterparty risk" can be defined as "the risk to each party in a . . . contract that the other party will not perform the contractual obligations." U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 16, at 3. Counterparty risk is sometimes referred to as credit risk. *E.g.*, Feder, *supra* note 10, at 689.

108. Many exchanges are also required by law to clear derivatives trades. *See, e.g.*, Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 723(a)(3), 124

contracts be "cleared." These exchanges are affiliated with a clearinghouse that coordinates such clearing.

Simply speaking, a clearinghouse "clears" derivatives contracts either by guaranteeing counterparty payments or, more commonly, by first inserting itself as a counterparty between the two original counterparties. In the latter scenario, known as "novation," the clearinghouse takes the long position vis-à-vis the original short counterparty and the short position vis-à-vis the original long counterparty. As a result, two contracts are formed with the clearinghouse as a counterparty to each. Since the clearinghouse has both a long and a short position in two contracts of otherwise identical terms, its (non-counterparty) risks under one contract are perfectly hedged by its rights under the other, and vice versa. Therefore, each of the original counterparties now has a derivatives contract not with the other original counterparty, but with the clearinghouse.

The clearinghouse reduces its own exposure to counterparty risks by requiring that the original counterparties post and maintain margin or collateral, frequently netting and settling accumulated obligations, and ensuring that it is well capitalized by its membership. These processes, often collectively referred to as "mutualization," effectively reduce the average counterparty risk faced by exchange traders.[109]

Other derivatives are not traded on exchanges but are negotiated and entered into bi-laterally in otherwise private forums. Non-exchange-traded derivatives are often referred to as "over-the-counter" ("OTC") derivatives.[110] The advantage of the OTC market compared to the exchange market is that instead of being limited to the finite set of standardized exchange-traded contracts, OTC counterparties can customize and narrowly tailor their derivatives contract to meet their

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Stat. 1376, 1568 (2010) (requiring that all swaps be cleared).

109. For a more complete and detailed description of the mechanics and benefits of clearing and the mutualization of counterparty risk, see DUFFIE ET AL., *supra* note 37, at 5–9, 21–27; JOHNSON & HAZEN, *supra* note 11, at 189–90; Sharon Brown-Hruska, *The Derivatives Marketplace: Exchanges and the Over-the-Counter Market*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 21; James T. Moser & David Reiffen, *Clearing and Settlement*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 263; Ed Nosal & Robert Steigerwald, *What is Clearing and Why is It Important?*, CHI. FED LETTER, Sept. 2010, at 1–4; Daniela Russo et al., *The Evolution of Clearing and Central Counterparty Services for Exchange Traded Derivatives in the United States and Europe: A Comparison*, EUR. CENT. BANK, Sept. 2002, at 109, *available at* http://www.ecb.int/ pub/pdf/ scpops/ecbocp5.pdf. As a result of measures such as margin requirements, daily clearing, and mutualization, and as a result of the fact that derivatives exchanges are heavily regulated, exchange-traded derivatives have received little criticism in recent years, and, unlike over-the-counter derivatives, did not contribute to the recent global economic crisis.

110. *See generally* DUFFIE ET AL., *supra* note 37, at 1.

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needs and desires.[111]   Compared with agreements executed on an exchange, however, transaction costs may be higher, especially when a contract is heavily negotiated, and the contract may not be easily offset.[112] OTC derivatives contracts may be cleared either with an ad hoc entity willing to participate in a novation (for a fee) and/or through an entity created by regular traders established for the purpose of clearing OTC contacts.[113] When OTC contracts are not cleared, each counterparty, to become comfortable that it will bear an acceptable level of counterparty risk, is likely to conduct due diligence on the creditworthiness of its counterparty before agreeing to enter into the contract. It may also require that the potential counterparty post margin to cover any payments, contingent or otherwise, due under the contract.[114]

In reality, derivatives contracts fall along a spectrum from highly traded, very liquid exchange-traded derivatives to individualized, highly negotiated, and illiquid derivatives contracts.[115] There are even private exchanges, where only a limited number of institutions may trade.[116] Additionally, as particular OTC derivatives contracts become more popular and standardized, they can evolve (in a process referred to as commoditization) into standardized contracts entered into on a highly formalized and regulated derivatives exchange.[117]

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111. Brown-Hruska, *supra* note 109, at 24.

112. "Offsetting" refers to entering into a derivatives contract that neutralizes the obligations owed and rights held under a previous derivatives contract. JOHNSON & HAZEN, *supra* note 11, at 28–29. For example, if a counterparty is long on a wind derivative and then enters into a wind derivatives contract with identical terms but takes the short, or opposite, position, he has offset his original position. (In fact, it can also be said that just as the second contract offset the first, the first offsets the second.) One can offset with his original counterparty or with a third party. If the terms of the second contract are not identical to but are similar to the original contract, the original contract may still be deemed to have been offset, but not perfectly offset. In such a case, the common party to both contracts will retain some level of contractual rights and responsibilities, which represents the gap between the respective terms of imperfectly offsetting contracts. On an exchange, where most contract terms are standardized, a long (short) position in a standardized contract on, let's say, future silk worm cocoons, may be used to offset a previously entered into short (long) position in a standardized contract on future silk worm cocoons, and such residual rights and responsibilities may simply result in the payment or the receipt of a lump sum of cash representing the price difference in the two contracts. When a clearinghouse novates a contract, it has perfectly offsetting positions in the resulting two contracts.

113. DUFFIE ET AL., *supra* note 37, at 1–9.

114. Brown-Hruska, *supra* note 109, at 29–31.

115. *See id.* at 21, 31–38 (discussing how OTC markets will often adopt multilateral credit risk management techniques that typically characterize formal exchanges).

116. *See* DUFFIE ET AL., *supra* note 37, at 4–7.

117. Christopher L. Culp, *The Social Functions of Financial Derivatives*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT, *supra* note 29, at 57, 59 ("Distinctions between exchange-traded and off-exchange derivatives have blurred.").

B. Asset as the Underlying

The payoffs of many derivatives (and their values before their payoff dates) are a function of the value or price of some asset or thing that can be possessed. For example, the payoff of a stock option on a share of IBM is a function of the market price of a share in IBM at the exercise date of the option. The payoff of a wheat future is a function of the market price of wheat at the expiration of the wheat futures contract. However, not all derivatives share this feature. The "underlying" for many derivatives are events, values, or other metrics that have no intrinsic price and cannot be possessed; the underlying of a derivative need not be an asset or a thing with intrinsic value.

The payoffs of the Super Bowl derivatives described above, for example, are not a function of the market price of any asset or thing. The payoffs of many well-known marketplace derivatives, such as many credit default swaps, interest rate swaps, and weather derivatives, are also not a function of the price or value of an underlying asset or thing, but rather of some event or metric.

C. Zero-Sum Transactions vs. Value-Creating Transactions

As stated above, derivatives are often understood to be zero-sum transactions. In the narrow sense that the monetary wealth received by one counterparty is obtained from the other counterparty, this understanding is correct. Many derivatives contracts, however, do create non-monetary wealth and hence, are not strictly zero-sum transactions. Derivative transactions that create such value are those that transfer ownership of assets, transfer pre-existing risks, and provide entertainment or recreational utility. Additionally, those that provide none of these benefits might still provide positive social externalities.

1. Deliverability of the Underlying Asset

Some derivatives have underlyings that are assets or rights capable of being physically delivered from the selling counterparty to the buying counterparty upon the expiration of the derivatives contract. Such deliverable assets include agricultural commodities, metals, minerals, foreign currency, corporate stock, emissions permits, electricity, or even the right to become a counterparty to an option, future, or other derivatives contract.[118]

It is hard to imagine that anyone but producers or consumers of these assets wants to actually effect physical delivery of such assets.[119] It is

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118. JOHNSON & HAZEN, *supra* note 11, at 7–11, 173–74, 389–94; KOLB & OVERDAHL, *supra* note 39, at 2–4, 21–24.

119. CHANCE & BROOKS, *supra* note 74, at 272–73.

easy to imagine, however, that a cereal producer that has purchased rice futures might actually want the underlying rice delivered upon the expiration of its rice futures contract or that a manufacturing firm that sold carbon emissions options and actually possessed more emission permits than it needed might want to deliver those permits to the buying counterparty upon the expiration of its option contract and the payment of any exercise price.

Other underlyings, however, are impossible or impractical to deliver. As discussed above, such undeliverable underlyings include interest rates, foreign exchange rates, broad securities indexes,[120] the temperature, hurricanes, terrorism, foreign governments,[121] and the final scores of Super Bowls. In fact, as of June 2010, the CFTC had approved approximately 500 contracts for exchange trading in which the underlying was not deliverable and had no cash market, including company-specific earnings per share, inflation indexes, payrolls, retail sales data, unemployment claims, company-specific mergers and acquisitions, state-specific and national crop yields, movie box office receipts, and weather measurements.[122]

The CFTC recently approved for exchange trading two movie box office receipt derivatives related to the movie *Takers*.[123] This prompted one member of the CFTC to write in a dissent that the Commission was interpreting the Commodities Exchange Act's ("CEA's") definition of "commodity" too broadly:

> In interpreting the CEA, we are to exercise some modicum of common sense in determining whether or not there is a public interest in deeming some "thing" a commodity for purposes of federal on-exchange derivatives regulation. Otherwise, the statute is meaningless; unless some sensible judgment is exercised, we could approve terrorism contracts, or contracts on whether a certain movie star will die or become disabled, or contracts on the likelihood of UFOs hitting the White House.[124]

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120. Delivering the basket of securities that comprise a broad securities index is impractical and not done. *See* Hazen, *supra* note 10, at 1018; *see also* Raines & Leathers, *supra* note 39, at 97 (comparing derivatives with non-deliverable underlyings to illegal bucket shop transactions).

121. Foreign governments may be a reference entity in, for example, a credit default swap also referencing that government's sovereign debt.

122. Statement of the Commission, U.S. Commodity Futures Trading Comm'n, June 14, 2010, at 3, *available at* http://www.cftc.gov/ucm/groups/public/@otherif/documents/ifdocs/mdexcommissionstatement061410.pdf (approving two movie box office receipt derivatives contracts).

123. *Id.*

124. Commissioner Bart Chilton Dissent from Approval of Media Derivatives Exchange's Opening Weekend Motion Picture Revenue Futures and Binary Option Contracts (June 14, 2010), *available at* http://www.cftc.gov/ucm/groups/public/@otherif/documents/ifdocs/mdexdissenting chilton061410.pdf.

Indeed. It is simply not necessary for the underlying to be physically deliverable—let alone actually physically delivered—for a contract to be deemed a derivatives contract.

In addition to there being no need that underlyings be deliverable, there is also no need for a deliverable underlying to be actually delivered. In fact, for the vast majority of exchange-traded derivatives contracts for which the underlying is a deliverable asset, there is no actual physical delivery upon the expiration of the contract.[125] Traders on exchanges will usually enter into a second derivatives contract to offset any possible delivery or receipt obligations they might have under the first contract.[126] For example, someone who sold a million gallons of heating oil under an exchange-traded futures contract may offset this position before the expiration of that contract by buying a million gallons of heating oil in a second futures contract. He has neutralized his obligation to deliver or receive any heating oil at all and will only gain or lose monetary wealth based on the difference between the price at which he sold the heating oil and the price at which he bought the same amount of heating oil.

Alternatively, although the derivatives contract may provide for the parties to ultimately decide to effectuate the delivery of the underlying asset at the expiration of the contract, it also may provide that the parties can merely settle their respective accounts towards each other through the netting of those accounts and the exchange of a lump sum of money from one counterparty to the other. The vast majority of derivatives contracts—both exchange-traded and OTC—under which delivery is possible are offset or settled in this fashion.[127]

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125. CHANCE & BROOKS, *supra* note 74, at 11; S. L. GUPTA, FINANCIAL DERIVATIVES (THEORY, CONCEPTS AND PROBLEMS) 16 (2006) ("[H]ardly one to two percent [of] derivatives are settled by the actual delivery of the underlying assets. As such speculation has become the primary purpose of the birth, existence and growth of derivatives."); ROBERT W. KOLB & JAMES A. OVERDAHL, UNDERSTANDING FUTURES MARKETS 15–17 (6th ed. 2006); KOLB & OVERDAHL, *supra* note 39, at 23 (noting that for the fiscal year ending in September 2005, less than one percent of futures contracts were settled by either physical delivery or cash delivery); THE CHICAGO BOARD OF TRADE HANDBOOK ON FUTURES & OPTIONS 67 (2006) ("Surprisingly, only 1 to 3 percent of all futures contracts result in delivery of the actual commodity.").

126*. See supra* note 112 and accompanying text (noting that "offsetting" refers to a party to a derivatives contract entering into a second derivatives contract that neutralizes the obligations owed and rights held under the previous derivatives contract).

127. Hazen, *supra* note 10, at 990 ("[M]ost futures contracts, even with regard to the agricultural commodities markets, do not result in actual delivery."). Note the very close similarity between offset and settlement and how the law has come to be more accepting of offsetting transactions than settlements. *See* Stout, *Why the Law Hates Speculators*, *supra* note 10, at 719–20. Also note the close relationship between underlyings as assets.

Derivatives contracts that result in the physical delivery of the underlying asset are almost always between counterparties who are hedging risks associated with their non-financial business activities; they are almost certainly producers of the deliverable asset, consumers of the deliverable asset, or middlemen engaged in the shipment, processing, or distribution of the deliverable asset. Derivatives contracts that result in physical delivery are *not* zero-sum transactions, both because there is presumably some consumer surplus enjoyed by the contract buyer and some producer surplus enjoyed by the contract seller.[128]   As a result, like any free exchange between willing parties, such contracts are socially beneficial.[129]

Historically, there was an assumption that derivatives contracts must have a deliverable underlying to be enforceable. This notion harkens back to a time when common-law courts considered "difference contracts," or what we today commonly refer to as commodity futures contracts, to be a form of gambling, and, as such, legally unenforceable[130] unless they provided for the physical delivery of the underlying commodity.[131] The common law assumed that if at least one counterparty either intended to hedge a risk associated with ownership of the underlying commodity or intended to actually buy or

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128. For a more detailed discussion of hedging, speculation and the nature of zero-sum transactions, see *supra* Part II.C.

129. *See* Lynch, *supra* note 43 (describing in detail the wealth created when the underlying commodity of a derivatives contract is actually delivered).

130. Rumsey v. Berry, 65 Me. 570, 574 (1876); *see also* HEIDI MCNEIL ET AL., UNDERSTANDING GAMING LAW ISSUES: LEADING LAWYERS ON UNDERSTANDING RECENT CHANGES IN STATE AND TRIBAL GAMBLING, HANDLING ECONOMIC AND REGULATORY PRESSURES, AND ANTICIPATING FUTURE LEGAL TENSION 8 (2010) (discussing changes in Indian gaming law); Edwin W. Patterson, *Hedging and Wagering on Produce Exchanges*, 40 YALE L.J. 843, 852–53 (1931) (tracing judicial and legislative hostility toward wagering agreements); Stout, *Why the Law Hates Speculators*, *supra* note 10, at 715 ("Common law courts regarded speculation as a type of wagering rather than a useful form of economic commerce. Thus difference contracts, like private wagers, were declared legally unenforceable.").

131. In the 1884 case *Irvin v. Williar*, the Supreme Court articulated this rule against difference contracts:

> The generally accepted doctrine in this country is . . . that a contract for the sale of goods to be delivered at a future day is valid, even though the seller has not the goods, nor any other means of getting them than to go into the market and buy them; but such a contact is only valid when the parties really intend and agree that the goods are to be delivered by the seller and the price to be paid by the buyer; and if, under the guise of such a contract, the real intent be merely to speculate in the rise or fall of prices, and the goods are not to be delivered, but one party is to pay to the other the difference between the contract price and the market price of the goods at the date fixed for executing the contract, then the whole transaction constitutes nothing more than a wager, and is null and void.

110 U.S. 499, 508–09 (1884); *see also* Stout, *supra* note 10, at 715 (discussing the common law approach to difference contracts).

sell the underlying commodity, the derivatives contract provided an economic interest beyond mere price speculation.[132]   Given this assumption, the common law invalidated difference contracts for which the underlying commodity could not be delivered. Hence, this was a way that the common law invalidated a subset of purely speculative derivatives.[133] This historical background highlights the fact that some derivatives, like those used for commercial purposes or for hedging, provide long-recognized social benefits, while others, such as those in which both counterparties are mere speculators, are merely a form of wagering with debatable social benefits.[134]

2. Derivatives as Hedging Mechanisms

Perhaps the most significant characteristic of some derivatives contracts, and the source of the most confusion within the popular understanding of derivatives, is hedging. Some counterparties enter into derivatives transactions to hedge—or insure—against some pre-existing risk they bear.[135] An entity that bears a risk can reduce or eliminate that risk by contracting with a third party that is willing to assume that risk, usually at a price. When one or both counterparties enter into a hedging transaction, the insurance value obtained by the hedging counterparty is the most obvious wealth generated by the transaction. Furthermore, the counterparty assuming the pre-existing risk from the hedging counterparty may also gain value from the transaction. He may charge a premium for assuming the risk, or he may have superior information about the future movement of the underlying. Hedging transactions, therefore, should generally be seen as positive-sum transactions.[136]

Indeed, enabling hedging is the *raison d'être* for the existence of derivatives, and without this characteristic, it is doubtful that the

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132. The validity of this assumption is certainly doubtful, especially in the case where the underlying is a highly liquid financial asset.

133. To improve the probability that courts would enforce their contracts, speculators in purely speculative derivatives contracts quickly learned to put a deliverability provision in each contract, even though the counterparties understood between themselves that they intended not to require physical delivery or otherwise exercise such a provision. Without the authority of the courts supporting them, speculators also resorted to establishing private derivatives exchanges and clearing systems that would mutualize counterparty risk, thus policing and best ensuring that each counterparty would honor its purely speculative derivatives agreements. Stout, *Regulate OTC Derivatives*, *supra* note 12, at 30.

134. For a discussion of purely speculative derivatives, or PSD contracts, see generally Lynch, *supra* note 43.

135. Hazen, *supra* note 91, at 438 ("The risk-shifting function of derivatives contracts thus operates as a type of insurance.").

136. For a discussion of the social benefit and the consumer and supplier surpluses created from hedging derivatives transactions, see Lynch, *supra* note 43.

modern derivatives industry would have developed.[137]   However, it is not necessary to be engaged in hedging to participate in the derivatives markets, and many counterparties enter into derivatives transactions without needing or desiring to hedge any previously-existing risk.[138] For the purposes of this Article, a person or entity that enters into derivatives contracts without hedging a pre-existing risk is a speculator.[139]

  A common example of using derivatives to hedge against a pre-existing risk is when an asset owner hedges against the risk that the market price of the asset will decline. A classic example is the farmer

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137. Derivatives provide some positive externalities, in particular facilitating price discovery and stabilizing cash prices. Culp, *supra* note 117, at 58–60; Lynch, *supra* note 43. However, it is doubtful that this benefit would be enough to prompt the development of a large and robust derivatives market.

138. Hazen, *supra* note 10, at 990 ("[O]ption contacts can be used either for speculation or to hedge existing securities . . . ."). Some commentators defend the existence of derivatives by pointing out that they are useful for hedging, but fail to note that they may be used for purely speculative purposes. *E.g.*, Bricknell, *supra* note 10, at A19.

139. Although the term "speculator" is used to mean various things in other investment contexts, for the purposes of this Article, a "speculator" in a derivatives contract means a counterparty who enters into the contract without the motivation to hedge a pre-existing risk. The holder of a put option who is not hedging a pre-existing risk is a speculator. The purchaser of a credit default swap on a debtor or a debt security who is not otherwise exposed to the risk that that debtor or that debt security experiences a credit event is a speculator. The non-hedging sports bettor is a speculator. A weather derivatives trader who is not exposed to any risk from the weather becoming hotter or colder, wetter or dryer, is a speculator. And so on. With regard to other contexts, as Professor Stout and others have noted, "The exact meaning of the term ['speculation'] . . . has proven remarkably elusive." Stout, *Why the Law Hates Speculators*, *supra* note 10, at 735; *see also* Martin S. Fridson, *Exactly What do You Mean by Speculation?*, J. PORTFOLIO MGMT., Fall 1993, at 29–30 (noting the lack of a universally accepted definition of the word "speculation"). Many, including Professor Stout, have used the term "speculation" to mean "the purchase of an asset with the intent of quickly selling it, or the sale with the intent of quickly repurchasing." Stout, *Why the Law Hates Speculators*, *supra* note 10, at 703 n.1; *see also* Hazen, *supra* note 10, at 994 ("[E]vidence suggests that most speculative behavior is short-term."). Professor Hurt has defined "speculation" as "the assumption of unusual, but considered, risk for the prospect of commensurate gain." Hurt, *supra* note 37, at 374; *see also* Shaheen Borna & James Lowry, *Gambling and Speculation*, 6 J. BUS. ETHICS 219, 221 (1987) (noting the difference between "price speculation," i.e., the "purchase (or sale) of goods with a view to re-sale (re-purchase) at a later date, where the motive behind such action is the expectation of a change in the . . . prices . . . and not a gain accruing through their use, or any kind of transformation effected in them or their transfer between different markets," and "creative speculation," i.e., the "utilization of resources in an effort to create new wealth under conditions when certain future events, which are bound to affect the outcome of present decisions, have not yet occurred and not one can possibly know what they will be like"); Hurt, *supra* note 37, at 378 (using "speculation" to refer to activities in which skill plays only a limited role). These meanings of "speculation," which emphasize either the expected temporal nature of an investment holding, the size or character of the risk incurred, or the investing skill (or lack thereof) of the investor, are not how this Article uses the term. In the world of derivatives counterparties, one is either hedging an existing risk or speculating (or in some case doing both simultaneously, e.g., in cases where a counterparty's rights under a derivatives contract are greater than necessary to hedge a risk or otherwise imperfectly aligned to the risk being hedged).

who, in the spring, sells his expected autumn harvest using a futures contract. This contract locks in the price for his harvest, and he is thus no longer subject to the risk that the market price of his crops will fall by harvest time. The risk of market price declines has been shifted to the farmer's counterparty.[140]

Alternatively, an asset owner could purchase a "put option," the right to make his counterparty, the put option seller, purchase the asset for some pre-determined minimum amount. For example, an investor owning 1000 shares of ABC Corporation stock that is currently trading at $12 per share may want to limit the risk of a price decline. In such a case, an appropriate hedge strategy would be to buy a put option with a strike price of $10 per share.[141] This would guarantee that any time until the expiration date, the investor could sell the stock for $10 per share. Buying the puts will cause the investor to incur the cost of the premium, thereby increasing his total cost, but he has limited the risk of greater loss.[142]

A creditor can use a credit default swap to hedge against credit risk. Imagine an investor has purchased the debt securities of XYZ Corporation. The investor has just incurred the risk that XYZ Corporation will default on its debt payments to him. To hedge (or lay off) this risk, the investor could enter into a credit default swap with a willing counterparty wherein the investor pays a certain amount of money to that willing counterparty for the right to receive from the counterparty a payment in the event XYZ Corporation experiences a credit event such as a downgrade in its credit rating or an actual default on the loan payments to the investor. In this sense, the investor's entering into a credit default swap is very much like purchasing debt insurance.[143]

Similarly, derivatives can reduce the risk faced by a lender and a borrower and thus facilitate financing arrangements. For example, a farmer may need financing to enable him to plant, grow, and harvest a

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140. For a more detailed explanation of futures contracts, see *supra* notes 75 and 77.

141. For a description of "strike prices," see *infra* note 145 and accompanying text.

142. Hazen, *supra* note 10, at 990 n.6. Hedging against a possible decline in the market value of an asset need not involve the actual physical delivery of the asset to the protection-selling counterparty. If the asset value falls enough to trigger an obligation on the part of the protection-selling counterparty to provide compensation, the protection-selling counterparty, instead of buying the asset for a pre-determined price, simply pays the hedging counterparty an amount of cash to make up the difference between, for example, the current market price and the pre-determined sales price. In other words, as long as a contract can be cash-settled, physical delivery is not necessarily required to achieve the hedging benefits. For a discussion of the cash settling and the related process of offsetting, see *supra* note 112 and accompanying text.

143. For a more detailed explanation of credit default swaps, see *supra* note 76 and accompanying text. *See generally* Partnoy & Skeel, *supra* note 81, at 1019.

crop, let's say rice. A bank considering extending a loan to the farmer may demand that the farmer pledge the harvest as collateral. However, the rice to be harvested does not exist prior to concluding the loan, so it is uncertain whether or not the market value of the rice at the time of harvest will provide adequate security for the loan. In such a case, the lender, to eliminate its risk, may require the farmer to enter into a futures contract for rice (as the rice-selling counterparty), thus insuring the farmer against a decline in the market price of rice. The lender would then require the farmer to pledge to him any proceeds he might receive under that futures contract.

Event risks can also be hedged. An amusement park owner might enter into a temperature derivatives contract to hedge against summer heat waves (or hurricanes or earthquakes or blizzards) that predictably lower attendance at, and revenue generated by, his amusement park. Weather derivatives can also be used by farmers to hedge against unfavorable weather conditions for their crops. If the weather is too wet for some crops, for example, a farmer might not get the crop yield he expects but would be compensated for that deficiency under a rainfall derivative.

Derivatives can also be used to hedge the risk posed by other derivatives. One might refer to such transactions as "hedging one's bets." Indeed, whenever a counterparty to one derivative enters into an offsetting derivatives contract, as previously explained, he is really just hedging the risks posed by the earlier derivatives contract.[144]

Imagine a senior executive of ABC Corporation who has been awarded stock options in his company as part of his compensation but who cannot exercise those options for three years (the "exercise date"). As a result, the executive bears the risk that the market price of a share of ABC Corporation will be lower three years hence than it is now or even lower than the pre-determined price at which the executive has the

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144. This notion that a derivatives risk can be hedged by a second derivative (or a set of additional derivatives) is important to emphasize because it highlights the fact that a derivatives speculator, as soon as he enters into a speculative derivatives contract, assumes a risk that is itself immediately hedgeable; he becomes a potential hedger. And, if two speculators enter into a derivatives contract and create—out of nothing—new (or what is sometimes referred to as "artificial") risk, they each become potential hedgers who may re-enter the derivatives market at a later time to lay off that risk. *See* Lynch, *supra* note 43 (explaining the "risk-hedging" model of speculator-hedger derivatives contracts). A risk, whether or not it is created in such a purely speculative derivatives contract or not, can be transferred, in theory, an infinite number of times using an infinite number of subsequent derivatives contracts. If these contracts are not cleared, the collective notional amount of derivatives contracts transferring this one risk back and forth between counterparties can be infinite. *See* Wallison, *supra* note 12, at 37 (demonstrating how the notional amount of outstanding derivatives contracts may be misleading since a risk may be passed from one party to another, to another, and so on through a series of still-outstanding contracts).

right to buy shares of ABC Corporation, i.e., the "strike" price, rendering his stock options worthless. To hedge this risk, the executive could purchase put options with (i) strike dates the same as the strike dates of his call options (ii) for an equivalent number of shares in ABC Corporation as he holds in stock call options and (iii) at the current market price of a share in ABC Corporation. In doing so, he would insure against any decline in share market price.[145]

It would even be possible to enter into a sports bet—i.e., a sports derivative—to hedge an existing risk. For example, the owner of a Pittsburgh Steelers-themed sports bar in downtown Pittsburgh may be able to predict with near certainty that his revenues will be much higher in the month after a Steelers' Super Bowl victory, when euphoric fans yearn to celebrate with like-minded friends, than after a Steelers' Super Bowl defeat, when depressed and frustrated fans are much less likely to revel in a Steelers-themed sports bar. The bar owner thus has a risk that the Steelers will lose. It would be reasonable, therefore, for him to hedge this risk by entering into a sports derivative wherein he bets against the Steelers. In the 2011 Super Bowl, the Steelers players also faced a risk that they would lose. For example, each player on the 2011 Super Bowl-winning team was awarded $83,000 in prize money[146] and a diamond-encrusted ring, had the thrill and emotional satisfaction of winning his sport's ultimate prize, and may get to enjoy professional bonuses and the ability to command future salary premiums as a result of being a Super Bowl winner. However, each player on the losing team earned only $42,000 in prize money, did not receive a ring, and

145. A strike price of less than then prevailing market price, but above the call option's strike price, would hedge some of the executive's risk but not all of it. A put option with a lower strike price would, however, be less costly to purchase. ROBERT W. KOLB & JAMES A. OVERDAHL, FINANCIAL DERIVATIVES 103–06 (3d ed. 2003). In order to ground this example numerically, assume that the call options are for one million shares at a strike price of $10.00 a share, and assume that the market price of a share in ABC Corporation was $12.00 and the put option was also for one million shares with a strike price of $12.00. If in three years the market price of a share in ABC Corporation is still $12.00, the executive can exercise his call options purchasing one million shares at $10.00, then immediately sell these shares at the market price of $12.00, thus netting $2 million in the process. Imagine, however, that the market price of a share in ABC Corporation drops to $10.50 on the strike dates. In this case, the executive would exercise his call options purchasing $10.5 million worth of shares for $10 million and then immediately put these shares to his put option counterparty for $12 million, netting for himself $2 million. In either case, the executive makes $2 million, even though in the second scenario the market price of a share in ABC Corporation declined over the course of the three years. (Note, however, that the executive did have to pay for that hedge by paying a premium to the put option seller.) Alternatively, the executive could hedge his risk by instead buying put options in the stock of a company whose stock prices are highly correlated with his own company's stock prices.

146. Peter King, *Monday Morning Quarterback*, SPORTSILLUSTRATED.COM (Jan. 20, 2009, 2:39 PM), http://sportsillustrated.cnn.com/2009/writers/peter_king/01/20/mail/.

had to process the negative emotions of a loss.[147] The team owner had certain risks associated with a Steelers loss, and even rabid Steeler fans had the risk of disappointment and other emotional costs. If any of these people—the players, the team owner, or the rabid fans—were to bet against the Steelers to cut their losses in the event of a Steelers loss, they would be hedging their risk with a sports derivative.[148]

Of course, one generally does not think of people betting against their own team to hedge the risks of their team losing.[149] More typically, one gambling on sports is either otherwise largely agnostic about the outcome of the game or bets in favor of the team with which his loyalty lies. In such cases, the derivative is not one entered into for the purpose of hedging, but rather ought to be considered a mere speculative bet.[150]

What should be immediately obvious is that—just like a sports bet against the Steelers made by someone who has no interest in a Steelers' victory—one need not have a risk to hedge in order to enter into a derivative. A seller of a wheat future need not produce wheat or have a pre-existing risk that the market price of wheat will drop. The purchaser of a credit default swap referencing a debtor corporation or a

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147. *Id.*

148. And, of course, a sports derivative risk can be hedged with a second sports derivative. For a simple example, recall Steve's $10 bet with Patrick over who would win the 2011 Super Bowl. Steve bet on the Steelers and Patrick bet on the Packers. Imagine that before the game, Steve obtained new information that caused him to update his prediction on who would win, perhaps a key Steelers player gets injured, and Steve becomes much less confident that the Steelers will win. In such a case, he can place another bet with Alex, in which Steve bets on the Packers for $10. Thus, no matter who wins the game, Steve's net payoff between the two contracts will be zero; he has perfectly hedged his original bet. Alternatively, and more realistically given the injury to the star Steelers player and the market's reasonable reaction to it, Steve might make a bet with Alex where Steve takes the Packers, but Steve and Alex agree that if the Packers win, Alex owes Steve $8, but if the Steelers win, Steve owes Alex $11. Thus, Steve has hedged his bet, but imperfectly; he still bears some risk. If the Steelers win, Steve's net payoff will be negative $1, and if the Packers win, his net payoff will be negative $2. He will have a negative payoff regardless of the outcome of the game, but the most he can lose is $2, which is much less than the $10 he feared before entering into the offsetting transaction.

149. *But see* Hazen, *supra* note 91, at 434–36 (describing ways that sports bets can hedge the pre-existing risks of sports owners and city merchants); Thomas Lee Hazen, *Filling a Regulatory Gap: It Is Time to Regulate Over-the-Counter Derivatives*, 13 N.C. BANKING INST. 123, 126–27 (2009) (describing how the owner of a hotel located near a sports stadium can bet against the local team to hedge against the risk that the team will not make the playoffs jeopardizing the hotel's opportunities to rent rooms).

150. It is, in other words, gambling. For more discussion on speculative derivatives trading and gambling, see Part III.B. Though a sports bet might not be used to hedge an existing risk, it may be more than "mere" speculation since some gamblers receive entertainment value from sports betting; they might enjoy the process of gambling and the anticipation of the final result. Such personal entertainment utility is worth something and should be valued. Guy Calvert, *Gambling America: Balancing the Risks of Gambling and Its Regulation*, CATO INST. (June 18, 1999), http://www.cato.org/pubs/pas/pa349.pdf. For a discussion of the entertainment utility of gambling, see *infra* Part II.C.5.

particular debt security does not need to own the debt securities of that corporation or otherwise bear any risk that the corporation becomes less creditworthy.[151] And a put option purchaser need not hold call options on the same underlying assets or have any pre-existing risk that the market price of the underlying asset will decline in price. In theory—without reference to prevailing derivatives law—someone can engage in any of these activities provided a willing counterparty can be found to take the opposite side of the transaction.

   Since a derivatives counterparty can be either a hedger or a speculator and nothing else,[152] there are only three types of derivatives contracts: (i) hedger-hedger contracts, (ii) hedger-speculator contracts, and (iii) speculator-speculator contracts.[153] It is possible—and, indeed, common—for a counterparty to a single derivatives contract simultaneously to be hedging a pre-existing risk *and* speculating. Such would be the case if a hedger enters into a derivatives contract that is not narrowly tailored to reduce or eliminate a pre-existing risk without creating new, additional risk. If the derivatives contract creates risk, which is not effectively hedged or neutralized itself by the pre-existing risk, the counterparty has exposed himself to a new risk, thus engaging in speculation regarding that piece of "over-protection." For purposes of this analysis, however, such derivatives contracts can be considered two derivatives contracts: one in which the particular counterparty is only hedging and another in which that same counterparty is speculating.[154]

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151. Bell & Dawson, *supra* note 39, at 553 ("It is worth noting that, *since* [a credit default swap] *is a derivative*, *there is no reason* why the credit protection buyer should have an actual exposure to the reference entity or be the holder of the reference obligations." (emphasis added)).

152. Some might claim that there is a third category of derivatives counterparties, called arbitrageurs. *See, e.g.*, Feder, *supra* note 10, at 720 (discussing arbitrageurs as a third type of derivative). Arbitrage, however, merely denotes a trading strategy, not whether or not a derivatives contract counterparty is speculating. An arbitrage strategy within the derivatives context is simply strategic offsetting. To arbitrage between two different markets is merely to enter into offsetting contracts in two different markets where the going prices are different at a particular point in time. For example, a party might buy 1000 bushels of future wheat at $10,000 in one market while simultaneously selling 1000 bushels of future or spot wheat at $10,100 in another market. Assuming that the market prices converge (and there is no physical delivery required, which would force the trader to incur transaction costs associated with delivery or receipt of delivery), the arbitrageur would make $100 profit (not including transaction costs).

153. Understanding the distinction between hedgers and speculators is critical to understanding derivatives, in part because it is possible for two counterparties to a derivatives contract to be speculators. Such purely speculative derivatives contracts are problematic and often harm both the counterparties and society generally. I expand on these observations in Part II.C.3 and in greater detail in a companion article. Lynch, *supra* note 43.

154. If both counterparties incur risk beyond that which neutralizes their respective pre-existing risks, and if those two counterparties' pre-existing risks are not mirror images of each other, their one derivatives contract may be deemed a combination of as many as four derivatives

3. Purely Speculative Derivatives

Speculator-speculator derivatives contracts are derivatives contracts in which neither counterparty is hedging a pre-existing risk. This Article terms these contracts "purely speculative derivatives contracts" ("PSDs" or "PSD contracts"). PSDs are zero-sum transactions in the same narrow sense that all derivatives are zero-sum transactions, but more broadly, they may be positive-sum transactions[155] or negative-sum transactions[156] depending on their contexts and the circumstances and motivations of the counterparties. A companion piece discusses how PSDs are problematic, how they are essentially equivalent to gambling (since, like the Super Bowl derivatives described in the Introduction, there is no risk hedging or commercial wealth created), and how they can create both troublesome negative externalities and also certain positive externalities.[157]

4. Entertainment

PSD contracts are, based on this framework, identical to what we commonly refer to as gambling or wagering. And the *process* of gambling—at least what we commonly call gambling, e.g., casino gambling, bets between friends, lotteries, horse races, fantasy baseball leagues—can often be entertaining for one or both of the counterparties. It is easy to imagine that the Super Bowl derivatives described in the Introduction would be entertaining for Steve and Patrick. Even though the winner in such a derivatives contract will take his winnings from the pocket of the loser, a PSD transaction that provides entertainment value is a positive-sum transaction, precisely because it does create such value.[158] For a more detailed discussion of the relationship between

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contracts: (i) a hedger-hedger contract, (ii) a hedger-speculator contract, where counterparty A is the speculator, (iii) a hedger-speculator contract, where counterparty B is the speculator, and (iv) a speculator-speculator contract. *See* Lynch, *supra* note 43 (discussing derivative contract combinations); Stout, *Why the Law Hates Speculators*, *supra* note 10, at 735–40, 743–46 (discussing various speculation models).

155. Some PSD contracts provide certain positive externalities such as price discovery for the underlying commodity and may create value for one or both of the counterparties in the form of entertainment. *See infra* Part II.C.4 (discussing entertainment value as a positive-sum transaction); *see also* Lynch, *supra* note 43 (explaining positive-sum transactions).

156. PSD contracts that do not provide entertainment for the counterparties are negative sum transactions for the average counterparty because each incurs transaction and opportunity costs engaging in a PSD. Lynch, *supra* note 43.

157. *Id.*

158. The entertainment value discussed here lies in part in the process of gambling and anticipating the outcome. It is not unlikely that gambling winners also experience some joy upon winning their bets. Of course, losers are likely to experience some amount of pain. Given loss aversion, it is not unlikely that the pain experienced by a losing gambler may be greater than the joy enjoyed by the winner. If the loser's pain is great enough relative to the winner's joy, the

what is commonly referred to as derivatives and what is commonly known as gambling, see Part III.B below.

D. Structuring and Pricing Issues

A large portion of the finance literature on derivatives and many of the resources of Wall Street derivatives dealers and brokers are devoted to issues of pricing and structuring.[159]   This is the real source of complexity in the derivatives world.   Since much of the derivatives market is comprised of hedging counterparties, it is necessary for derivatives to be designed to perfectly (or nearly perfectly) hedge that risk and to ensure that speculators will be willing to assume that risk for a rational price.   Under-coverage leaves a putative hedger subject to risk he would rather lay off, and over-coverage subjects him to speculative risk he may not want.   Indeed, a derivatives contract can be simultaneously too narrow to completely hedge against an unwanted risk and too broad such that speculative risk is created.

Since many hedgers want to enter into derivatives contracts that are tailored to perfectly hedge their pre-existing risks, and since there are so many risks one could hedge against, much academic attention is given to determining how to rationally structure derivatives and how to develop new ones that can hedge additional risks.[160]   There is also substantial literature on how to determine price terms so that a contract may be fairly priced for both counterparties or so that speculators can discover and invest in underpriced derivatives.[161]

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overall transaction, from contract execution to payoff and emotional aftermath, may be value-destroying. And, indeed, not all casino gambling is enjoyable. Gamblers may be addicted or may be gambling in a desperate attempt to recoup prior losses. Nevertheless, presumably some PSDs are positive-sum transactions because, in the aggregate, they entertain.

159. For example, all six of the major articles in the most recent issue of the *Journal of Derivatives* address derivatives structuring and pricing methodologies. 18 J. OF DERIVATIVES (Summer 2011). Three of the four major articles in the most recent issue of the *Journal of Futures Markets* address derivatives structuring and pricing. 31 J. FUTURES MARKETS (Sept. 2011). The web page for the *Review of Derivatives Research* states, "the *Review* publishes high quality articles dealing with the pricing and hedging of derivative assets on any underlying asset." *Review of Derivatives Research*, SPRINGER.COM, http://www.springer.com/business+%26+ management/finance/journal/11147 (last visited Aug. 15, 2011).

160*. See supra* note 159 (listing various publications that address derivatives structuring and pricing methodologies).

161. Many derivative classes have commonly accepted pricing methods. For example, European stock options are commonly priced using the "Black-Scholes" formula, which takes into consideration, among other things, the strike price, the time until the expiration date, and the past volatility of the stock's market price. Other categories do not have commonly accepted pricing methods, and finance scholars devote a lot of resources determining the best way to price different derivatives. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 16, at 13 ("[I]t may be difficult for market participants to agree on the valuation of CDS contracts on ABS and CDOs."); *see, e.g.*, Hyungsok Ahn & Paul Wilmott, *Stochastic Volatility and Mean Variance Analysis*,

Although it may sometimes be important for policy makers, regulators, and legal analysts to understand the details associated with derivatives structuring and pricing, it is certainly important that they understand that these issues dominate much of the derivatives industry and derivatives research.[162] Knowing this will allow them to more easily ignore irrelevant pricing analysis and to eliminate the fear of treading into the derivatives waters, waters that often appear so turbulent, opaque, quantitative, and incomprehensible to the less mathematically inclined.

III. DERIVATIVES, INSURANCE CONTRACTS, AND GAMBLING

Based on the framework detailed in this Article for understanding derivatives, it is reasonable, and indeed proper, to include both traditional insurance contracts and what we understand as gambling or wagering transactions within the ambit of derivatives.[163] The following are some observations in this regard.

A. Derivatives and Insurance Contracts

First, it is reasonable to include traditional insurance contracts within the ambit of derivatives. After all, the insurance industry's business model involves selling risk protection—in the form of a contract known as an insurance policy—to people and entities that choose to hedge their existing risk by transferring that risk to the (speculating) insurance industry for a price.[164] While others have noted the similarities between

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WILMOTT MAG., Nov. 2003 at 84 (presenting stochastic volatility models for pricing certain derivatives). Consider the payoff formula for the second Super Bowl derivative *supra* note 37. Determining what the fair, efficient, or rational price is for the right to receive that payoff, or the minimum price that one would be willing to accept before accepting the obligation to make that payoff, would be difficult indeed.

162. It should be re-emphasized that despite the regular use of phrases such as "investing in" a derivative or "pricing" a derivative as if derivatives were a mere asset to be owned, derivatives are contracts between two counterparties. "Investing" in a derivatives contract merely means entering into the contract with a counterparty, and "pricing" can refer to any or all of the terms in the derivatives contract and the fact that they can all be made more or less favorable to either counterparty. Price does not simply refer to a monetary term or an initial premium payment (though it often actually does).

163. *See generally* Hazen, *supra* note 91 (suggesting that derivatives include both traditional insurance contracts and gambling or wagering transactions).

164. RAY HODGIN, INSURANCE LAW: TEXT AND MATERIALS 117–18 (2d ed. 2002); GEORGE E. REJDA, PRINCIPLES OF RISK MANAGEMENT AND INSURANCE 8 (11th ed. 2011). Through extensive speculation, insurance companies incur significant risk. They rationally choose to incur this risk, however, by attempting to predict, through the use of actuarial methods, the amount of future payments they will have to make to policyholders and then charging policyholders a premium over this expected amount. These revenues are then pooled and it is from this large pool that insurance premiums are paid, leaving, if all goes according to plan, a remainder that represents, after other costs are deducted, the insurance company's profits. *Id.*; *see also* Lynch,

and indeed common, for both counterparties to a derivatives contract to be speculators.[170]

The primary reason for implementing the insurable interest rule is that without it, an undesirable moral hazard may be created. A non-hedging policyholder would have incentive to murder an insured person or destroy insured property. Undoubtedly, there is wisdom in this rule.[171] A companion article to this one, which examines the nature of PSDs, considers whether or not something like the "insurable interest" rule should be adopted for what we commonly refer to as derivatives.[172]

Because of the similarity between risk-hedging derivatives contracts and insurance contracts, and to reduce the misunderstanding and public ignorance about derivatives, it is time to start referring to risk-hedging derivatives contracts as "private counterparty insurance contracts." This would highlight for all participants the true nature of the derivatives contract and would present an opportunity to differentiate this subset of derivatives from the purely speculative form, the PSD.

B. Derivatives and Gambling

As discussed above, the purely speculative form of derivatives contracts, where both counterparties are mere speculators, is identical to what we commonly refer to as gambling contracts or wagering. Indeed, choosing events and metrics associated with the Super Bowl as underlyings of the hypothetical derivatives described in the Introduction was intended to highlight this identity and to demonstrate, from the outset, that what we commonly refer to as "derivatives," in particular those where no one is hedging a pre-existing risk, are the same as what we commonly refer to simply as "bets." The better we understand such derivatives contracts, the more obvious it becomes that they share their defining characteristics with these Super Bowl bets.

As with the comparison to insurance, there are significant opportunities to draw lessons about derivatives from an analysis of what we popularly know as gambling and its regulation, which is also based

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170. *See* Hazen, *supra* note 91, at 424 ("The moral hazard concern [seen in the case of what we commonly refer to as] insurance—namely, that an insured will be overly insured and therefore be able to profit from an event—is not a limitation imposed on those who opted to 'insure' against certain risk by utilizing derivatives contracts or other hedging mechanisms . . . . [A] derivatives transaction may be made to generate profit."); *id.* at 426 ("It would appear appropriate to either rethink the insurable interest doctrine or attempt to import something comparable into derivatives regulation.").

171. *But see* Loshin, *supra* note 169, at 474 (arguing that the insurable interest doctrine creates perverse incentives and invites unfairness and inefficiency in the insurance market).

172. The companion article is Lynch, *supra* note 43 (noting that the moral hazard argument has some, but only limited, applicability to PSDs since in most cases the counterparties to a PSD do not have the capability of influencing the outcome of the underlying metric or event).

on a long and extensive history.[173] Again, such an analysis is beyond the scope of this Article. It is worth noting, however, that while gambling is not completely prohibited in the United States,[174] where gambling contracts are legally enforceable, they are highly regulated, far more than what we know as derivatives and, in particular, far more than other PSDs.[175] Perhaps PSDs should be scrutinized and regulated to a similar extent.

CONCLUSION

This Article has presented a comprehensive and modern framework for understanding derivatives. Derivatives are simply contracts between two counterparties in which the payoffs to and from each counterparty depend on the outcome of one or more extrinsic, future, uncertain events and/or metrics and in which each counterparty expects such outcome to be opposite to that expected by the other counterparty. Appreciating this more inclusive and precise framework will yield more rational and comprehensive derivatives regulations, including the administrative regulations required to be crafted in the wake of the passage of the Dodd-Frank Act.

Appreciating this framework will also readily allow us to better differentiate between socially beneficial derivatives and those that are more problematic. Such problematic derivatives contracts include those in which both counterparties to the contract are mere speculators. These purely speculative derivatives contracts do not offer the risk-hedging value for which derivatives are rightly touted and are not used to facilitate any commercial transaction in the real economy. They are mere bets. And, as I argue elsewhere, the social benefits of PSD contracts rarely outweigh their costs. Therefore, except for limited circumstances, PSD contracts should be void for public policy reasons.[176]

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173. There have been a handful of legal articles written that explore the core commonalities between derivative transactions and gambling and suggest that it would be preferable to regulate the two types of transactions similarly. *E.g*., Hazen, *supra* note 91, at 375 (comparing derivatives regulation to gambling regulation); Hazen, *supra* note 10, at 987; Hurt, *supra* note 37, at 381–84, 404–05; Stout, *Insurance or Gambling?*, *supra* note 10, at 38.

174. Perhaps the strongest argument for permitting and enforcing what we popularly know as gambling contracts is that gambling can serve as a source of entertainment. For a brief discussion of the entertainment value of such derivatives contracts, see *supra* Part II.C.4.

175. Traditionally, under the common law of contracts, public policy arguments have dictated that gambling or wagering agreements are not enforceable. *See supra* note 130 and accompanying text (discussing the history of derivatives contracts).

176. A companion article to this one closely examines the nature of purely speculative derivatives contracts, analyzes their costs and benefits, and makes the argument that, except in limited circumstances where PSD contracts either serve a valuable discovery price purpose or

Derivatives can be complicated things, and the structural details of some can be extraordinarily difficult to deconstruct and understand. But all derivatives share common elements that make them easily understood as a class. Confidently equipped with such understanding—the understanding facilitated by the framework offered in this Article—regulators, policy makers, and legal analysts will be much better able to design an optimal, rational, and efficient derivatives regulatory apparatus.

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provide desirable entertainment utility for at least one counterparty, PSD contracts should be void on the basis of public policy. Lynch, *supra* note 43.