

Financial Derivatives and the Costs of Regulatory Arbitrage

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I. INTRODUCTION	212
II. CLASSES AND USES OF DERIVATIVES	216
A. <i>Classes</i>	216
1. <i>Forwards/Futures</i>	217
2. <i>Options</i>	218
3. <i>Swaps</i>	218
4. <i>Structured Notes</i>	220
5. <i>Special Purpose Vehicles</i>	221
6. <i>Exotica</i>	222
B. <i>Uses</i>	223
1. <i>Hedging</i>	223
2. <i>Speculation</i>	224
3. <i>Arbitrage</i>	226
III. REGULATORY ARBITRAGE ¹	227
A. <i>Tax</i>	228
B. <i>Accounting</i>	231
C. <i>Investment Restrictions</i>	232
D. <i>Government Subsidies</i>	235
IV. AN ECONOMIC MODEL OF DERIVATIVES USE AND REGULATION	235
A. <i>A Static Model of Financial Regulation</i>	235
B. <i>A Dynamic Model with Regulatory Arbitrage</i>	239
V. OVERCOMING THE COSTS OF REGULATORY ARBITRAGE	242
A. <i>Market Failure</i>	243
1. <i>Agency Costs</i>	243

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1. "Regulatory arbitrage" refers to financial transactions designed to reduce costs or capture profit opportunities created by differential regulations or laws. I discuss the various types of regulatory arbitrage and their effects on financial markets in part III. Although both the term and practice are common within the financial industry, legal scholars only recently have seized the possibility of a relationship between regulatory arbitrage and the explosion in the use of financial derivatives. See, e.g., Lynn A. 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, 57 (1995).

2. Informational Costs	244
3. Externalities	245
4. Moral Hazard	245
B. Categories of Derivatives Regulation	246
1. Self-Regulation	247
2. "Top-Down" Regulation	249
3. "Bottom-Up" Regulation	252
VI. CONCLUSION	254

I. INTRODUCTION

In recent years, financial instruments called "derivatives"² have generated increasing losses, staggering in number and cost.³ These losses spurred attempts by legal scholars to explain what derivatives are,⁴ to analyze the international web of derivatives

2. A "derivative" typically is defined as a financial instrument whose value depends on—i.e., is linked to or "derived" from—some other financial instrument. *See, e.g.*, ATSUO KONISHI & RAVI E. DATTATREYA, *THE HANDBOOK OF DERIVATIVE INSTRUMENTS* 1 (1991) (defining "derivative"); Henry T.C. Hu, *Hedging Expectations: "Derivative Reality" and the Law and Finance of the Corporate Objective*, 73 *TEX. L. REV.* 985, 996-1000 (1995) [hereinafter Hu, *Hedging Expectations*] (discussing various definitions of "derivative"). The Federal Reserve Bank defines a "derivative" as a financial contract whose market value depends on the value of one or more underlying "goods"—the "good" may include a commodity (metal or agricultural product), financial instrument (equity, fixed income, or foreign exchange), or financial index (interest rate or equity). *See* Gerald A. Edwards, Jr. & Gregory E. Eller, *Overview of Derivatives Disclosures by Major U.S. Banks*, 81 *FED. RES. BULL.* 817 (1995). Derivatives include exchange-traded futures and options, as well as over-the-counter (OTC) forwards, options, swaps, structured notes, and more exotic instruments. *See infra* part II. Although derivatives have become infamous only in recent years, they have existed in various forms for thousands of years; even money, in its original incarnation, was a "derivative" because its value was "derived" from its convertibility into gold. *See* Jonathan R. Macey, *Derivative Instruments: Lessons for the Regulatory State*, 21 *J. CORP. L.* 69, 70 (1995) (quoting Professor Robert Merton).

3. *See, e.g.*, Brandon Becker & Jennifer Yoon, *Derivative Financial Losses*, 21 *J. CORP. L.* 218 (1995) (providing a compendium of more than 100 examples of financial losses related to derivatives). Publicly-disclosed losses from derivatives in 1994 alone were approximately \$10 billion, including individual losses of one billion dollars or more by Orange County (\$1.7 billion), Barings Bank (\$1.3 billion), and Metallgesellschaft (\$1 billion). *See, e.g.*, Jason Fox & Diana Horrocks, *The Collapse of Barings*, *INT'L FIN. L. REV.*, Apr. 1995, at 12; Kevin Muehring, *The Year of the Client*, *INST. INVESTOR*, Mar. 1995, at 31 (citing Capital Market Risk Advisors). Following these massive losses, and a brief respite by derivatives issuers and investors, complex derivatives deals are "heating up" again. *See, e.g.*, Tom Pratt, *S&P-Linked Note Mart Sizzles As Three New Deals Emerge*, *INV. DEALERS' DIG.*, May 20, 1996, at 9-10; Laurie Hays & Nikhil Deogun, *J.P. Morgan's Net Rose 72% in First Quarter*, *WALL ST. J.*, Apr. 12, 1996, at A4 ("The derivatives derby is back."). Losses, however, are back as well. *See, e.g.*, Suzanne McGee & Stephen E. Frank, *Metal Detection: Sumitomo Debauch Is Tied to Lax Controls by Firm, Regulators*, *WALL ST. J.*, June 17, 1996, at A1 (discussing Sumitomo Corporation's likely losses of \$2.6 billion and Daiwa Bank Ltd.'s losses of \$1.1 billion).

4. *See, e.g.*, Macey, *supra* note 2, at 71-82; Todd E. Petzel, *Derivatives: Market and Regulatory Dynamics*, 21 *J. CORP. L.* 95 (1995); Henry T.C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 *YALE L.J.* 1457 (1993) [hereinafter Hu, *Misunderstood Derivatives*] (book review); Henry T.C. Hu, *New Financial Products, the Modern Process of Financial Innovation, and the Puzzle of Shareholder Welfare*, 69 *TEX. L. REV.* 1273 (1991) [hereinafter Hu, *New*

regulation,⁵ and to discuss derivatives litigation in the aftermath of these losses.⁶ These efforts continue.

Until recently, most scholars, commentators, and regulators have presumed—despite these losses—that derivatives are, on balance, “good.”⁷ Derivatives, the argument goes, allow corporations, governments, financial firms, and others to:

(1) reduce or hedge exposure to fluctuations in interest rates, foreign exchange rates, equity and commodity prices, and other financial variables; (2) speculate in a less costly and more efficient manner; and (3) capture arbitrage opportunities and thus reduce funding and other financial costs. In the most optimistic⁸ scenario, derivatives benefit the entire financial system by “completing” markets (offering investors and traders risk and return patterns that previously were either unavailable or too costly⁹), by reducing transaction and agency costs, and by increasing liquidity.¹⁰ Certainly, derivatives have been one of the most dynamic forces in financial markets since the 1970s.¹¹ Likewise, the derivatives market is by far the largest market in the world, financial or otherwise.¹²

Financial Products].

5. See, e.g., William P. Albrecht, *Regulation of Exchange-Traded and OTC Derivatives: The Need for a Comparative Institution Approach*, 21 J. CORP. L. 111 (1995); Brandon Becker & Francois-Ihor Mazur, *Risk Management of Financial Derivative Products: Who's Responsible for What?*, 21 J. CORP. L. 177 (1995); Hu, *Hedging Expectations*, supra note 2, at 987-96; Geoffrey B. Goldman, Note, *Crafting a Suitability Requirement for the Sale of Over-the-Counter Derivatives: Should Regulators “Punish the Wall Street Hounds of Greed?”*, 95 COLUM. L. REV. 1112 (1995).

6. See, e.g., William Blair, *Liability Risks in Derivatives Sales*, 1 J. INT'L BUS. L. 18, 19-23 (1996); Lauren A. Teigland, *Derivatives Disputes and Disappointments: The ‘SAD’ Phenomenon of Derivatives Litigation*, 64 Banking Rep. (BNA) 703 (Apr. 3, 1995); Joanne Medero et al., *Investing in Derivatives: Current Litigation Issues*, 8 INSIGHTS 4 (1994).

7. See, e.g., Remarks of Commissioner Steven M.H. Wallman, The Second Annual Conference & Member Meeting End-Users of Derivatives Association, Inc., Apr. 9, 1996, at 2 [hereinafter Wallman] (“As I suspect is true of most of you, I start with the proposition that derivatives, on balance, are good.”) (on file with the author); Hu, *New Financial Products*, supra note 4, at 1274-76; UNITED STATES GENERAL ACCOUNTING OFFICE REPORT TO CONGRESSIONAL REQUESTERS, FINANCIAL DERIVATIVES—ACTIONS NEEDED TO PROTECT THE FINANCIAL SYSTEM 6-9 (1994) [hereinafter GAO REPORT]. By use of the term “good,” I mean efficient or efficiency-creating. Unfortunately, the debate about derivatives thus far has shied from economic analysis. In part IV, I develop an economic model of efficient derivatives regulation.

8. Following the enormous losses in 1994, several optimistic authors strained to explain away the potential harms associated with derivatives. See, e.g., Saul Hansell, *Derivatives as the Fall Guy: Excuses, Excuses*, N.Y. TIMES, Oct. 2, 1994, at C1; Thomas C. Theobald, *Regulatory Chokehold: Derivatives Aren't the Danger*, WALL ST. J., May 23, 1994, at A14. The laudatory comments about derivatives have included one dubious assertion, without analysis, that the “monumental losses have been more than offset by record trading gains from derivatives.” Adam R. Waldman, *OTC Derivatives & Systemic Risk: Innovative Finance or the Dance Into the Abyss?*, 43 AM. U. L. REV. 1023, 1042 (1994).

9. See, e.g., FRANK J. FABOZZI, THE HANDBOOK OF FIXED INCOME SECURITIES 669 (3d ed. 1991). The notion that derivatives “complete” markets is closely related to the concept of “regulatory arbitrage.” If derivatives “fill the gaps” in existing investment opportunities, such gaps may include the inability to achieve a specific payout profile (potentially “good” gaps); alternatively, such gaps may include the inability to engage in a prohibited transaction or to avoid the cost of an existing regulatory requirement (potentially “bad” gaps).

10. See, e.g., Hu, *Misunderstood Derivatives*, supra note 4, at 1465 n.31 (discussing the private and social benefits of financial innovation).

11. See, e.g., Petzel, supra note 4, at 109.

12. The size of the derivatives market is disputed and arguably much smaller than its often-quoted “no-

The other side of the derivatives debate—the minority—includes commentators who argue, at least under certain limited circumstances, that derivatives are, on balance, “bad.”¹³ At minimum, this argument asserts that the purported benefits of derivatives must be balanced against their substantial costs and risks. Several scholars have suggested that financial derivatives (1) constitute the riskiest market in the world,¹⁴ (2) are used more for pure gambling¹⁵ than for traditional investment-related purposes,¹⁶ and (3) in certain uses, may inflict great harm.¹⁷ Often, however, these concerns do not extend beyond the vague notion that widespread derivatives use may create a risk of systemic market collapse.¹⁸

tional amount.” The “notional amount” is the reference value used for calculating payments owed by the parties to a derivatives transaction. A \$100 million “notional amount” transaction may have a value of zero to the parties to the transaction if no actual payments are owed. One recent survey found that although the notional amount of outstanding OTC derivatives was \$40.7 trillion as of March 31, 1995, the market value, or replacement cost, of these derivatives was \$1.7 trillion. Although substantial, this still only represented 4.2% of the notional amount. See Waldman, *supra* note 8, at 1025 (citing Bank for International Settlements, Central Bank Survey of Derivatives Market Activity).

13. Again, by “bad,” I mean inefficient or efficiency-reducing. For example, the prevalence and persistence of regulatory arbitrage is strong evidence that the current regulation and use of financial derivatives does not lead exclusively to efficient results. See *infra* part IV (examining derivatives use and regulation). Despite recent losses, the view that voluntary derivatives use may be “bad” remains a minority view, although not a new one. Several of the most sophisticated, high-profile investors and regulators have issued dire warnings about derivatives. See, e.g., Heidi Fiske, *Where Do We Go from Here?*, INST. INVESTOR, July 1992, at 209, 213 (quoting warning by Felix Rohaytn, senior partner at Lazard Frères & Co., that derivatives may be “financial hydrogen bombs”); Waldman, *supra* note 8, at 1055 n.217 (quoting warning by E. Gerald Corrigan, then-president of the New York Federal Reserve Bank, that “high-tech banking and finance has its place, but it’s not all that it’s cracked up to be . . . I hope this sounds like a warning, because it is.”).

14. See, e.g., Stout, *supra* note 1, at 68 (calling derivatives “the world’s largest and most dangerous casino”).

15. Professor Stout in particular has warned that, in many respects, derivatives trading represents a more troubling activity than orthodox gambling. See Stout, *supra* note 1, at 66.

Gambling can be defended as providing entertainment to individuals who usually bet relatively small amounts of their own funds. Even so, the gambling industry is tightly regulated and heavily taxed. In contrast, the relatively-unregulated derivatives market is dominated by banks, corporations, pension funds, and municipalities. These institutions are run by managers who have been entrusted with the savings of depositions, employees, and citizens seeking reasonable returns at reasonable risks, rather than recreation.

Id.

16. See, e.g., RICHARD W. JENNINGS ET AL., *SECURITIES REGULATION: CASES AND MATERIALS* 2 (7th ed. 1992) (describing derivatives as essentially “side bets”); Blair, *supra* note 6, at 19 (stating that although every investment is in some sense a gamble, some derivatives are “bets pure and simple”).

17. See, e.g., Corinne M. Bronfman & Michael F. Ferguson, *Don’t Ask, Don’t Tell and Other Contracting Considerations*, 21 J. CORP. L. 155, 156 (1995) (discussing information asymmetries that may be the true source of derivatives losses); Hu, *Hedging Expectations*, *supra* note 2, at 1024-27 (discussing principal-agent problems among senior managers and lower-level personnel who trade financial derivatives); Stout, *supra* note 1, at 68 (arguing that burgeoning derivatives markets may be the source of huge, and growing, social dead-weight losses, primarily from speculation under conditions of uncertainty).

18. “Systemic risk”—the risk that derivatives use may cause an international system-wide financial market breakdown or crash—has been an important topic among derivatives regulators. See, e.g., Wallman, *supra* note 7, at 4-6; GAO REPORT, *supra* note 7, at 10-12. However, discussions of “systemic risk” have not led to any substantive regulatory proposals, and have done little other than to divert attention from recent derivatives

The concerns and ideas expressed here create a compromise position: that *particular* uses of financial derivatives may result in a net gain or loss for society, i.e., that as to such uses derivatives may, on balance, be either "good" or "bad," and that the normative assessment of whether a particular use is good or bad depends not only on an analysis of the applicable regulation, but also on the existence and ease of regulatory arbitrage. At a minimum, these concerns and ideas suggest that the observation that market participants are trading derivatives *voluntarily* does not, by itself, support a conclusion that derivatives trading benefits either these participants or society.¹⁹ This Article extends the above arguments about financial derivatives, explains the concept of regulatory arbitrage, and constructs a framework for analyzing the costs of regulatory arbitrage.

Part II analyzes particular classes and uses of derivatives, and challenges the presumption of regulators and industry participants that derivatives are generally "good." Many uses of derivatives are likely to result in deadweight losses; other uses redistribute wealth from corporations and individuals to employees of financial intermediaries. Part III explains the concept of "regulatory arbitrage" and discusses several examples. Part IV introduces a theoretical model of regulatory arbitrage and explains the conditions for efficient derivatives regulation. In general terms, the model is a restatement of the Coase Theorem,²⁰ allowing for market imperfection and positive transaction costs. Part V analyzes several approaches to regulating derivatives, discusses how the fast-changing financial world has outpaced the ability of regulators²¹ and the usefulness of securities regulation,²² and suggests new rules and concepts as necessary conditions for

losses and the role of financial intermediaries in derivatives trading.

The progression of academic commentary on derivatives thus has resembled a common cyclical progression of scholarship in the financial area: first generalized "good" comments about the markets, then generalized "bad" comments, and finally a more balanced, focused approach. See John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717, 717 (1984). Coffee observed:

First, there is an orthodox school, which tends to see historical events largely as a moral drama of good against evil. Next come the revisionists, debunking all and explaining that the good guys were actually the bad. Eventually, a new wave of more professional, craftsmanlike scholars arrives on the scene to correct the gross overstatements of the revisionists and produce a more balanced, if problematic, assessment.

Id.

19. See Stout, *supra* note 1, at 67 (observing that voluntary derivatives trading is not per se evidence of benefits to traders or society).

20. The Coase Theorem states generally that, absent transaction costs, the initial assignment of legal rights will not affect the ultimate result of market transactions. See R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 27 (1960).

21. The pace and imagination of the markets in inventing derivatives to overcome existing regulation has outstripped the regulatory framework's ability to adjust. See Macey, *supra* note 2, at 70 ("[T]he pace of financial innovation in the derivatives market is faster than ever."); Petzel, *supra* note 4, at 95; Stout, *supra* note 1, at 64.

22. See, e.g., Hu, *Misunderstood Derivatives*, *supra* note 4, at 1499. Many of the financial instruments and transactions involved in recent derivatives losses were largely unregulated. During the past five years, the growth in derivatives trading primarily has been in over-the-counter derivatives, which are transacted in private, contractual settings that are removed from centralized exchanges or trading markets. Macey, *supra* note 2, at 71.

efficient derivatives regulation to overcome market failure generated by increased technology, globalization, and financial innovation.

My point is not that derivatives use necessarily results in some harm to society; rather, it is that because derivatives often are used to reduce or avoid the costs of financial regulation, the question of whether increased derivatives use is "good" or "bad" depends on the particular use. To the extent derivatives use is directed at avoiding regulations that seek to ameliorate market failure, redistribute wealth, in accordance with society's collective wishes, or otherwise achieve efficient results, derivatives may create unanticipated and serious regulatory distortion, deadweight losses, and wealth redistribution. Unfortunately, this conclusion does not necessarily suggest that regulations should be enforced at any cost; the most efficient result may be to allow derivatives users to skirt regulations. In any event, a more precise analysis of the costs associated with regulatory arbitrage is required, and the existing presumptions for or against the current state of derivatives trading and regulation are dubious.

II. CLASSES AND USES OF DERIVATIVES

It is easier to categorize financial derivatives than to define them.²³ As a result, the term "derivative" often is not particularly useful. Below, I describe the basic classes and uses of derivatives. The question is not merely *what* the specific classes and uses are; that question is addressed at length elsewhere.²⁴ Instead, the question is, more fundamentally, *why* do particular classes and uses of derivatives exist? The discussion below attempts to understand what factors may be motivating the various types of derivatives trading.

A. Classes

Financial derivatives are contingent claims. The value of a financial derivative can be contingent on virtually any variable, from the price of hogs to the amount of snow falling at a certain ski resort,²⁵ although more typically the value of a derivative is contingent on a financial instrument or index, including fixed income (government, mortgage, and corporate bonds), equity, foreign exchange, commodities, and real estate.²⁶ The two most basic classes of contingent claims are forwards and options; they are the building blocks for nearly all other derivatives.

23. See, e.g., Claude Brown, *How to Recognize a Derivative*, INT'L FIN. L. REV., May 1995, at 28 (discussing difficulties in defining "derivatives").

24. See, e.g., JOHN HULL, *OPTIONS, FUTURES, AND OTHER DERIVATIVES SECURITIES* (2d ed. 1993) 1-25, 104-28, 134-50, 251-300; KONISHI & DATTATREYA, *supra* note 2, at 1-54, 129-230, 371-412, 525-64; Hu, *Hedging Expectations*, *supra* note 2, at 996-1000.

25. See HULL, *supra* note 24, at 1.

26. In general, derivatives present a variety of issuance options (e.g., fixed or floating payments, various maturities, currencies, credits, and redemption provisions), as well as a variety of market exposures (e.g., long, short, option, and forward).

1. Forwards/Futures

A “forward” or “future” is an agreement to buy or sell an asset at a certain future time for a certain price.²⁷ The party who agrees to buy the asset assumes a “long” position; the party who agrees to sell the asset assumes a “short” position. When the parties enter into the forward contract, they typically set the forward delivery price so that the initial value—and therefore the cost—of the contract to both parties is zero. Prior to maturity, if the price of the asset rises, the value of the long position increases, and the value of the short position decreases; if the price falls, the opposite occurs.

Forwards and futures are used for hedging and speculating.²⁸ They also enable parties to extract arbitrage profits from discrepancies among forward rates,²⁹ or to capture attractive “relative value” trades, based on the relative prices of futures and their underlying cash market financial instruments.³⁰ Because futures allow a party to borrow cheaply by depositing margin with an exchange or counterparty, they provide greater leverage than a corresponding spot contract, and thus can be a less expensive means of speculating.³¹ Because transactions in many futures markets are conducted with anonymity, whereas a spot transaction in the same underlying financial asset may be publicly disclosed, futures may be more attractive than spot transactions to investors who are concerned about public exposure or inquiries by certain regulators.³² Finally, futures can be used to avoid book losses, or for other accounting and regulatory purposes.³³

Futures trading often is driven by considerations of transactions costs. In theory, in a perfect capital market with no transaction costs, there would be no need at all for forward contracts with fixed maturity; a forward is economically equivalent to a long position in a longer maturity asset plus a short position in a shorter maturity asset.³⁴ Therefore, the very existence of huge, liquid fixed income futures markets is strong evidence that (1) transaction costs impose severe restraints on replicating futures transactions in cash markets, and (2) lower transaction costs are a strong motivation for futures trading.

27. A “forward” contract usually is between two financial institutions, or between a financial institution and one of its clients, and normally is not traded on an exchange. A “futures” contract is similar to a forward contract, but normally is traded on an exchange. See, e.g., FABOZZI, *supra* note 9, at 670-71; HULL, *supra* note 24, at 2-9.

28. See HULL, *supra* note 24, at 3.

29. Many forward derivatives trades are driven by a desire to capture pricing anomalies among forward and spot yield curves. A spot yield curve describes the yields of (typically risk-free) bonds of varying maturities. A forward yield curve extrapolates forward rates for the same maturities from the existing spot yield curve. To the extent discrepancies exist between spot and forward yield curves, traders may be able to profit from arbitrage. See, e.g., KONISHI & DATTATREYA, *supra* note 2, at 71-73.

30. See *id.* at 64, 71-73.

31. See HULL, *supra* note 24, at 8.

32. See, e.g., KONISHI & DATTATREYA, *supra* note 2, at 64.

33. See *id.*

34. See THOMAS S.Y. HO, STRATEGIC FIXED INCOME INVESTMENT 155-57 (1990) (describing the arbitrage conditions and assumptions used to price forwards and futures).

2. Options

An option is the right to buy (a call option) or sell (a put option) an asset at a certain future time for a certain price, called the "strike" price.³⁵ Options on stocks were first traded on a U.S. exchange in 1973, and now are available on individual stocks, equity indices, foreign currencies, debt instruments, commodities, and futures contracts.³⁶ There are two sides to every option contract: the "long" position who has bought the option, and the "short" position who has sold the option.³⁷ The "long" position, e.g., a purchased call option, is essentially a leveraged position in the underlying asset, and thus speculators often use options to obtain leverage. The "short" position receives cash up front but has potential liability later, and usually is required to post margin.³⁸

A principal justification for options trading is to create payoffs and returns to meet specific needs the market either is not providing or is providing too expensively.³⁹ In fact, one of the central propositions of modern finance is that it is possible to create and hedge *any* payoff with an appropriate set of options.⁴⁰ Options also can be used for speculation, to hedge a contingent liability (or to hedge a portion of a definite liability), and for arbitrage.⁴¹ Many of the motivations for futures trading which involve transactions and regulatory costs exist for options trading as well.

3. Swaps

Swaps were, without a doubt, one of the major financial innovations of the 1980s.⁴² Although swaps may appear complex, a swap involves, at its core, a straight-

35. See, e.g., FABOZZI, *supra* note 9, at 671.

36. See HULL, *supra* note 24, at 9. Exchange-traded options provide a means for shifting the risk of unfavorable short-term price movements from owners of the instruments who have, but do not wish to bear these risks, to others who are willing to assume such risks in anticipation of possible rewards from favorable price movements. Options are traded OTC as well, although unlike forwards and futures, exchange- and OTC-traded options have the same name.

37. At maturity, the "long" position is entitled to the difference between the price of the underlying instrument or index and the "strike" price set when the option was purchased.

38. See HULL, *supra* note 24, at 13.

39. See KONISHI & DATTATREYA, *supra* note 2, at 272-78.

40. For example, the simultaneous purchase of an at-the-money call option and sale of an at-the-money put option is economically equivalent to ownership of the underlying asset through maturity of the options. An option is "at-the-money" if its "strike" price equals the price of the underlying asset at the time the option is purchased or sold.

41. See KONISHI & DATTATREYA, *supra* note 2, at 42-44.

42. See, e.g., Keith C. Brown et al., *An Empirical Analysis of Interest Rate Swap Spreads*, J. FIXED INCOME, Mar. 1994, at 61. Swaps were virtually unknown before 1980. See Simon Robinson, *The Nature of Swaps and Risk Management Derivatives*, INT'L FIN. L. REV., Apr. 1994, at 30. The precursors to the modern swap were swap-like transactions in the mid-1970s, after the United Kingdom imposed foreign exchange controls. These controls both created an arbitrage opportunity between spot and forward Sterling rates and U.K. and non-U.K. interest rates and prevented borrowers from taking advantage of this opportunity. Highly-rated companies and banks realized they could raise capital and fund loans more cheaply in foreign markets by having a non-U.K. subsidiary borrow from a non-U.K. branch of a bank, and then offset the borrowing with a matching sterling deposit with a U.K. branch of the same bank. These matching transactions were equivalent to a swap. *Id.*

forward lending transaction. Simply put, a swap is a private agreement⁴³ between two parties to exchange cash flows at certain times according to a prearranged formula.⁴⁴

The most basic swap is a "plain vanilla" interest rate swap, in which party A agrees to pay party B a fixed, predetermined rate on a notional principal amount for a number of periods, and party B agrees to pay party A a floating rate on the same notional amount for the same periods.⁴⁵ An interest rate swap is also equivalent to a series of forward contracts on some reference interest rate, such as LIBOR (the London Interbank Offered Rate).⁴⁶ By comparison, a currency swap is similar to an interest rate swap, except that the periodic payments are made in different currencies.⁴⁷ Again, the economic equivalence of swap and forward transactions implies that transaction costs may be motivating numerous swaps transactions. Otherwise, swap counterparties would simply engage in equivalent loan or forward transactions, instead of swaps.

The three basic categories of risk posed by swaps are counterparty risk, market risk, and legal or regulatory risk.⁴⁸ The credit quality of the counterparty is an especially important issue for swap transactions, and has led many swap participants to contract exclusively with highly-rated counterparties.⁴⁹

A major reason for swaps trading—a reason supported by extensive empirical evidence—is to take advantage of arbitrage opportunities among different financial markets.⁵⁰ Arbitrage opportunities often are based on the difference between swap spreads⁵¹ and interest rates available in other markets.⁵² Equivalently, borrowers use

43. During the past decade, swap agreements have become increasingly standardized. In 1984, a group of swaps dealers formed the International Swap Dealers Association, now called the International Swaps and Derivatives Association (ISDA), and ISDA has produced standardized swap documentation since then. See Jeffrey B. Golden, *Setting Standards in the Evolution of Swap Documentation*, INT'L FIN. L. REV., May 1994, at 18.

44. See, e.g., HULL, *supra* note 24, at 17; PAUL MIRON & PHILIP SWANNEL, *PRICING AND HEDGING SWAPS* 9-15 (1991).

45. The floating rate may vary, and the standard ISDA Master Agreement provides for considerable flexibility with respect to the currency and index composing both the floating and fixed rates. See ISDA, 1991 ISDA DEFINITIONS 16-44 (1991).

46. See Brown et al., *supra* note 42, at 61.

47. For a description of the mechanisms of interest rate and currency swaps, see Simon Robinson, *Interest Rate and Currency Exchange Swaps*, INT'L FIN. L. REV., June 1994, at 14; KONISHI & DATTATREYA, *supra* note 2, at 373.

48. See, e.g., Simon Robinson, *The Risks of Swap Transactions*, INT'L FIN. L. REV., July 1994, at 20. Counterparty risk is the risk the swap counterparty defaults when the swap has positive replacement value for the other party. Market risk is the price risk associated with the underlying financial instrument or index. Legal or regulatory risk refers to the potential imposition of additional costs due to action taken by a court or regulatory body.

49. For a description of the special risks posed when public entities enter into swap transactions, with a particular focus on non-U.S. counterparties, see Charles Chatterjee, *Use of Derivatives by Public Bodies: Law and Ethics*, 4 J. INT'L BUS. L. 155, 155 (1996).

50. See, e.g., Brown et al., *supra* note 42, at 61-62.

51. The main pricing variable in an interest rate swap is the swap spread, which is the difference between the fixed rate on the swap and the comparable-maturity Treasury yield. See, e.g., Brown et al., *supra* note 42, at 61-62; Tong-sheng Sun et al., *Interest Rate Swaps: An Empirical Investigation*, 34 J. FIN. ECON. 77, 85 (1993).

52. In equilibrium—meaning the absence of an arbitrage opportunity created by issuing one type of debt and swapping into another—the swap spread should equal the difference in the default risk premiums between

swaps to exploit the comparative advantage of a particular borrowing market, and thereby to reduce the cost of either fixed or floating rate borrowing.⁵³ Swaps also provide new and efficient ways to manage assets and liabilities.⁵⁴ Swap hedging does not require the constant attention and rebalancing required for hedging with futures and options.⁵⁵ Perhaps most importantly, swaps do not have the same balance sheet implications as cash trades, which often include periodic reporting requirements, minimum capital requirements, and other regulatory constraints.⁵⁶ The “off-balance” sheet status of swaps alone may have been a sufficient motivation for trading.

4. Structured Notes

Structured notes are customized fixed income instruments—bonds, notes, certificates of deposit, or commercial paper—which a financial intermediary creates, or “structures,” to fit the specific needs of an issuer or investor.⁵⁷ A typical structured note has two basic components: a “commodity-dependent” payoff—a formula based on some underlying financial instrument or index—and a “commodity-independent” payoff—equivalent to some standard financial instrument, often a zero coupon bond.⁵⁸ Structured notes normally are issued as part of a borrower’s “medium-term-note” (MTN) program.⁵⁹

The amount of principal repayment and/or coupon payments of a structured note may be based on one or more formulas. For example, a note may have a guaranteed principal repayment, but a variable coupon based on the performance of some underlying financial instrument or index. The underlying instrument or index, as well as the issuer, may vary widely.

Many structured notes can be thought of as the combination of (1) a zero coupon bond and (2) one or more options. Because structured notes are composed of several

the swap market and other markets. See Brown et al., *supra* note 42, at 66. Available evidence indicates that the swap markets have moved toward equilibrium. For example, spreads between swap rates and Treasury yields increase significantly with maturities, and bid-offer spreads in the swap market are sensitive to the credit rating of the counterparty. See, e.g., Sun et al., *supra* note 51, at 97 (documenting that the swap bid and offer rates of an A-rated dealer are bracketed by the rates of a AAA-rated dealer).

53. See KONISHI & DATTATREYA, *supra* note 2, at 137-41.

54. More esoteric swaps include basis swaps (between indices), forward swaps (with a delayed start), amortizing or accreting swaps (with variable notional amounts), swaptions (with embedded options), and asset swaps (to create new assets). See, e.g., FABOZZI, *supra* note 9, at 1162-68.

55. See KONISHI & DATTATREYA, *supra* note 2, at 131 (“The swap has no equal as a financing and risk management tool.”).

56. See *id.* at 131, 143; see also HULL, *supra* note 24, at 291-92 (discussing the effects of regulation, including capital requirements, on swap pricing).

57. See, e.g., Peter G. Morrissey, Note, *Regulating Risk in Financial Markets: Private Insurance for Public Funds*, 69 S. CAL. L. REV. 1163, 1170-71 (1996).

58. See, e.g., David S. Mitchell & Mark W. Saks, *CFTC Exemptions for Swap Agreements and Hybrid Instruments*, 9 BANKING & FIN. SERVICES. J., May 5, 1993, at 87, 91.

59. See, e.g., *Dealers Debate the Future of the Structured Note Market*, 7 SWAPS MONITOR, Aug. 1, 1994, at 1, 5. A borrower typically sets up an MTN facility with the capacity to issue a large face amount of debt, e.g., \$1 billion. A structured note then is issued as a “shelf takedown” of some lesser face amount, e.g., \$50 million, from the MTN program. Structured notes usually are issued as private placements under Rule 144A.

different “pieces,” questions arise as to whether the value of the note is greater than the sum of the value of its pieces. If the value of the note is less than the value of the pieces, it is unclear why any fully-informed investor would buy a structured note instead of the individual components. If the value of the note is more than the value of the pieces, for a particular investor, the reason may be that a structured note avoids the cost of a regulation or requirement for that investor, or allows the investor to buy “pieces” it otherwise could not buy.⁶⁰ Structured notes are the most complex and infamous derivatives and are the source of many of the well-publicized losses in recent years.⁶¹ Certain types of structured notes are directed at the often non-economic concerns of money managers.⁶² For many structured notes, there is virtually no reason for an investor to buy the note—instead of its separate components—other than to disguise the purchase of a particular financial instrument or derivative, to evade internal guidelines or regulation, or to create advantageous tax or accounting treatment.

5. Special Purpose Vehicles

Many derivatives transactions are structured using trusts or off-shore companies, called special purpose vehicles or “SPVs.”⁶³ SPV transactions are members of a class of transactions known generally as “asset securitization.”⁶⁴ Typically, an SPV will purchase financial instruments and finance its purchase of the instruments by issuing its own security or securities, guaranteed by cash flows generated by the purchased instruments. The SPV’s securities often are rated by one or more of a handful of independent ratings agencies, such as Standard & Poor’s and Moody’s Investor Services. Because most investors have neither the time nor the resources to fully investigate the financial condition of the companies in which they invest, these ratings take on special signifi-

60. Structured notes appropriately have been called “guideline busters;” this term describes the tendency of a structured note to mask or disguise the actual underlying investment. See Morrissey, *supra* note 57, at 1171.

61. Jim Grant, one of the most respected financial analysts on Wall Street, was asked in an interview on 60 Minutes whether he understood a particular structured note, and he responded, “I understand enough to lose a lot of money in it. I don’t understand it, no, and I think it’s even money whether the guy who invented it understands it, and I think it’s certain the guy who bought it didn’t.” See *60 Minutes* (CBS television broadcast by Steve Kroft, Mar. 5, 1995).

62. For example, a structured note with a maturity of approximately five years that pays more than 100% of a particular equity index is attractive to many money managers, because it appears as if they automatically will have “beaten” the underlying index for five years. In reality, the money manager simply has purchased a five-year zero coupon bond plus a five-year equity option (plus a structuring fee), usually for more than the cost of the independent components. The structured note simply was packaged attractively so that the notional amount of the equity option was greater than the face amount of the bond. See, e.g., Pratt, *supra* note 3, at 9-10.

63. See, e.g., Steven L. Schwarcz, *The Global Alchemy of Asset Securitization*, INT’L FIN. L. REV., May 1995, at 30.

64. Asset securitization transactions include the sales of financial instruments to SPVs, which then issue securities backed by the instruments, in transactions designed to reallocate risks associated with those financial instruments. See, e.g., Joseph C. Shenker & Anthony J. Colletta, *Asset Securitization: Evolution, Current Issues and New Frontiers*, 69 TEX. L. REV. 1369, 1374-75, 1383-1406 (1991) (defining asset securitization).

cance, because investors rely on the assigned ratings to determine the minimum return they will accept on a given investment.⁶⁵

One explanation of why securitization through an SPV might be cheaper than direct borrowing is that securitization reduces monitoring costs. Normally, the SPV's only assets are the financial instruments it purchases, and its only obligations are the related securities it issues. Consequently, because a bankruptcy-remote SPV separates the source of payment of its securities from other risks associated with the issuer, the need to monitor the issuer's financial condition is largely eliminated.⁶⁶ SPVs also are used as a mechanism to strip apart the cash flows of a financial instrument,⁶⁷ or to create leverage by segregating cash flows in order of seniority.⁶⁸ Perhaps most commonly, SPV transactions are motivated by favorable tax and accounting treatment.⁶⁹

6. Exotica

There exists an incredible array of exotic OTC forwards, options, swaps, and other derivatives,⁷⁰ including esoteric mortgage derivatives,⁷¹ interest rate derivatives,⁷² and exotic options.⁷³ Not surprisingly, the primary use of exotic derivatives is speculation. Exotic derivatives allow a speculator to take a highly-specific, leveraged position, based on a narrow, particularized view of one or more financial instruments or indices. How-

65. See Schwarcz, *supra* note 63, at 31.

66. See *id.* at 34; see also Joseph A. Grundfest, *The Limited Future of Unlimited Liability: A Capital Markets Perspective*, 102 YALE L.J. 387, 410 (1992) (describing use of off-shore investment vehicles).

67. One example of such stripping is the U.S. Treasury STRIPS program, through which traders may strip apart and reconstitute the coupon and principal components of U.S. Treasury bonds of varying maturities. The individual coupon and principal STRIPS are traded separately as U.S. Treasury zero coupon bonds. Although Treasury STRIPS have been praised for creating a new efficient and liquid market, and for adding to the liquidity in the underlying U.S. Treasury bond market, the STRIPS program also created the potential for abuse. Joseph Jett, the now-infamous rogue trader, allegedly used the ability to reconstitute Treasury STRIPS to create bogus profits of approximately \$350 million. See, e.g., Frances A. McMorris, *Jett Denies Wrongdoing in Kidder Case*, WALL ST. J., May 24, 1996, at B5. STRIPS are also used as component pieces of SPV and structured note transactions.

68. The Collateralized Bond Obligation (CBO) is a typical example of the use of an SPV to create senior and junior claims on a portfolio of assets. In a CBO, the SPV purchases a portfolio of assets, e.g., high-yield bonds, and finances its purchase by issuing two or more classes of securities. The most senior class of securities has a first claim on the underlying assets, and therefore usually is a highly-rated debt security with a relatively low coupon payment. The more junior classes of securities have a claim on the assets which is subordinated to the more senior class. The most junior class has an equity-like claim, is far riskier, and therefore receives a much higher stated coupon. A CBO can be thought of as a leveraged purchase of a portfolio of assets by the junior class of securities, where the more senior class(es) provide(s) the financing. In other words, a CBO is a leveraged buy-out (LBO) of a portfolio of financial assets. See, e.g., Greg Joslyn, *Learning Curve: Senior/Subordinated Structures*, 4 DERIVATIVES WEEK, Jan. 16, 1995, at 8.

69. See *infra* part III (discussing various types of tax and accounting regulatory arbitrage).

70. See, e.g., HULL, *supra* note 24, at 21-23; Waldman, *supra* note 8, at 1027.

71. See, e.g., FRANK J. FABOZZI, *THE HANDBOOK OF MORTGAGE-BACKED SECURITIES* 483-532 (3d ed. 1992).

72. See, e.g., FABOZZI, *supra* note 9, at 1170-80 (describing various interest rate caps, floors, collars, and corridors).

73. See, e.g., CORPORATE FINANCE, RISK MANAGEMENT & DERIVATIVES YEARBOOK 16-42 (1994) (containing a series of articles discussing exotic options, including swaptions, barrier, currency, chooser, and average rate options).

ever, the risks associated with more esoteric derivatives may not be understood properly by even the most sophisticated investors.⁷⁴

Perhaps the most powerful factor motivating esoteric derivatives transactions is the fee income of financial intermediaries. As derivatives have become more common, profit margins from derivatives trading and structuring have declined, and financial intermediaries have sought to create more exotic derivatives to generate increased fees.⁷⁵ Financial intermediaries have created complex swaps and structured notes with "hidden" costs and fees that purchasers have been unable to discover.⁷⁶

B. Uses

The most common uses of financial derivatives are: (1) to hedge against some risk; (2) to speculate on predicted changes in interest rates, currencies, and the prices of securities and commodities; and (3) to extract riskless profits through arbitrage, including "regulatory arbitrage."⁷⁷ As with the classes of derivatives, a more specific analysis of these three primary uses of financial derivatives reveals that there are substantial costs, and often only illusory benefits, associated with particular derivatives use.

1. Hedging

Hedging is thought to be the most common—and perhaps the most beneficial—use of derivatives. An entity exposed to an unwanted risk may "hedge" (i.e., eliminate or reduce) that risk by entering into an offsetting derivatives transaction. Although an individual entity may reduce its risk by hedging, it does not necessarily follow that investors are better off when companies hedge such risk.

74. See, e.g., GEORGE SOROS, SOROS ON SOROS: STAYING AHEAD OF THE CURVE 313-14 (1995). George Soros has argued there are special dangers associated with the explosive growth in certain exotic options, including options that expire (i.e., "knock out") when the underlying financial asset reaches a certain price. See also *id.* at 107 ("Recent experience indicates that so-called knock-out options are particularly pernicious in this regard. They relate to ordinary options the way crack relates to ordinary cocaine."); *Dealers Debate the Future of the Structured Note Market*, *supra* note 59, at 1 (discussing theory that structured note investors "did not understand the risks of their trades, or were buying in circumvention of internal or external constraints").

75. See, e.g., *Structured Note Market Remains Comatose, With Prospects for Recovery Receding*, 8 SWAPS MONITOR, Feb. 6, 1995, at 1, 5.

76. Several financial intermediaries have displayed an extraordinary ability to embed hidden fees in complex derivatives transactions. Some of the tapes of salespeople at Bankers Trust discussing a swap transaction with Gibson Greeting Cards are especially illuminating:

I think that we should use this [a downward market price movement] as an opportunity. We should just call [the Gibson contract] and maybe chip away at the differential a little more. I mean, we told him \$8.1 million when the real number was 14. So now if the real number is 16, we'll tell him that it is 11. You know, just slowly chip away at that differential between what it really is and what we're telling him.

Carol J. Loomis, *Untangling the Derivatives Mess*, FORTUNE, Mar. 20, 1995, at 50, 58.

77. A recent survey of U.S. non-financial firms confirmed that derivatives are used to hedge balance sheet and firm commitments, to take speculative "views," and to reduce funding costs by arbitraging markets. See Bronfman & Ferguson, *supra* note 17, at 170.

An investor in a diversified portfolio of equities may find it more efficient to hedge certain risks in the aggregate rather than to have each company in its portfolio hedge individual risks. Especially with the growth of mutual funds, it is possible for an individual to hedge collectively those risks associated with a large number of different investments. Such a collective hedging strategy is likely to be less costly than numerous individual hedging strategies, because it will capture economies of scale and diversification benefits, and avoid duplicative hedging costs that individual entities may incur, e.g., a mutual fund may own two stocks that have offsetting exposure to some risk.⁷⁸

There are also significant transaction costs associated with hedging. For a derivative to facilitate the hedging of risk, the underlying cash market, where assets already are traded, must be sufficiently liquid. Liquidity is costly, and the costs of maintaining a liquid market may or may not outweigh the benefits from hedging.⁷⁹ Additionally, liquidity generally requires a certain amount of underlying speculative activity.⁸⁰ With respect to foreign exchange risk, for example, it is not clear which of the following strategies is less costly: (1) all companies hedge their income streams into one currency, so the investor need not hedge; or (2) no companies hedge their income streams, so the investor in a diversified portfolio of companies can determine an appropriate hedge, in aggregate, based on the exposure of the portfolio to different currencies.⁸¹

2. Speculation

Perhaps the next most common use of financial derivatives is speculation. A speculator uses derivatives because they provide a more efficient means of speculating than cash trading in the underlying financial instrument or index. However, as with hedging, the fact that derivatives may be cost-reducing transactions for individual speculators does not mean that derivatives are cost-reducing for society overall.

Speculation in financial derivatives is extremely costly. Although there are many others, I will briefly mention four examples of the costs of speculation. First, there are informational costs associated with speculation.⁸² Where informational costs are significant, they likely are duplicative as well, because proprietary information—especially information related to financial derivatives—often has private value for only one entity

78. See, e.g., Stout, *supra* note 1, at 56 (arguing that to the extent transactions costs associated with derivatives use reduce corporate wealth, hedging actually leaves diversified shareholders worse off).

79. In general, the liquidity requirement imposes significant additional costs and restraints on the use of derivatives. See, e.g., ROBERT J. SHILLER, *MACRO MARKETS: CREATING INSTITUTIONS FOR MEASURING SOCIETY'S LARGEST RISKS* 33 (1993) (discussing problems associated with creating derivative indices based on illiquid underlying assets, including art and real estate).

80. See Peter Blackman, *Dealing in Derivatives: Is a 'Sophisticated' Investor a 'Suitable' One?*, N.Y.L.J. 5, 5-6 (May 12, 1994) ("Because the derivatives market is a zero sum game, the speculators are essential for giving the market liquidity that allows others to hedge.").

81. Professor Hu has suggested the second strategy may be less costly. See Hu, *Hedging Expectations*, *supra* note 2, at 1016 ("To the extent that corporations spend money on hedges for the purpose of eliminating unsystematic risk, the corporations are devoting real resources to get rid of something that well-diversified investors have already eliminated.").

82. See, e.g., Stout, *supra* note 1, at 60 ("The corporation or investment fund that attempts to earn trading profits in the derivatives markets by predicting future price shifts must first invest resources gathering data and making predictions.").

and generally has no public value. To be sufficiently well informed to trade, speculators must expend vast resources; the more complex the trading, the more resources are required.

Second, uncertainty compounds the informational costs of speculating.⁸³ Under conditions of uncertainty, speculative derivatives trading may reduce trader welfare, i.e., reduce returns and increase risk, as traders with differing expectations, each hoping to earn speculative profits, try to outpredict each other in what essentially is a zero-sum game.⁸⁴ There also may be “winner’s curse” costs associated with trading derivatives under conditions of uncertainty.⁸⁵ For financial derivatives, the “winner’s curse” especially may apply to the highest bidder for those exotic products that are difficult to value;⁸⁶ likewise, uncertainty is acute in more complex derivatives trades.⁸⁷ Not surprisingly, many active participants in the most complex derivatives markets also have become the biggest losers.⁸⁸

The conclusion that derivatives trading furthers an individual trader’s welfare may be based on flawed assumptions. To the extent derivatives trades are based on traders’ disagreement about subjective probability estimates, the result may be substantial dead-weight losses for both traders and society.⁸⁹ Empirical evidence indicates that traders disagree about such estimates, and that it is especially difficult to assess whether one trader is more or less likely to be correct.⁹⁰ It is apparent, therefore, that at some level, increased speculation cannot be justified on the basis of increased liquidity alone.

Third, speculation through derivatives may increase overall risks by creating opportunities for parties to use leverage where no such opportunity previously existed, often because a regulation or internal investment policy increased the cost of (or prohibited the use of) leverage. Derivatives often are used exclusively for the purpose of obtaining leverage,⁹¹ and many derivatives transactions can be viewed as the economic equiva-

83. See *id.* at 63 (“Trader welfare losses from speculation can, however, be explained as a result of the difference between the private and public value of speculative research and trading, compounded by *ex post* trader error because of imperfect information (that is, uncertainty).”).

84. Several scholars have suggested that derivatives speculation may be a zero-sum game. See, e.g., Stout, *supra* note 1, at 60, 63; Blackman, *supra* note 80, at 5-6.

85. The “winner’s curse” is the notion that the bidder who wins an auction is “cursed” because it has overpaid. See, e.g., RICHARD H. THALER, *THE WINNER’S CURSE: PARADOXES AND ANOMALIES OF ECONOMIC LIFE* 1-2 (1992).

86. See, e.g., Stout, *supra* note 1, at 57.

87. See Anne Schwimmer, *Derivatives Dealers Struggle to Hedge Tricky Digital Options: Sellers of “Fairway Bonds” Caught in the Rough*, *INV. DEALERS’ DIG.*, Oct. 10, 1994, at 10 (stating that “[s]ome complex derivatives are turning on their creators” and that digital options “could have been a situation where both sides lost” because the trades were so complex that both buyers (who lost all of their upside and are accruing zero coupons) and sellers (who lost money on their corresponding hedge positions) lost money from the trades).

88. See Becker & Yoon, *supra* note 3, at 221-34.

89. See Stout, *supra* note 1, at 62, 67.

90. By one calculation, a money manager would have to outperform the stock market by an impressive two percent each year for 25 years to establish a 95% confidence level that the manager’s performance was the result of skill rather than random luck. See *id.* at 63-64 n.41 (citation omitted).

91. See, e.g., Bronfman & Ferguson, *supra* note 17, at 169 (“While the underlying information asymmetry is common to many markets, what is unique to derivatives is the effect of leverage.”).

lent of highly leveraged transactions in non-derivative markets.⁹² Accordingly, derivatives may turn non-speculators into speculators; where leverage is unavailable or too costly in a non-derivative market, a speculator may simply switch to an equivalent derivative transaction.

Fourth, any profits earned by speculators may divert income to the employees and owners of the speculating firms, but will not necessarily reward or encourage any productive services. To the extent speculation causes resources to be expended unproductively, that expenditure is an additional cost to be balanced against the purported benefits of speculation.⁹³

3. Arbitrage

Finally, derivatives are used for arbitrage, i.e., to capture riskless profits based on pricing anomalies among financial markets and products. Derivatives thus allow financial market participants to "fill gaps" left by the unavailability of particular types of financial instruments. For example, if a sovereign does not have a long-term corporate debt market, investors may use interest rate or currency swaps to generate fixed liabilities.

The ease of arbitrage has increased dramatically and is due in part to the profound changes in modern capital markets, including global deregulation. Capital markets now cross national borders quickly and easily, and encourage creation of novel financial instruments and transactions to capitalize on changes in regulation, law, or tastes.⁹⁴ The ease of arbitrage and the elasticity of international financial markets also make it difficult for one country to impose restrictions or costs on parties to financial transactions.⁹⁵ As a result, there are significant costs, as well as benefits, associated with arbitrage.

Arbitrage opportunities may exist for various reasons and, depending on the reason, arbitrage may or may not benefit society as a whole. According to the classical theory of arbitrage, the process of exploiting an arbitrage opportunity will eliminate it, and the process of eliminating arbitrage opportunities will lead to an efficient result. However, a substantial number of sources of derivatives arbitrage are structural in nature; consequently, increased arbitrage activity may reduce the *size* of the arbitrage profit, but will not necessarily eliminate it.⁹⁶ Such structural conditions especially prevail for regulatory arbitrage, and there is no reason to expect regulatory arbitrage opportunities to disap-

92. See, e.g., Macey, *supra* note 2, at 82.

93. See, e.g., Stout, *supra* note 1, at 62 n.38 ("But hiring laborers to dig and then refill ditches also provides income to ditchdiggers. In either case, society would have benefited more if the funds had been spent on more productive services.").

94. See, e.g., Grundfest, *supra* note 66, at 391.

95. According to Second Circuit Judge and Yale Law School professor Ralph K. Winter, the federal securities laws registration and periodic disclosure provisions "will die of their own accord because they are inefficient enough that they deter foreign companies from choosing to register their stock in this country." Ralph K. Winter, *Paying Lawyers, Empowering Prosecutors, and Protecting Managers: Raising the Cost of Capital in America*, 42 DUKE L.J. 945, 947 n.7 (1993).

96. See SATYAJIT DAS, SWAPS AND FINANCIAL DERIVATIVES: THE GLOBAL REFERENCE TO PRODUCTS, PRICING, APPLICATIONS AND MARKETS 154 (2d ed. 1994).

pear until the relevant regulations are changed. Moreover, this process of attempting to eliminate such permanent arbitrage opportunities likely will lead to *inefficient* results as funds are diverted to financial transactions with minimal private value, and negative social value.

III. REGULATORY ARBITRAGE

Regulatory arbitrage consists of those financial transactions designed specifically to reduce costs or capture profit opportunities created by differential regulations or laws. The numerous opportunities for regulatory arbitrage derive from a widely-understood, basic concept in modern finance: a party to financial transactions may use a variety of different trading strategies to achieve the same economically-equivalent position.⁹⁷ As a response to costly financial regulation, regulatory arbitrage opportunities have generated an astonishing array of derivatives transactions.

In practice, financial intermediaries are constantly structuring new financial derivatives in response to changes in financial regulation.⁹⁸ Regulation that imposes costs on non-derivatives transactions creates an incentive for parties to structure economically equivalent derivatives transactions that avoid the reach of the regulation or reduce its cost. Available empirical evidence supports the conclusion that the driving force behind the development of many financial derivatives is the desire to reduce regulatory costs.⁹⁹ Derivatives are exceedingly malleable¹⁰⁰ and often are economically equivalent to an existing security, yet may receive differing tax, accounting, or other regulatory treatment.¹⁰¹ Consequently, derivatives have proven an efficient mechanism for eluding the costs of regulation imposed by taxes,¹⁰² accounting requirements, invest-

97. See, e.g., Macey, *supra* note 2, at 78.

98. A blossoming industry, composed primarily of lawyers and investment bankers in New York, has evolved to respond to new financial regulations. As financial markets have become more sophisticated and globalized, more opportunities have arisen to profit from reacting to financial regulation. See, e.g., Morrissey, *supra* note 57, at 1168-73.

99. See, e.g., *Of Votes and Volatility*, THE ECONOMIST, at 86 (May 14, 1994) ("Some financial innovation is driven by wealthy firms and individuals seeking ways of escaping from the regulatory machinery that governs established financial markets."); SOROS, *supra* note 74, at 316; Grundfest, *supra* note 66, at 416 ("Capital markets have a long and illustrious history of responding in ways that frustrate the best laid plans of even the most clever and well-intentioned regulators."). One major securities law casebook offers the following response to the question of why derivatives use has grown: "A partial answer is taxes and regulation. If an issuer can avoid either by designing a new instrument, it has a rational incentive to do so." JENNINGS ET AL., *supra* note 16, at 25.

100. See, e.g., Angelo A. Calvello, *Synthetic Equity*, INST. INVESTOR, Nov. 1991, at 37 ("Name an index or market sector, denominate it in the currency of your choice, and pick a term: someone will construct a product that meets your specifications."). In another context, Professor Grundfest has argued that "[i]ntermediaries such as investment banks, commercial banks, and mutual funds can structure myriad instruments and transactions specifically designed to [achieve the desired objective]." Grundfest, *supra* note 66, at 408.

101. See *Derivatives Roundtable*, INST. INVESTOR, Dec. 1992, at S4.

102. For a general description of the tax and accounting treatment of derivatives, see Robert Baer, *Understanding Derivatives and Financial Instruments*, 72 TAXES 929 (1994); Robert H. Scarborough, *Different Rules for Different Players and Products: The Patchwork Taxation of Derivatives*, 72 TAXES 1031 (1994). For a more specific discussion of the effects of recent capital market innovation on the income tax, see Alvin C.

ment restrictions, and government subsidies. The remainder of this Part considers the most common examples of the use of financial derivatives in regulatory arbitrage.

A. Tax

A tax is the simplest, and most commonly imposed, regulatory cost. To the extent a tax imposes an additional transaction cost, an economically rational taxpayer will seek to minimize the amount of tax paid and will enter into a tax-motivated financial transaction when the expected value of the transaction is positive.¹⁰³

Regulatory arbitrage to minimize taxes is predicated on the existence of tax-related restrictions on capital flows or on the pricing of capital flows.¹⁰⁴ Such restrictions create differential pricing or differential access for various classes of participants in capital markets.¹⁰⁵ Differential pricing means, for example, that if an investor today may purchase two economically equivalent financial instruments—A and B—for the same price, and the government levies a tax on instrument A, instrument B becomes relatively less expensive. Additionally, an investor who previously had purchased instrument A—or was indifferent between A and B—now will purchase instrument B. Likewise, if a company that had purchased a financial instrument through a U.S. subsidiary now faces a U.S.-based tax, the company will, if it can, shift the taxable event to a non-U.S. subsidiary. Cross-border transactions may be used to defer or avoid income taxes, to capture differential treatment of hedging transactions, and to capture foreign tax credits.¹⁰⁶ Examples of tax arbitrage opportunities abound, and the following examples are not meant to appear inclusive, although the analysis of other tax arbitrage trades would be no different in principle.

First, a withholding tax on domestically-issued securities creates a “wedge” between yields on domestic securities and those on comparable securities issued outside

Warren, Jr., Commentary, *Financial Contract Innovation and Income Tax Policy*, 107 HARV. L. REV. 460 (1993). Theoretically, financial derivatives are similar to standard insurance policies, in that derivatives often insure against specific risks, and there is significant overlap in the tax treatment of insurance and financial derivatives. See, e.g., H. David Rosenbloom, *Source-Basis Taxation of Derivative Financial Instruments: Some Unanswered Questions*, 50 U. MIAMI L. REV. 597, 598 (1996).

103. A risk neutral taxpayer will enter into a tax-motivated trade if the expected benefit of the trade minus the expected cost is less costly than the current expected tax liability. The expected cost of a tax-motivated trade may include tax penalties—including, depending on the nature of the trade, criminal penalties—and thus a risk averse taxpayer may only enter into a tax-motivated trade where the expected benefit is substantial. Despite the potential penalties, the volume of such tax-motivated trading is enormous. As one commentator has noted, “tax uncertainty creates the opportunity for some taxpayers to use new financial products to obtain (or at least claim to obtain) after-tax results that are disproportionately better than the pretax economics of those strategies.” Edward D. Kleinbard, *Equity Derivative Products: Financial Innovation's Newest Challenge to the Tax System*, 69 TEX. L. REV. 1319, 1321-22 (1991) (also arguing that these taxpayers “should no more be held responsible for the tax system’s shortcomings than the insect kingdom should be blamed for spoiling improperly refrigerated meat”).

104. One commentator, exhibiting the hubris of some derivatives market participants, has repeatedly called such restrictions and regulations “artificial.” See DAS, *supra* note 96, at 146. Of course, many of these so-called “artificial” restrictions and regulations, though substantial barriers to financial intermediaries, are based on fundamental government policies.

105. *Id.*

106. *Id.* at 152.

the domestic market.¹⁰⁷ One way to take advantage of the relative cheapness of foreign-issued securities is to structure a derivatives transaction with a swap that captures the value of a domestically-issued security, but is free of withholding tax.

For example, the Australian government formerly imposed a withholding tax on all domestic securities denominated in Australian dollars (A\$). In contrast, an A\$ Eurobond, issued by a high-credit European institution, was not subject to withholding tax. Consequently, the European institution had a comparative advantage in borrowing A\$, relative to an Australian company. The European institution—even if it had *absolutely no connection* to Australia—could issue an A\$-denominated Eurobond and then enter into a currency swap transaction with a domestic Australian counterparty. On the swap, the European institution would receive A\$ and pay another currency, say United States dollars (US\$); the Australian institution would receive US\$ and pay A\$. Thus, the Australian institution could create a lower-cost A\$ obligation, free of withholding tax. A portion of the tax revenue the Australian government had expected to receive would be shifted, in varying shares, to the European institution, the domestic Australian counterparty, the entity who intermediated the swap, and, to some extent, deadweight losses.¹⁰⁸

Second, a withholding tax credit for foreign purchasers of domestic securities (but not for domestic purchasers) creates an opportunity to capture the value of the reclaimed tax credit. If a foreign entity buys the domestic securities and then enters into a swap transaction, the entity can achieve more favorable financing than it otherwise could have achieved. For example, various Italian government bonds, including the Certificate Del Tesoro (CTE), issued in European Currency Units (ECUs), were subject to Italian withholding tax. However, many investors outside Italy were entitled to reclaim the withholding tax under tax treaties and credit arrangements between Italy and the investors' country of domicile or residence. Therefore, a non-Italian investor could purchase CTEs and enter into a swap transaction, typically with a bank or other financial intermediary, whereby the investor would pay to the bank all ECU coupons on the CTEs (including the right to reclaim the tax credit), and would receive from the bank US\$ coupon payments. Thus, such an investor could borrow more cheaply than otherwise, and the bank could capture a significant portion of the value of the tax credit. In fact, financial intermediaries entered into large numbers of these transactions, often as purchasers, and created large portfolios of tax reclaims against the Italian government.¹⁰⁹

Third, and more basically, U.S. tax laws which permitted bond issuers to amortize the implicit interest on a zero coupon bond¹¹⁰ on a straight line basis for tax purposes created an enormous tax arbitrage opportunity. As a consequence, in the 1980s zero coupon securities emerged as an important financial instrument. The use of zero coupon

107. In other words, an investor domiciled outside the country where the financial instruments are issued is subject to a withholding tax on interest payments made on instruments issued by entities who are domiciled in that country. *See id.* at 147-48.

108. *See infra* part IV.

109. *See, e.g.*, DAS, *supra* note 96, at 148-49.

110. A zero coupon bond is a bond that is issued at a discount to its face value, does not pay any coupons prior to maturity, and repays the principal amount at maturity.

bonds was justified for legitimate reasons (reducing reinvestment risk and price volatility, obtaining call protection, and extending duration), but zero coupon bonds thrived primarily for tax-related reasons.¹¹¹ A borrower could achieve cheaper funding than it otherwise could by issuing a zero coupon bond and swapping the zero coupon liability into its preferred liability structure.

At the same time this U.S. tax arbitrage opportunity existed, Japanese, and some European, tax authorities were treating income earned from holding a zero coupon bond as a capital gain, which was not taxable. The confluence of these two regulatory arbitrage opportunities created an explosion in the use of zero coupon bonds and swaps to capture the value of the differential tax costs imposed under U.S. and Japanese regulations.¹¹² As a result, non-U.S. investors were willing to purchase zero coupon securities at higher prices than they otherwise would have, and then share part of the after-tax return benefit with a U.S. issuer.

Other tax-related examples include differential treatment of types of income for investors, and differential treatment of interest or expense for issuers.¹¹³ One very common tax opportunity involves the use of options to replicate various investment strategies. In Brazil, for example, options traders used very sophisticated options strategies to capture implied forward rates that the government prevented investors from accessing directly. Similarly, until recently, an equity swap¹¹⁴ and a leveraged purchase of equities received different tax treatment, even though they were essentially the same transaction. When the Internal Revenue Service discovered investors were using equity swaps to avoid capital gains taxes from the sale of stock, investors began switching to more sophisticated options strategies that U.S. authorities would be less likely to detect.¹¹⁵

The conclusion from these examples of tax arbitrage is that investors seek to maximize after-tax income while borrowers seek to minimize after-tax funding costs.¹¹⁶ Financial intermediaries seek to create such opportunities for both investors and borrowers and when demand exists structure transactions to avoid costly taxes. These activities distort the capital markets, although the efficiency effects of such tax-motivated transactions are not obvious.¹¹⁷

111. See DAS, *supra* note 96, at 151.

112. See Macey, *supra* note 2, at 76.

113. The ability to use passive investment trusts, including grantor's trusts and owner's trusts, to strip streams of income and thereby generate differential tax treatment also was a significant factor in the development of derivatives and, in particular, of asset securitization. See James M. Peaslee, *Investment Trusts in the Age of Financial Derivatives*, 49 TAX L. REV. 419 (1994).

114. In an equity swap, the investor pays some funding rate, e.g., LIBOR plus a spread, and receives the total return on an equity instrument or index.

115. See, e.g., Floyd Norris, *Capital Gains Draw Tougher Clinton Stand*, N.Y. TIMES, Mar. 19, 1996, at A1. These strategies have included, for example, the simultaneous purchase of an at-the-money put and the sale of an at-the-money call. Such trades are economically equivalent to a sale of the stock. See *supra* note 40.

116. See DAS, *supra* note 96, at 151. Structured notes in particular may be used in various forms to gain favorable tax treatment for issuers, investors, or both. For a description of the taxation of structured notes, see Kirk Van Brunt, *Contingent Payment Debt Instruments—A Light at the End of the Tunnel*, 73 TAXES 365 (1995).

117. See, e.g., Kleinbard, *supra* note 103, at 1321, 1328 ("The tax system typically has no mechanism to

B. Accounting

Accounting requirements also impose costs on investments in financial instruments. Derivatives can be used to recharacterize transactions to lessen or avoid costs associated with these requirements. For example, if a transaction can be characterized as "off-balance sheet," the party entering the transaction may pay a reduced capital charge or avoid required disclosure.

Accounting standards are based on the classic distinction between assets and liabilities. However, most derivatives are neither assets nor liabilities, and consequently there often exists a derivatives transaction which, although economically equivalent to a particular asset or liability (or other derivatives transaction), receives different accounting treatment. It is enormously difficult, costly, and time-consuming for the accounting profession and various regulatory agencies collectively to ensure that a derivative which is economically equivalent to a particular asset or liability is treated as such.¹¹⁸ For example, disclosure requirements may be triggered only when a financial instrument is defined as a security; for many financial derivatives, the issue of whether such a requirement applies often is not clear.¹¹⁹ Similar questions arise concerning the categorization of income and the treatment of particular line items on the balance sheets and income statements of publicly-reporting companies.

Likewise, a party may use a swap or other financial derivative to lock in an economic position in a financial instrument for accounting purposes, even if contractual agreements or penalties prohibit early lock-in or repayment.¹²⁰ In all such cases, a party may pay a premium for a derivative transaction that avoids the relevant cost or penalty.¹²¹

Another common use of derivatives is to avoid recognition of accounting losses. Derivatives transactions may be designed to avoid mark-to-market accounting losses, or to utilize a particular accounting rule to avoid booking a loss while moving the loss off-balance sheet.¹²²

ask, much less answer, the tax policy questions raised by new financial products." I address the efficiency effects of regulatory arbitrage in part IV.

118. See, e.g., Petzel, *supra* note 4, at 108 ("In most cases, derivatives are neither assets nor liabilities, and fitting them into the traditional [accounting] framework has been a daunting task.")

119. For example, on January 14, 1993, the Commodity Futures Trading Commission (CFTC) adopted final rules to exempt certain swap agreements and hybrid instruments from most provisions of the Commodity Exchange Act. See Mitchell and Saks, *supra* note 58, at 87. Likewise, many other financial derivatives recently have become exempt from the securities laws generally.

120. Incentives for such derivatives transactions may exist even absent a regulation that penalizes early repayment. For example, market protocol may dictate that a borrower *should not* repay a loan early, even if the borrower is entitled to repay, because the borrower may want to preserve its reputation as one who does not prepay, and thus maintain access to low-cost funding within a particular group of lenders.

121. Likewise, if the borrower had certain expectations regarding the performance of the financial asset, e.g., versus a comparable benchmark index, once the borrower's performance exceeded that benchmark, the borrower might pay an above-market rate to lock in that performance.

122. The Collateralized Bond Obligation (CBO) transaction, described *supra* note 68, is a typical example. An entity which owns a portfolio of loans or bonds at a loss may not wish to sell the instruments, because it would be forced to recognize the loss when the instruments were sold. Instead, if the entity transfers the instruments to an SPV, and retains the most junior (equity) interest in the SPV, the transfer may not constitute a sale. Moreover, because the entity may consolidate all of the assets of the SPV on its balance sheet,

Finally, there are significant balance sheet implications related to the role of ratings agencies, especially for securitized financings, including mortgages and mortgage derivatives. For example, if a derivative has a higher credit rating than an equivalent financial instrument, a bank may prefer to purchase the derivative, because it will incur a lower capital charge. A bank generally will enter into such a capital charge-motivated transaction when the cost of complying with regulation is greater than the cost of entering into a derivative transaction to avoid the capital charge.¹²³ Similar incentives exist for non-bank entities, including insurance companies, whose investments receive differential regulatory treatment based on their credit rating.

C. Investment Restrictions

Investment restrictions on financial instruments may be imposed by state or local regulatory authorities, or by the management of the investor itself, and often are based on "prudential criteria."¹²⁴ Restrictions may include limitations on the type of instrument (e.g., no trading in futures or options), restrictions on investment characteristics (e.g., no investments in foreign currency or long-maturity bonds), or limits on acceptable credits.¹²⁵

Where such restrictions exist, particularly those imposed by regulatory authorities, investors often will undertake transactions designed to circumvent the limitations on investment choices.¹²⁶ Individual investors and employees may enter into such transactions to better achieve overall investment objectives, or to take additional risks in the hope of personal gain.¹²⁷ Simply put, investors often try to do indirectly with derivatives what they are not permitted to do directly without them.¹²⁸

it may liquidate the vast majority of its portfolio without recognizing a book loss. Although exceedingly popular, such CBO transactions still fall short of the "holy grail" of derivatives transactions: a trade that generates a loss for tax purposes, but not for book purposes. The U.S. tax authorities generally are sophisticated enough to prohibit such transactions.

123. Moreover, in such a situation, a financial intermediary may have superior information about the relative borrowing needs and credit-worthiness of different entities. Because the financial intermediary may be able to earn substantial fees from such transactions, it will have significant incentives to make parties aware of such opportunities. *See, e.g., Macey, supra* note 2, at 74.

124. *See, e.g., DAS, supra* note 96, at 149.

125. Such restrictions may apply to virtually any financial instrument, including common stocks, regardless of complexity. *See Kleinbard, supra* note 103, at 1325.

Other inefficiencies are attributable to nontax regulatory constraints: regulated entities, such as pension funds or insurance companies, often are subject to limitations on investment in foreign equity securities. Derivative instruments can be used to overcome these inefficiencies, by enabling parties to take an economic position in an equity security without actually owning it.

Id.

126. *See DAS, supra* note 96, at 149 (describing the "often byzantine nature of Japanese investment restrictions"). Such circumvention often is described euphemistically as a "market access" trade, although the term "market access" is double-edged: an investor's "access" to a market may be either efficiency-creating (if it allows an investment in a permitted asset) or pure subterfuge (if it is merely a means of allowing investment in a restricted asset).

127. The existence of such activities may be due to the types of principal-agent problems discussed *infra*, part V.A.

128. *See, e.g., SOROS, supra* note 74, at 314 (stating that "[s]ome of these [derivative] instruments appear

Perhaps the best example of an entity using derivatives to avoid investment restrictions is Orange County. In recent years, the Orange County Treasurer was required to invest only in highly-rated fixed income instruments, with a maximum maturity of five years, and was greatly restricted in entering into reverse repurchase agreements.¹²⁹ In the early 1990s, the Orange County Treasurer bought numerous financial instruments that at least in a technical sense, did not violate these requirements, because the instruments were highly-rated structured notes with maturities of five years or less. However, the structured notes were far riskier than their appearance indicated and carried far greater risk than the Orange County Treasurer technically was permitted to take.¹³⁰

Likewise, Japanese investors repeatedly have engaged in derivatives transactions to avoid investment restrictions. For example, in late 1984-85, Japanese investors wanted to increase their exposure to foreign currency-denominated securities, but regulations capped their exposure to such securities at ten percent. However, this regulatory cap did not apply to foreign currency-denominated securities issued by a Japanese resident company. As a result, Japanese banks began issuing huge amounts of foreign currency-denominated securities. Demand was so great at the time that banks were able to sell these securities at yields below those of comparable *sovereign* foreign currency-denominated securities. For the banks, the fact that their obligations were now in foreign currency was irrelevant; they simply swapped these obligations into their preferred liability using currency swaps.¹³¹

Another popular example from Japan is the so-called "dual currency bond." As noted above, until recently, Japanese investors received favorable capital gain tax treatment on their investments in zero coupon bonds. However, Japanese investors were unable to buy sufficient amounts of US\$ zero coupon bonds, because the Japanese Ministry of Finance (MOF) limited the investments, in particular of Japanese pension funds, in non-yen denominated bonds. However, MOF regulations classified a "dual currency bond"—coupons payable in yen, principal repayment in US\$—as a yen-denominated

to be specifically designed to enable institutional investors to take gambles which they would otherwise not be permitted to take" and citing examples of structured notes and Collateralized Mortgage Obligations (CMOs)).

129. See Complaint at 4-7, 28, *County of Orange v. Morgan Stanley & Co.*, No. SA 94-22272JR (Bankr. C.D. Cal. June 11, 1996) [hereinafter *Orange County Complaint*] (on file with author). By using a reverse repurchase agreement (or reverse repo), an investor can fund its ownership of an asset, and thereby create a highly-leveraged position in the asset. In a reverse repo, the investor lends a security to a financial intermediary in return for cash, and thus borrows a significant portion, often more than 90%, of the value of the asset. The financial intermediary marks to market the value of the position daily and may require daily margin calls. In fact, when the value of Orange County's derivatives portfolio declined, it was subject to massive margin calls.

130. See *Orange County Complaint*, *supra* note 129, at 27-28. Many of the notes in Orange County's portfolio were so-called "inverse floaters," debt instruments that pay an interest rate equal to a fixed rate minus some floating interest rate (or a multiple of such a rate). Inverse floaters are extremely sensitive to changes in interest rates; specifically, when interest rates began to increase in early 1994, the value of Orange County's inverse floater portfolio declined dramatically.

131. See *DAS*, *supra* note 96, at 149. As a result of these transactions, Japanese banks obtained cheaper-cost funding than they otherwise could have obtained, and Japanese investors obtained the foreign currency exposure they desired. However, this regulatory arbitrage prevented the Japanese government from realizing benefits it expected from minimizing the exposure of Japanese investors to foreign currency fluctuations.

bond. Therefore, Japanese investors were able to buy dual currency bonds, and still capture the tax advantages of a US\$ zero coupon bond.¹³²

Other investment restrictions may be imposed on investors who require or prefer confidentiality. Certain companies may wish to avoid review by ratings agencies or government regulatory bodies, and certain governmental entities may wish to avoid the scrutiny of the international investing community and press. Such entities may use proxy borrowers, including SPV-related derivatives transactions, to shield their identity, paying a premium for their secrecy.

Still other restrictions may arise because regulators in some countries dictate the timing and order of access to particular capital markets transactions to control the flow of investment funds. Prospective borrowers must apply for permission to issue debt, and there can be up to a one-year wait.¹³³ Because most borrowers need to be able to anticipate market conditions and volatility, they may want to borrow when they are not permitted to, or not want to borrow when they are, and therefore often will swap with other borrowers at different places in the queue. As a result, borrowers may pay a premium to accelerate or defer borrowing to fit their liability preferences.

All of these trades have one aspect in common: the imposition of a governmental or private regulation or restriction leads investors to pay higher prices, including fees, for derivative financial instruments than they otherwise would pay for equivalent financial instruments absent the regulation. The amount of price distortion caused by costly investment restrictions is likely to be significant. Likewise, to the extent the costs of investment restrictions are significant, the premium investors will pay to avoid the restrictions—and the effect on the market price level—also will be greater. A liquid financial market might easily absorb—without a change in its equilibrium price—a small number of trades in which one party is willing to pay a higher (or lower) rate due to “non-economic” reasons. However, to the extent demand for a particular financial instrument shifts dramatically due to investment restrictions, and to the extent markets are illiquid or imperfect, the market price of the instrument is likely to shift as well.¹³⁴

132. See, e.g., Conner Middelmann, *Investors' Appetite for Risk Fuels Surge in Samurai Issues*, FIN. TIMES, Aug. 1, 1996, at 26 (describing growth in dual currency bond issuance); *First Dual Currency Bond To Be Issued on Japanese Market in April*, JAP. ECON. J., Mar. 29, 1986, at 24 (describing 10-year issues by the Bank of China and the Federal National Mortgage Association). Ironically, in response to the “dual currency bond,” the MOF changed its regulations to require that a bond must have principal repayment in yen to be classified as yen-denominated. At the same time, as Japanese interest rates declined dramatically in the early 1990s, Japanese life insurance companies—who were required to buy highly-rated, yen-denominated bonds—were unable to earn enough on their investments to pay their expected liabilities. As a result, and in response to the change in MOF regulations, life insurance companies began buying enormous amounts of “reverse dual currency bonds”—coupons payable in foreign currency, principal repayment in yen—to capture higher nominal yields in currencies other than yen. The “reverse dual currency bonds” were classified as yen-denominated and allowed the life insurance companies to capture an interest rate that nominally exceeded their hurdle rate, but that exposed them to additional foreign exchange risk.

133. Such government regulation is known as “queuing,” and imposes additional, often unknown, costs on borrowers. See DAS, *supra* note 96, at 153-54.

134. See *infra* part IV.A (discussing the static economic model).

D. Government Subsidies

Finally, government subsidies often create regulatory arbitrage opportunities for recipients of subsidies. Just as regulators may impose costs or restrictions on investments, they may reward particular investments with subsidies. To the extent a subsidy is contingent on certain limitations with respect to a financial instrument or index, the subsidy may create demand for derivative transactions to avoid the limitations.

One common example is export credit financing.¹³⁵ Most developed nations exporting capital goods maintain agencies to assist exporters. These agencies provide low-cost financing or subsidies to create incentives for foreign entities to purchase domestically-produced equipment or other items requiring major capital investment. However, export credit financing may include restrictions on terms and conditions of the financing, including restrictions on the financing's currency and interest rate. If the entity receiving the financing has a preferred liability structure which differs from the currency and interest rate liability dictated by the subsidized financing, the entity may enter into swap transactions to adjust its liabilities. By entering into such swaps, the recipient of financing receives the subsidy but is not bound by the subsidy's restrictions.

Other examples of government subsidies include programs designed to stimulate capital investment that provide for specialized depreciation schedules or allow immediate write-offs.¹³⁶ Prospective users of equipment can lower the cost of financing equipment by obtaining this subsidy. Again, however, the subsidy may include particular currency or interest rate restrictions and thus may create swap arbitrage incentives and opportunities.

IV. AN ECONOMIC MODEL OF DERIVATIVES USE AND REGULATION

The economic effect of a costly regulation on a financial market theoretically is no different than the effect of any tax or cost imposed on a market. The regulation reallocates consumer and producer resources to the regulating entity and/or certain private entities, and creates a potentially large deadweight loss. The consumer, producer, and deadweight losses provide the incentive for financial market participants to engage in regulatory arbitrage. This conclusion may be explained using two closely-related economic models of (1) the economic effect of a costly regulation on a static market for financial transactions, and (2) the economic effect of a costly regulation on a dynamic market in which participants engage in regulatory arbitrage.

A. A Static Model of Financial Regulation

In general, financial markets are modeled in terms of the supply of and demand for funds.¹³⁷ In such a model, the financial market may be described generally by the sup-

135. See DAS, *supra* note 96, at 152.

136. Sovereign tax authorities make capital allowances available for infrastructure-related investments, e.g., transportation, often through complex leasing arrangements and credits, and other tax-based financing structures.

137. See, e.g., IVAN C. JOHNSON & WILLIAM W. ROBERTS, MONEY AND BANKING: A MARKET-ORIENTED APPROACH 104-05 (2d ed. 1985).

ply of and demand for funds of a given risk level at various costs of funds, or alternatively by the supply of and demand for a particular risk-return profile. There may be various ways of achieving a particular risk-return profile, just as there may be various lenders and borrowers of funds. The relative supply of and demand for a particular transaction are a function of the price, or cost, of the transaction.

More specifically, suppose the supply of and demand for a particular risk-return profile are as depicted in Figure 1.

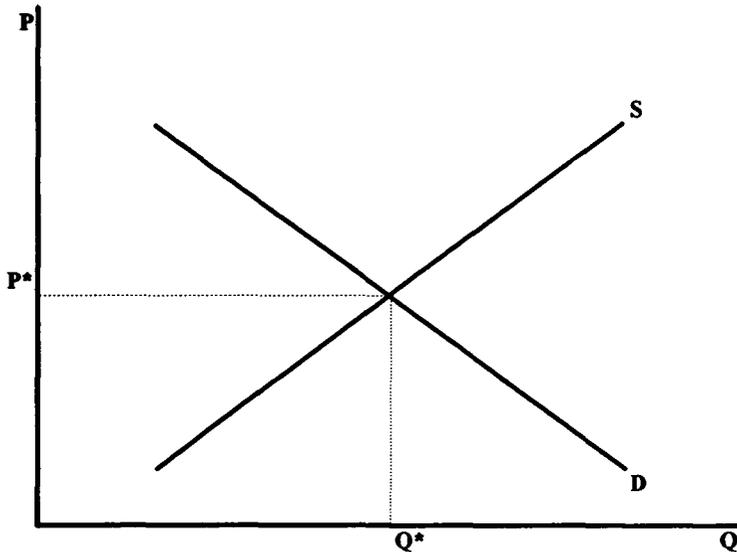


FIGURE 1

The demand curve, D , can be thought of as the amount of a particular transaction that a group of buyers, e.g., mutual funds, will purchase, given a transaction price. The lower the price, the more buyers will demand. Likewise, the supply curve, S , for the transaction can be thought of as the amount of the transaction that a group of sellers, e.g., financial intermediaries, will sell, given a price. The higher the price, the more sellers will supply. In equilibrium, the financial intermediaries sell to the mutual funds a quantity of Q^* , at a price of P^* , and the market clears, i.e., there is no excess demand or supply.

Now suppose a regulation imposes a cost of c on the transaction, either through a tax or some other costly regulatory requirement. The effect of the regulation is to shift the supply curve, S , upward by the amount of the cost, c . I am assuming that the regulation has no effect on the demand curve, D . The new "regulated" supply curve, S_c , describes the amount of a particular regulated transaction that will be sold, at a given price, including the cost of the regulation. At any given price, a lesser amount of the regulated transaction will be sold, and the cost of the transaction will be greater. At the new equilibrium, sellers will sell to buyers the lower quantity, Q_c , of the transaction, at a higher price of P_c . The effects of the costly regulation are described in Figure 2.

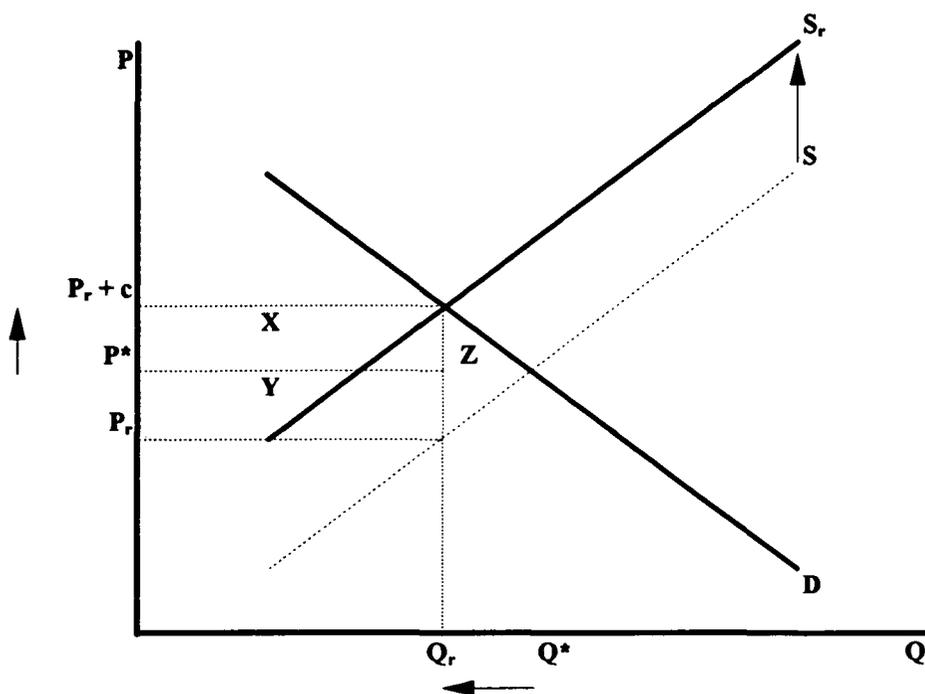


FIGURE 2

Area *X* in Figure 2 represents the amount buyers of the transaction collectively must spend to comply with the regulation. Area *Y* represents the amount sellers collectively must spend to comply.¹³⁸ In economic terms, Area *X* is lost consumer (or buyer) welfare, and Area *Y* is lost producer (or seller) welfare. Unless these amounts—whether a collected tax or other involuntary expenditure, e.g., the cost of required disclosure—are used to ameliorate some existing market failure, they likely will be spent less efficiently than if the regulation had not been imposed. On the other hand, if the collected sums *are* spent efficiently, society may be better off, or at least no worse off, as a result of the regulation. In contrast, Area *Z* in Figure 2 represents the absolute deadweight loss caused by the regulation. The amount of deadweight loss associated with a particular financial regulation may be significant, depending on both the regulation's cost and the elasticity of supply and demand for the regulated transac-

138. The relative burdens borne by the buyers and sellers depend on the relative elasticities of supply and demand. In general, the more inelastic the demand (supply), the greater the relative burden of the buyers (sellers). See, e.g., WILLIAM J. BAUMOL & ALAN S. BLINDER, *ECONOMICS: PRINCIPLES AND POLICY* 605-09 (3d ed. 1985). In reality, the supply of particular financial instruments is likely to be extremely elastic because financial intermediaries confront nearly perfect substitutes for particular transactions they offer to intermediate. In contrast, demand is likely to be more inelastic because investors, especially mutual funds, have a much smaller set of alternative transactions and investment objectives. The greater the supply of economically-equivalent derivatives transactions, i.e., the greater the opportunities for regulatory arbitrage, the greater the elasticity of *both* demand and supply. To the extent demand is relatively more inelastic, a greater share of the burden will fall on the buyers.

tion.¹³⁹ Efficient or not, a costly regulation generates potentially substantial losses for financial market participants. It is these losses—the sum of Areas *X*, *Y*, and *Z*—that create the incentive for regulatory arbitrage.

More specifically, now suppose sellers of financial transactions are able to provide an economically-equivalent alternative to the regulated transaction at a cost of x . If x is less than the cost imposed by regulation, c , a viable regulatory arbitrage opportunity exists, and it is reasonable to assume that a financial intermediary—and thus the buyers and sellers of the financial instruments—will take advantage of it.¹⁴⁰ Such derivatives transactions are likely to involve financial markets and products that are economically equivalent to markets and products targeted by the new regulation, but that for whatever reason do not fall within the purview of the regulation. In fact, an opportunity for regulatory arbitrage exists if a financial intermediary¹⁴¹ can structure a derivatives trade with the same characteristics as the underlying regulated transaction, and offer the derivatives trade for any price of less than P_c .

The new equilibrium is described in Figure 3. The new derivatives supply curve, S_d , is shifted upward from the original supply curve, S , by the amount of the cost of the derivatives transaction, x .¹⁴² However, the derivatives supply curve is not shifted as far as the regulated transaction supply curve, S_r , because the cost of the derivatives transaction is assumed to be less than the cost of the regulation.¹⁴³ At the new equilibrium, compared to the regulated equilibrium in Figure 2, the financial intermediaries will sell to the mutual funds a greater quantity, Q_d , at a lower price, P_d . The corresponding costs and deadweight losses also will be lower.

139. At minimum, a regulation must generate benefits greater than Area *Z* to be considered efficient. See *infra* part IV.B.

140. The existence of regulatory arbitrage opportunities thus raises questions about the efficacy of any attempt to regulate financial markets. See, e.g., JENNINGS ET AL., *supra* note 16, at 3 (“Does it make sense, for example, to restrict or prohibit a particular practice if a U.S. investor can lawfully engage in the same practice in the London or Tokyo markets simply by making a phone call?”); see also *infra* part V.

141. As well, either the buyer or the seller could take advantage of a regulatory arbitrage opportunity directly and eliminate the need for a financial intermediary. Such direct regulatory arbitrage would not change the above analysis, except that the buyer or seller would capture any benefit the intermediary otherwise would capture. Direct regulatory arbitrage is unlikely, however, because financial intermediaries, given superior access to information and economies of scale, are likely to be more efficient providers of derivative products.

142. Note that x is assumed to be greater than zero. If x had been negative, rational financial market participants would have chosen the less-costly derivatives trade in place of the regulated trade at the outset, and the regulation would have no effect at all.

143. If the derivatives transaction were more costly than the regulated non-derivatives transaction, financial market participants would not engage in the derivatives transaction, i.e., a viable regulatory arbitrage opportunity would not exist.

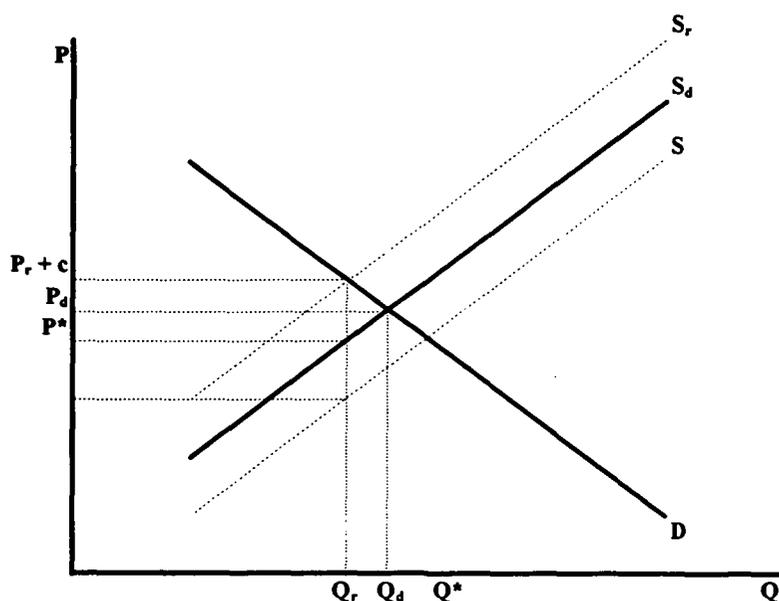


FIGURE 3

What do Figures 1-3 tell us about derivatives and regulatory arbitrage? There are at least four important conclusions. First, costly financial regulation provides a powerful economic incentive for parties to structure derivatives transactions to avoid regulatory costs. Second, financial market participants are likely to engage in regulatory arbitrage whenever the cost of alternative derivatives transactions is less than the costs imposed by regulation. Third, costly regulation of financial markets creates potentially substantial deadweight losses and, therefore, can be justified as efficient only if the regulation also creates some greater benefit, e.g., ameliorates some existing market failure. Fourth, financial market participants may engage in derivatives transactions that are economically equivalent to regulated transactions, thereby decreasing both the costs and the benefits of regulation.

B. A Dynamic Model with Regulatory Arbitrage

Alternatively, financial market regulation may be modelled based exclusively on the benefits and costs of regulation over time. A dynamic cost-benefit model of financial regulation allows for the effects of regulatory arbitrage on the net benefits of regulation. The dynamic model also reveals some of the reasons for the failure of existing derivatives regulation and provides a new framework for assessing proposed regulation, consistent with the above static model.

Suppose that S equals the absolute value of the social benefit from applying a particular regulation to an activity, and that P equals the absolute value of the private costs

of the regulation. Then, in a perfect market, with zero transaction costs, the following condition holds:

$$(1) S = P$$

Equation (1) can be thought of as a simple restatement of the Coase Theorem, which, in Coase's words, states that although "the delimitation of rights is an essential prelude to market transactions . . . the ultimate result (which maximizes the value of production) is independent of the legal decision,"¹⁴⁴ or alternatively, in George Stigler's restatement of the Coase Theorem, that "under perfect competition private and social costs will be equal."¹⁴⁵ If private and social costs are equal, the value of the economic benefit of any regulation, e.g., $S-P$, will be zero. Consequently, it follows from the above static model, that any costly derivatives regulation is inefficient because it creates deadweight private losses that are not offset by any social gain and because the regulation will not change the ultimate result of transacting.

Two critical assumptions underlying Equation (1), and the Coase Theorem, are that markets are perfect and transaction costs are zero. Coase recognized that when transaction costs were positive, the applicable legal rule would play "a crucial role" in determining how resources are used.¹⁴⁶ I will proceed by eliminating first the assumption that markets are perfect, and second the assumption that transaction costs are zero.

As in Figures 1-3, suppose a regulation imposes a direct cost of c_i on each individual party to a financial transaction. The direct costs can be thought of as Areas X and Y in Figure 2. The regulation also creates a deadweight loss, Z, which can be thought of as Area Z in Figure 2. S remains the gross value or benefit to society from the regulation. If we now allow for the possibility of market imperfection,¹⁴⁷ Equation (1) will not necessarily hold, i.e., the "value" of a regulation may be positive, if $S > P$, or negative, if $S < P$. More specifically, for n individuals, a regulation can be thought of as efficient¹⁴⁸ if, again in absolute value terms, the following condition holds:

$$(2) S > \sum c_i + Z, i = 1, \dots, n$$

Equation (2) states that a regulation is efficient if the total benefits to society from the regulation exceed the sum of costs imposed on individuals, $\sum c_i$, plus deadweight losses, Z. The right hand side of Equation (2) can be thought of as the sum of Areas X, Y, and Z in Figure 2; the sum of Areas X and Y equals the sum of costs imposed on all individual parties to financial transactions. Thus, Equation (2) states the *static efficiency condition* for a regulation, absent regulatory arbitrage. Conversely, if Equation (2) does not hold, then the costly regulation merely serves to collect revenue from market participants, and it is inefficient. To satisfy the efficiency condition, the regulation must generate additional benefits that exceed the deadweight loss, Z, associated with the regulation.

144. See Coase, *supra* note 20, at 27.

145. See GEORGE J. STIGLER, THE THEORY OF PRICE 113 (1966).

146. See COASE, THE FIRM, THE MARKET, AND THE LAW 178 (1988).

147. Market imperfection may include the persistence of the various kinds of market failure described *infra* part V.A.

148. By "efficient" I mean simply that the overall benefits to society are greater than the overall costs, so that in principle it would be possible to make every person better off, and no person worse off, by enacting the regulation.

The static model of Equation (2) is unstable. As noted in Part III, once a costly regulation is imposed, financial market participants will engage in regulatory arbitrage, i.e., enter into derivatives transactions that are economically equivalent to the original transaction they had planned. Therefore, the final step in the analysis is to allow for the existence of regulatory arbitrage, which, as I will demonstrate, also will eliminate the assumption of zero transaction costs.

Now, suppose individuals enter into economically equivalent derivatives transactions for the purpose of regulatory arbitrage when the additional cost of entering into the derivatives transaction, x_i , is less than the cost of the regulation, c_i . For each individual who enters into a derivatives transaction to avoid the reach of the regulation, there is a resulting loss to society, l_i , which must be subtracted from the gross anticipated benefits of the regulation, S . The sum of such losses, Σl_i , can be thought of as the lost revenue or other benefits anticipated from the regulation.

Therefore, given positive transaction costs, and the opportunity for regulatory arbitrage, a regulation is dynamically efficient only if the *net benefits* to society from the regulation (total benefits minus the sum of lost benefits for each individual who enters into a regulatory arbitrage trade) exceed the *net costs* imposed on individuals (the sum of the cost of entering into derivatives transactions for those individuals who do, plus the cost of the regulation for those individuals who do not, plus deadweight losses), as follows (again in absolute value terms):

$$(3) \quad S - \Sigma l_i > \Sigma x_i + \Sigma c_i + Z, \quad i = 1, \dots, n$$

Equation (3) states the *dynamic efficiency condition* for a regulation, allowing for the existence of regulatory arbitrage. For each individual, the cost imposed by the regulation will be either the direct cost of the regulation, c_i (if the individual does not enter into a derivatives transaction), or the transaction cost of a derivatives trade to avoid the cost of the regulation, x_i (if the individual enters into a derivatives transaction). The net value to society of the regulation will be S , the gross value to society assuming no individuals engage in regulatory arbitrage, less Σl_i , the sum of the losses (or foregone benefits) to society because individuals engage in regulatory arbitrage.

The above model imposes several requirements on efficient derivatives regulation. First, the regulation must generate substantial benefits for society. Second, the regulation must generate these benefits without imposing excessive costs on market participants. Third, the regulation should minimize opportunities for regulatory arbitrage. Fourth, the regulation should minimize the effect of regulatory arbitrage on its purported benefits.

Finally, the model, and in particular Equation (3), yields two additional theoretical insights. First, in the absence of regulatory arbitrage, Equation (3) reduces to Equation (2). This is consistent with the notion that the dynamic model, by relaxing the assumption of zero transaction costs, simply extends the static model to allow for the existence of regulatory arbitrage. Second, Equation (3) can be thought of as an extension of the Coase Theorem. Coase stated that the result brought about by a legal rule, when transaction costs were positive, was "not intuitively obvious and depends on the facts of each particular case."¹⁴⁹ In theory, Equation (3) demonstrates how the necessary effi-

149. See COASE, *supra* note 146, at 178.

ciency condition of a regulation depends on a small set of variables, and provides an intuitive extension of the Coase Theorem. At least with respect to financial derivatives and regulatory arbitrage, Equation (3) also provides a framework for assessing the efficiency of regulation.

V. OVERCOMING THE COSTS OF REGULATORY ARBITRAGE

Given the above model, what derivatives regulation is likely to be efficient? At the outset, the model does not predict that more regulation, less regulation, or regulation of a particular type would be efficient. Instead, the model shifts the analysis of derivatives regulation from various amorphous notions—including customer protection, fair treatment, financial safety, liquidity,¹⁵⁰ and market integrity¹⁵¹—to a more specific analysis of costs and benefits.

In the model's simplest terms, a particular regulation is efficient if it generates more net benefits than net costs. This balancing test requires a comparison of the direct costs of the regulation, the opportunities for regulatory arbitrage, and, most importantly, the effectiveness of the regulation in correcting market failure.¹⁵² The extent to which the regulation corrects market failure is crucial. The value of S , the benefits to society, depends in large part on the value of benefits from correcting market failure; moreover, such additional value is the only benefit that potentially can offset the deadweight losses associated with costly regulation, i.e., Area Z in Figure 2.

Next, the various types of market failure associated with derivatives use are briefly described. In the final section, the theoretical model will be applied to assess the efficiency of the three categories of derivatives regulation.

150. The goal of market integrity often is described in terms of liquidity. Liquid financial markets are thought to provide a social benefit by encouraging investors to purchase newly-issued financial instruments, thereby promoting capital formation and directing new capital to its most productive use. Although these goals *may* apply to an active securities market, e.g., the New York Stock Exchange, it is not clear how, if it all, they apply to other markets, including the OTC derivatives market, where the investor is not *directly* investing in any asset. Of course, the presence of a liquid derivatives market may in turn improve the liquidity of the underlying cash market. But that effect alone certainly is not sufficient to justify the existence of the largest market in the world. See, e.g., Stout, *supra* note 1, at 65 ("We may celebrate liquidity that encourages investors to 'put more' of their savings into stocks, but do we want to encourage them to 'put more' into a particular interest rate, currency exchange rate, or position on future commodities prices?").

151. Unfortunately, these worthy-sounding goals offer little guidance for assessing specific financial regulation. See Albrecht, *supra* note 5, at 112, 114 (describing these goals as "more than desirable; they are essential to the well-being of not only the financial sector, but of the entire country").

Regulation generally entails three separate functions. One function is to write regulations which implement a statutory mandate. The second is to monitor behavior to determine whether market participants are complying with the rules. The third function is to enforce the rules by bringing actions against those who do not comply with the rules.

Id. at 115.

152. These goals are consistent with the goals of securities regulation generally. See, e.g., Joel Seligman, *The Obsolescence of Wall Street: A Contextual Approach to the Evolving Structure of Federal Securities Regulation*, 93 MICH. L. REV. 649, 649 (1995). SEC Commissioner Wallman has echoed this goal by suggesting that the way to ensure integrity in the financial markets is to set up "rules designed to promote consistency, predictability, enforceability, transparency, reduced transactions and investigation costs, and reduced externalities, among other things, in addition to customer protection." Wallman, *supra* note 7, at 3.

A. Market Failure

The correction of one or more of the following types of market failure is the most likely source of value for derivatives regulation. Efficient regulation should, at least to some extent, be directed at such market failure. Below, I discuss four types of market failure and the impact of derivatives on efforts to correct and, more often, to exploit them.

1. Agency Costs

Increased use of derivatives may be a response to one or more principal-agent problems.¹⁵³ Senior management and employees, both at companies using derivatives and at financial intermediaries trading derivatives, typically have differing incentive structures. Managers and senior employees may be more risk-averse with respect to derivatives trading, especially if they do not understand the derivatives their companies are buying, or if they already are overinvested in the company, in terms of human or financial capital. Conversely, lower-level employees may have a shorter payoff horizon, or a desire to take on greater risks and thus may view their job as a “free option,” a virtually costless opportunity to take additional risks buying and trading derivatives.¹⁵⁴ Derivatives traders in particular may be driven to expose their firms to as much risk as possible to maximize their own compensation.¹⁵⁵ It is not surprising, given these differing incentive structures, that the finance industry periodically encounters plagues of misconduct.¹⁵⁶

Alternatively, the relatively low pay of public sector employees suggests that such employees may engage in risky derivatives trading because they value non-pecuniary compensation, such as high visibility, power, and perquisites, which the managers of the public sector entities—and the public—do not value (or at least cannot benefit from collectively).¹⁵⁷ Many derivatives losses have involved public entities whose traders appear to have been motivated by factors other than their own pay.¹⁵⁸

153. See, e.g., Tracy R. Lewis & David E.M. Sappington, *Optimal Capital Structure in Agency Relationships*, 26 RAND J. OF ECON. 343, 343 (1995).

154. See, e.g., Hu, *Hedging Expectations*, *supra* note 2, at 1024-27 (discussing principal-agent related risks).

155. See Jerry W. Markham, *Guarding the Kraal—On the Trail of the Rogue Trader*, 21 J. CORP. L. 131, 144 (1995).

156. Losses from so-called “rogue trading” often have involved one or more lower-level employees. Such agency problems certainly are not new; such losses even have precipitated at least one national panic, in 1884. See *id.* at 131, 136. More recently, companies sustaining losses attributed to one or more “rogue traders” have included the following entities, a literal “who’s who” of international business and finance: Barings PLC; Bankhaus I.D. Herstatt; a government agency in Peru; Merrill Lynch; Kidder Peabody; Orange County; Salomon Brothers; Metallgesellschaft; Kashima Oil; Piper; Showa Shell Sekiyu KK; Chemical Bank; Codelco; the State of Wisconsin; Atlantic Richfield Co.; ABN-Amro NV; Daiwa Bank; and others. *Id.* at 136-39; see also 1 LOSS & SELIGMAN, *SECURITIES REGULATION* 28 (1995) (“As long as all men (and women) are not angels some of them will be fraud artists, and the bubbles of yesteryear are not a whit more fantastic than some of the schemes of today.”).

157. See Bronfman & Ferguson, *supra* note 17, at 163.

158. Again, the example of Orange County is instructive. County regulators had attempted to limit the risk of its investment portfolio by proscribing investments in fixed income instruments with maturities longer

To the extent derivatives regulation seeks to reduce any of the above agency costs, it may create additional social and private value. Even existing regulation may accommodate attempts to correct problems related to agency costs. However, recent civil and criminal prosecutions of both individual traders and their employers may deter rogue trading and excessive speculation in the future.

2. Informational Costs

The costs of obtaining the information necessary for fully-informed derivatives transacting may simply be too great, and derivatives buyers and traders may therefore opt—not necessarily in an economically irrational manner—to make uninformed, or partially informed, decisions about trading derivatives. Many of the “inefficiencies” observable in the derivatives markets are attributable to information shortages and high transaction costs.¹⁵⁹ The information requirements associated with derivatives trading are extraordinary. Moreover, the intricate web of regulation and derivatives-specific terminology requires a great deal of training, even for attorneys with specialized derivatives practices.¹⁶⁰ As a consequence, even the most sophisticated purchasers of derivatives often have engaged in essentially uninformed trading.¹⁶¹

Moreover, information costs associated with existing financial markets drive the creation of less-costly derivatives markets. Participants in the financial markets will create new derivatives markets and transactions to the extent such markets and transac-

than five years. Orange County Complaint, *supra* note 129, exs. 4, 5. During the early 1990s, Orange County's Treasurer, Robert Citron, obeyed the literal requirements of this proscription by using derivatives with maturities of five years or shorter, but with the interest rate sensitivities of much longer maturity bonds. See Bronfman & Ferguson, *supra* note 17, at 162. Citron, who by perquisites or power appeared to become infected with unusual hubris, insisted he somehow *knew* interest rates would not rise (which would cause the price of the County's enormous long-duration derivatives bet to fall), because “I am one of the largest investors in America . . . I know these things.” Jeffrey Taylor, *Behind the Throne: Hard-Charging Broker Draws the Spotlight in Orange County Mess*, WALL ST. J., Dec. 12, 1994, at A1. Public entities confronted similar agency problems related to their investments in financial derivatives in numerous states, including: Ohio and Wisconsin, *see, e.g.*, Aaron Baar, *Trends in the Region: States Updating Investment Laws*, THE BOND BUYER, Aug. 9, 1995, at 8 (describing losses of \$114 million by Ohio's Cuyahoga County and \$95 million by the State of Wisconsin); Louisiana, *see, e.g.*, Fred Kalmbach, *Ex-Official Indicted by Grand Jury*, THE BATON ROUGE ADVOCATE, July 21, 1995, at 1B (describing state retirement system's \$600 million investment in derivatives, and an assistant state treasurer who was fired for lying about his investment credentials); Florida, *see, e.g.*, Christopher McEntee, *Florida Probes Derivatives Firms Over Losses by Escambia County*, THE BOND BUYER, Aug. 3, 1995, at 1 (discussing losses on derivatives investments by Escambia County, Florida); Wyoming, *see, e.g.*, *Wyoming Treasurer Admits Funds Invested in Derivatives*, THE ROCKY MOUNTAIN NEWS, Aug. 13, 1995, at 46A (same for State of Wyoming); and others, *see* Becker & Yoon, *supra* note 3, at 216-18.

159. *See, e.g.*, Kleinbard, *supra* note 103, at 1325.

160. Informational costs are especially onerous for end-users of derivatives. In one recent survey, attorneys estimated that there are perhaps 200 practitioners in New York active in the derivatives area, and the majority of these attorneys represent dealers in derivatives, not end-users. *See* Blackman, *supra* note 80, at 6.

161. *See id.* at 5-6 (“[T]here is evidence that even some large institutions act like babes in the woods when it comes to negotiating derivatives contracts.”); Goldman, *supra* note 5, at 1112 (“The aftermath of the Orange County bankruptcy has demonstrated that some investors in the expanding derivatives market do not understand what they are buying.”).

tions save more in transaction costs than they generate in new costs. Swaps are one excellent example of such informational cost-saving derivatives.¹⁶²

To the extent derivatives regulation encourages financial market participants to provide information in a more efficient manner, it may generate additional benefits. However, the potentially significant cost of specific disclosure related to derivatives, and the risk of overproviding information, must be balanced against the public good-related benefits of the provision of information.¹⁶³

3. Externalities

Opponents of derivatives regulation argue that as long as the risks associated with derivatives trading are internalized to the transacting parties, there is no reason to worry about losses associated with derivatives. However, there are reasons to believe the costs and risks of derivatives trading may not be internalized to the transacting parties.

Numerous commentators have expressed concerns about the "systemic risk" of market collapse; likewise, there may be additional system-wide costs when derivatives traders either do not understand certain risks or cannot afford the information necessary to understand those risks.¹⁶⁴ To the extent derivatives create risks that parties to derivatives transactions do not bear, there will be additional incentives to engage in risky derivatives trading. To the extent governmental regulation can cause financial market participants to internalize the costs of financial market transactions, it may generate substantial benefits. On the other hand, the absence of externality-related problems would be a strong argument in favor of derivatives *self*-regulation.¹⁶⁵

4. Moral Hazard

There are two types of moral hazard problems that potentially lead to increased derivatives use. In the first instance, moral hazard refers to the proclivity of shareholders to increase the riskiness of projects a firm undertakes after the firm has issued debt. Firms may use derivatives as a low-cost substitute for debt where a variety of legal rules—e.g., bankruptcy law, lender liability, obligations of good faith—increase the creditors' expense of protecting themselves against excessive risk-taking of shareholders.¹⁶⁶

162. See Macey, *supra* note 2, at 73 ("The informational asymmetry that exists among market participants provides yet another core economic justification for swap transactions.").

163. See, e.g., Wallman, *supra* note 7, at 9; Coffee, *supra* note 18, at 723.

164. See, e.g., Wallman, *supra* note 7, at 7 ("I believe there is strength to the argument that the externalities of surprise in the financial markets caused by a perception of losses from derivatives that are not well understood is different from the surprise from understandable losses.").

165. See, e.g., Macey, *supra* note 2, at 89.

Clearly, there are major risks in trading in derivatives, as such well publicized fiascos as Orange County and Barings bank illustrate. But as long as these risks are internalized, derivatives trading should be encouraged rather than discouraged since such trading creates wealth, permits risk hedging, and helps to eliminate certain economic frictions.

Id.

166. See *id.* at 76-77.

In the second instance, moral hazard refers to the proclivity of derivatives purchasers protected by insurance or government guarantees to increase the riskiness of their investments. Again, Orange County and other state and local government entities are obvious examples.¹⁶⁷ To the extent derivatives regulation can correct moral hazard problems, it may generate substantial benefits. The moral hazard problems associated with excessive risk-taking resemble the externality problems discussed above.

B. Categories of Derivatives Regulation

Whether the above model, and in particular Equation (3), holds for a specific regulation is a difficult empirical question. However, the model suggests that certain categories of derivatives regulation are more likely than others to yield efficient results.¹⁶⁸ I next describe three categories of regulation and suggest, both within and across categories, what types of regulations are more likely to be efficient. I do not attempt a specific, quantitative application of the model in Part IV to any particular regulation, although I suggest in qualitative terms how the model might be applied and what kinds of results it might generate.

In general terms, I have reached the following conclusions. First, derivatives self-regulation is likely to be inefficient, because financial industry participants will find it more profitable to avoid regulatory costs, ignore market failure, maximize fee income, and, to the extent they support any regulation, support those designed to extract economic rent or other benefits. Second, various “top-down” approaches of general applicability—including such *ex ante* regulation as mandatory disclosure, suitability requirements, and investment restrictions—are unlikely to promote efficiency, because they impose significant costs on non-derivative transactions, and may “tip off” financial market participants to regulatory arbitrage opportunities. Third, case-specific “bottom-up” approaches to derivatives regulation—including *ex post* imposition of civil and criminal liability—are the most likely to achieve the efficiency goals suggested by the model presented here, primarily because they do not present viable opportunities for regulatory arbitrage.

Many scholars assert that swaps and other derivative transactions are used to economize on transaction costs.¹⁶⁹ However, derivatives transactions also generate enormous costs and thereby cause a redistribution of wealth from borrowers and lenders to financial intermediaries, in part through increased fees. Arranging a derivatives transaction requires time and money, especially if a significant fee must be paid to a dealer or other intermediary; the billions of dollars of annual fee income derivatives intermediaries earn reflect, in part, such transaction costs.¹⁷⁰ Moreover, parties to a derivatives

167. See, e.g., Becker & Yoon, *supra* note 3, at 216-18.

168. Recently, SEC Commissioner Wallman has suggested several possible approaches to derivatives regulation. These approaches are representative of suggested approaches generally, and fall within the three categories described here. See Wallman, *supra* note 7, at 8-9.

169. See, e.g., Macey, *supra* note 2, at 73; *id.* at 92 (stating “regulations can clearly benefit market participants as well as the economy by reducing the costs of transacting”); Bronfman & Ferguson, *supra* note 17, at 171 (stating “transactions costs of contracting also contribute to the decision to enter into derivatives markets”); *id.* at 175 (characterizing the firm’s decision to utilize derivatives as one of minimizing *total* contracting costs, and discussing the “primary problem” that perfect contracts cannot be written without cost”).

170. Although the “notional amount” of derivatives transactions may not be an appropriate measure for

transaction continue to incur costs after the transaction has been executed as they must continue to monitor the market and the transaction.¹⁷¹

Consequently, those regulatory approaches which are most likely to deter those derivatives transactions which generate significant costs and only questionable benefits, e.g., regulatory arbitrage transactions, also are likely to be the most efficient. Although uncertainty is generally undesirable in financial markets, the uncertainty created by ex post derivatives regulation may deter such transactions and thus may generate substantial benefits at minimal costs.

1. Self-Regulation

The theory supporting self-regulation of financial derivatives is that individual parties to derivatives transactions will internalize the costs of those transactions.¹⁷² This theory does not appear to be supported in practice. Although the number of parties involved in the self-regulation of derivatives appears to be large,¹⁷³ the substance of the self-regulation directed at derivatives often is trivial.¹⁷⁴ For example, perhaps the most cited recent instance of derivatives self-regulation, the May 9, 1995, voluntary oversight framework agreed to by the six largest non-bank Wall Street participants in the OTC derivatives market, on behalf of their non-broker-dealer affiliates, was largely toothless.¹⁷⁵ Insights from the economics of regulation suggest that decisions by self-regulatory organizations are intended to balance the interests of parties contending for rents, rather than to maximize efficiency.¹⁷⁶ Also, self-regulatory organizations are likely to respond only to actual market losses, not to mere warnings.¹⁷⁷

estimating the size of the derivatives market, see *supra* note 12, such "notional amounts" typically are used as the basis for calculating the fees charged by financial intermediaries. Assuming (conservatively) that the average fee for a derivatives transaction is 0.1%—10 basis points—the total fees charged on all derivatives transactions (approximately \$40.7 trillion in notional amount) would be more than \$40 billion. See Waldman, *supra* note 8, at 1025. Publicly-reported derivatives trading revenues for commercial banks alone in the first quarter of 1996 were approximately \$2 billion. See Joanne Morrison, *Derivatives Activity Reaches Record High*, THE BOND BUYER, June 11, 1996, at 30.

171. See, e.g., Stout, *supra* note 1, at 61.

172. See Wallman, *supra* note 7, at 9-10.

173. "84% either report regularly to their boards or have a documented policy on derivatives use." *Id.* at 12 (citing WHARTON SCHOOL AND CIBC WOOD GUNDY, 1995 SURVEY OF DERIVATIVES USAGE BY NON-FINANCIAL FIRMS).

174. The vast majority of the derivatives activities of securities firms are carried out through unregistered affiliates that face considerably less regulatory oversight than do their parents. See Goldman, *supra* note 5, at 1122.

175. See DERIVATIVES POLICY GROUP, FRAMEWORK FOR VOLUNTARY OVERSIGHT (March 1995). For example, it is telling (but not surprising) that the Derivatives Policy Group Framework excluded from its definition of OTC derivatives both structured notes and SPV transactions, by far the most profitable derivatives transactions for financial intermediaries.

176. See, e.g., MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS 5 (1965); Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211, 212 (1976); Stephen Craig Pirrong, *The Self-Regulation of Commodity Exchanges: The Case of Market Manipulation*, 38 J.L. & ECON. 141, 159-60 (1995); Richard A. Posner, *Theories of Economic Regulation*, 5 BELL J. ECON. & MGMT. SCI. 335, 335-36 (1974); George Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3, 3 (1971).

177. In his 1994 warning to the financial community, then-New York Federal Reserve Bank President E.

For example, prior to the advent of federal commodities laws, commodity exchanges took few, if any, actions to deter manipulation.¹⁷⁸ One reason for this inaction was the costs attributable to rent seeking and collective action.¹⁷⁹ Similarly, self-regulation has not prevented the manipulation of futures markets, even though a futures exchange at least theoretically has incentives to take precautions against such manipulation.¹⁸⁰

It is, of course, incorrect to infer from the failings of self-regulation that some alternative means of government regulation is superior. If government regulation imposes higher costs or yields fewer benefits, self-regulation may be optimal, even if relatively ineffective.¹⁸¹ Although the government has powers which might enable it to accomplish certain regulatory tasks at a lower cost than a private organization, the governmental administrative machine certainly is not costless.¹⁸² Moreover, apart from self-regulation, market participants act collectively to correct market failure when they are able to benefit directly from collective action and when bargaining costs are low.¹⁸³ Nevertheless, in terms of the model set forth above, the failure of *self-regulation* to prevent regulatory arbitrage indicates that there may be new governmental regulations for which Equation (3) would hold.

SEC Commissioner Wallman has called self-regulation a *caveat emptor* approach, in which every market participant is presumed sophisticated and must, absent fraud, rely on its own evaluation of the transaction.¹⁸⁴ Such an approach requires that individual parties incur significant transacting costs, and therefore the private costs of a *caveat emptor* approach likely would exceed any social benefits. Moreover, to the extent individual parties do not internalize the costs of derivatives transactions—which the above discussion of market failure suggests already is the case—self-regulation will not achieve *any* benefits associated with the correction of market failure.

One final example of the inadequacy of self-regulation is illustrative. The financial costs due to inaccurate estimation of credit are extensive, and credit is perhaps the most important, fundamental consideration in derivatives transactions. The number and fre-

Gerald Corrigan noted that “[g]iven the sheer size of the [derivatives] market, I have to ask myself how it is possible that so many holders of fixed- or variable-rate obligations want to shift those obligations from one form to the other.” Steven M. Roberts, *High-Profile Fiascos with Derivatives Point Up the Need for More Vigilance*, AM. BANKER, June 8, 1994, at 16.

178. See Pirrong, *supra* note 176, at 195.

179. See *id.* at 196.

180. There are several reasons why the self-regulation of futures markets has failed: (1) there is no necessary connection between the total costs of futures manipulation and the losses borne by futures exchange members, i.e., an exchange’s members do not necessarily bear the entire burden of a decline in demand from the reduction in benefits of hedging and increased trading costs associated with manipulation (due to the presence of externalities), (2) transaction costs of negotiations between exchanges, their members, and their myriad customers preclude the consummation of an efficient agreement, and (3) free riding limits the incentives of individual consumers to bargain with the exchange to change its rules. See *id.* at 151, 154.

181. See *id.* at 196.

182. See, e.g., COASE, *supra* note 146, at 118 (“All solutions have costs, and there is no reason to suppose that governmental regulation is called for simply because the problem is not well handled by the market or the firm.”).

183. The ISDA standard forms and contract provisions are a notable example. See generally ISDA, *supra* note 45.

184. See Wallman, *supra* note 7, at 9-10.

quency of debt crises and unexpected bankruptcies in recent years has been astonishing. In many cases, e.g., Orange County, the credit ratings of a particular entity have later proved woefully inaccurate. Yet even today, derivative products companies continue to rely on credit ratings to engage in profitable derivatives transactions.¹⁸⁵ Credit information is proprietary and costly; consequently, the ratings agencies' estimation of credit quality—though likely unreliable—is the best guess for anyone transacting in derivatives. For example, determining the appropriate level of required capital for an investment bank's derivatives trading subsidiary depends on estimates of potential credit losses, based on just such credit ratings.¹⁸⁶ Stricter government regulation of credit ratings agencies—or perhaps even the risk of liability from private litigation—might lessen the transaction costs associated with credit considerations in derivatives transactions by providing a more credible, accurate, public system of assessing credit quality. Financial market participants, acting alone, do not appear willing to do this.

2. "Top-Down" Regulation

By "top-down," I mean a regulatory approach of broad, general applicability, where the regulating entity has centralized control and jurisdiction over all regulated market participants. A typical example of a "top-down" ex ante regulatory approach is the mandatory disclosure requirements of the securities laws.

Commissioner Wallman has commented on two "top-down" approaches to derivatives regulation. One approach, a full-scale suitability obligation, would require a dealer to have a reasonable basis for believing that a recommendation was suitable.¹⁸⁷ Another approach would require the dealer to disclose various information about the financial instrument at issue, but not to determine whether the customer was a suitable purchaser.¹⁸⁸ These and related approaches have two major weaknesses: they impose significant direct regulatory costs and they create incentives for inefficient regulatory arbitrage.¹⁸⁹

In general, there are two alternative means of financial regulation: ex ante and ex post. Ex ante regulation often is more costly because its restrictions are both general and onerous, although ex post regulation also may be costly because of the difficulties of detecting wrongdoing and of imposing significant penalties.¹⁹⁰ Ex ante regulatory

185. See Ben Iben & Rupert Brotherton-Ratcliffe, *Credit Loss Distributions and Required Capital for Derivatives Portfolios*, J. FIXED INCOME, June 1994, at 6.

186. See *id.*

187. See Wallman, *supra* note 7, at 8-9.

188. See *id.*

189. Both suitability and disclosure requirements can be contracted around through the use of often meaningless disclosure forms and releases. Unless coupled with the prospect of liability from private litigation, such approaches are unlikely to do more than create a purely formal administrative requirement, without consequence.

190. See, e.g., Frank H. Easterbrook, *Monopoly, Manipulation, and the Regulation of Futures Markets*, 59 J. BUS. S103, S107 (1986) (comparing a textbook model of market economies with the operation of a market after the introduction of fraud); Steven Shavell, *The Optimal Structure of Law Enforcement*, 36 J. LAW & ECON. 255, 256-66 (1993) (discussing fundamental dimensions of law enforcement and the theoretical optimal level of enforcement). For example, the problems associated with U.S. regulation of commodities include: (1) reliance on ex ante measures that impose severe constraints on the legitimate activities of market users and

costs are likely to be especially significant for financial derivatives. New financial laws and regulations inevitably are written before the types of financial derivative transactions to which they might apply are even imagined.¹⁹¹ Consequently, regulators are forced to adapt and transform *ex ante* regulations in response to financial innovation; the resulting mountain of exceptions and patchwork regulations are, in turn, driven by the market's responsive attempt to avoid out-dated or costly regulations. Although *ex ante* regulation often targets particular classes of transactions, such as securities, options, or futures, the line between securities markets and other capital markets has become increasingly uncertain,¹⁹² and regulations aimed at one type of transaction miss economically-equivalent transactions in other classes.

In many instances, the creation of financial derivatives has been a response to changes in regulatory approach and has allowed investors, brokers, and banks to act in ways in which they previously were not permitted, or to take advantage of incremental profit opportunities created by differential regulation.¹⁹³ For example, in the past two decades, various countries, including the United States, have instituted regulatory programs, especially foreign exchange controls and international tax regulation, to address concerns about domestic economic dislocation or financial market collapse, or to stem the outflow of investment capital. According to Professor Grundfest, such programs "failed dismally in achieving their intended public policy objectives but succeeded smashingly in stimulating the growth of international money markets."¹⁹⁴

An even more formidable barrier to efficient *ex ante* regulation is the elastic nature of capital markets. Regulating capital markets is substantially more difficult than regulating other markets, including markets for consumer products.¹⁹⁵ Capital markets are

exchanges, (2) poorly crafted and vague existing federal statutes, and (3) a maximum fine for manipulation which is too small to deter a large manipulation. See Pirrong, *supra* note 176, at 198-99.

191. See, e.g., Becker & Mazur, *supra* note 5, at 205; Grundfest, *supra* note 66, at 390-91 ("Efforts to regulate behavior through the manipulation of financial market prices are often misguided and will generally fail to achieve their desired purposes."). For a description of bank regulators' informational disadvantages in the swap market, see Henry T.C. Hu, *Swaps, the Modern Process of Financial Innovation and the Vulnerability of a Regulatory Paradigm*, 138 U. PA. L. REV. 333 (1989).

192. See JENNINGS ET AL., *supra* note 16, at 1.

193. See, e.g., AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS, INC., DERIVATIVES—CURRENT ACCOUNTING AND AUDITING LITERATURE 3 (1994) ("Given the fast-changing market for derivatives and related projects under way, any summary of existing guidance risks [is] out-of-date upon its issuance."); Petzel, *supra* note 4, at 101-02 ("[W]hat Congress never seems to learn is that whenever regulatory fences are regulated, there are bound to be incentives for people on both sides to go around, through, and over the dividers."); Becker & Mazur, *supra* note 5, at 205 ("Often, the form rather than the substance of a particular derivatives transaction can determine the applicable legal framework.").

194. Grundfest, *supra* note 66, at 418.

195. Professor Grundfest has noted the stark contrast between efforts to regulate consumer product safety, and financial regulation:

By defining safety standards, regulators can reduce the risk of events that threaten to generate liability in excess of corporate assets. These standards cannot be avoided through capital market activity because, regardless of financial arbitrage, the market for goods and services—which is, after all, where torts occur—remains subject to these safety standards. Although the inefficiencies of product safety standards are legion and regulators inevitably make mistakes in setting such standards, they can be enforced and do affect the standard of care followed by a corporation.

characterized by extremely high elasticities of supply and demand. On the demand side, investors can readily shift among financial instruments and markets to tap new investment opportunities. On the supply side, financial intermediaries, including investment bankers, commercial bankers, and securities exchanges, constantly create new financial instruments and transaction techniques to satisfy investor demands.¹⁹⁶ Likewise, capital markets respond quickly to changes in regulation.¹⁹⁷ "Top-down" regulatory approaches are unlikely to win a game of catch-up with the financial community.

Moreover, any effort to single out particular derivative instruments in advance for special regulatory treatment would create artificial incentives to structure transactions based on the regulations, not economic characteristics of the transactions.¹⁹⁸ Thus, the elastic nature of capital markets suggests that especially draconian or costly regulation is unlikely to accomplish its objectives. In terms of Figure 3, there may be many derivatives transactions which generate a risk-return profile similar to that of the regulated transaction. In terms of Equation (3), the costs of arranging alternative derivatives transactions (i.e., regulatory arbitrage) may be less than the regulatory cost.

Many of the above problems in assessing "top-down" derivatives regulation fall under the rubric of transaction costs. The difficulties posed by regulatory arbitrage opportunities are consistent with two long-established themes in transaction costs theory. First, selective intervention always is inefficient because affected parties opportunistically attempt to influence decisionmakers empowered to intervene in order to obtain a larger share of the available rents.¹⁹⁹ Second, even when it is possible to change the legal delimitation of rights through market transactions, it is obviously desirable to reduce the need for such transactions and thus reduce the expenditure of re-

Id. at 422; *see also id.* at 391-92 ("Given the structure of modern capital markets, strategies that affect the value of underlying productive activities are more effective than strategies that seek to influence or tax capital market transactions."); STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 281-82 (1987).

196. According to Professor Grundfest, the lesson from efforts to regulate financial markets is clear: "Regulate the activity and not the capital flow." Grundfest, *supra* note 66, at 419.

197. *See, e.g., id.* at 416 ("Capital markets have a long and illustrious history of responding in ways that frustrate the best laid plans of even the most clever and well-intentioned regulators."); *id.* at 411 (concluding that to prevent capital market arbitrage would require a regulatory structure of "truly talmudic proportions").

198. *See Derivative Financial Instruments Relating to Banks and Financial Institutions: Hearings Before the Senate Comm. on Banking, Housing, and Urban Affairs*, 104th Cong. 18 (1995) (testimony of Alan Greenspan, Chairman, Federal Reserve Board); Grundfest, *supra* note 66, at 416 (stating "efforts to modify behavior through regulation of capital market transactions are generally inferior to efforts at influencing the far less elastic markets for goods and services"). Consequently, such efforts would not only prove futile; they would trigger "an escalating cycle in which regulatory initiatives inspire financial innovations that trigger further regulations that in turn give rise to additional rounds of innovation. At the end of this cycle, the rule books are thicker, but the capital markets often restructure themselves to block the regulatory regimes' goals." *Id.* at 410-11 (citations omitted).

199. *See* OLIVER E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM* (1985); Pirrong, *supra* note 176, at 159; Oliver E. Williamson, *Corporate Finance and Corporate Governance*, 43 J. FIN. 567 (1988) (introducing the concept of selective intervention).

sources in carrying them out.²⁰⁰ Even the most seemingly-trivial aspects of regulating derivatives transactions can be extraordinarily expensive.²⁰¹

3. "Bottom-Up" Regulation

By "bottom-up," I mean a regulatory approach of specific applicability, where each regulating entity has jurisdiction over only certain regulated transactions or disputes. A typical example is the federal securities law anti-fraud provisions for private securities fraud suits, which may be filed in any U.S. federal district court. A "bottom-up" approach often is *ex post*, and assumes that some financial activities, including fraud, can be regulated piecemeal after-the-fact, and that such regulation nevertheless may achieve an efficient result, primarily through deterrence. Such an approach may also be a mechanism to short-circuit some of the types of market failure described above. "Bottom-up" regulation derives much of its power from the generation of uncertainty.

Why might the generation of uncertainty be efficient? The classical theory is that in an efficient market, arbitrage opportunities will *not* persist. Traders will compete away the profits from arbitrage, and the price differential between equivalent trades will approach zero. According to this theory, the existence of arbitrage is a sign of a healthy, efficient, competitive market.

However, the financial derivatives markets often contradict the classical theory. To the extent that market failure²⁰² persists, arbitrage opportunities, including regulatory arbitrage opportunities, may persist. The market price differentials that represent regulatory arbitrage opportunities result not from classical inefficiencies, but from differential regulatory regimes. To the extent that such differential regimes persist, profits from

200. See COASE, *supra* note 146, at 119. Coase anticipated many of the transaction cost arguments related to derivatives, in explaining why regulations applied differentially to market and intra-firm transactions would bring into existence firms "which otherwise would have no *raison d'être*." *Id.* at 41. An example of such a differential regulation is a sales tax, which applies to market transactions, but not to transactions within a firm. *Id.* (stating "so much that happens in the economic system is designed either to reduce transaction costs or to make possible what their existence prevents"); *id.* at 63 ("The way in which industry is organized is thus dependent on the relation between the costs of carrying out transactions on the market and the costs of organizing the same operations within that firm which can perform this task at the lowest cost."). As well, the classic statement of the effect of transaction costs on market transactions is given by Coase:

In order to carry out a market transaction, it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost.

Id. at 114.

201. For example, identifying foreign owners can be virtually impossible. See, e.g., Grundfest, *supra* note 66, at 398 n.44.

202. The types of market failure discussed here are specific to recent developments in financial derivatives. An enormous amount of scholarship has discussed whether financial markets generally are "efficient." See, e.g., Seligman, *supra* note 152, at 666-69; Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, 25 J. FIN. 383 (1970). Of course, to the extent that derivatives markets are inefficient, in the sense that prices do not accurately reflect all available information, arbitrage opportunities, albeit of different kinds than those discussed here, may persist as well.

regulatory arbitrage also will persist, and it is these persisting (efficiency-limiting) regulatory arbitrage profits that “bottom-up” regulation seeks to eliminate. In a sense, the profits created from regulatory arbitrage transactions can be thought of simply as a “cost” of regulating. However, that “cost” may be unnecessary and preventable if a “bottom-up” regulation can generate sufficient uncertainty or risk to outweigh the cost.

The same circumstances apply to new, as well as to existing, regulation. To the extent derivatives are used to exploit existing differential regulations, they allow market participants to circumvent the existing regulatory scheme.²⁰³ Additionally, new regulations—including attempts to correct the effects of regulatory arbitrage on existing regulations—may create new regulatory arbitrage opportunities. Thus, both existing differential regulation, and the possibility of new or different regulation, may create an environment where regulatory arbitrage opportunities persist indefinitely. The advantage of new “bottom-up” regulation is that because its results are not predictable, it should not encourage regulatory arbitrage.

One “bottom-up” approach, which Commissioner Wallman recommends, would require parties to derivatives transactions to clarify their relationships before transacting, with certain default categories, and would impose different obligations on different relationships.²⁰⁴ This approach is a blend of *ex ante* and *ex post* regulation. The enforcement of the approach is “bottom-up,” in that the consequences of financial losses in litigation would depend on how an individual court would assess the parties’ financial relationship. The flaw in this approach is that purchasers of financial derivatives are no more likely to succeed in bargaining with a financial intermediary about a pre-defined relationship category than they are in negotiating previous derivatives trades. To some extent, this approach differs little from the suitability and disclosure approaches discussed earlier. The success of this approach would depend not on the category of relationship selected by the parties, but rather on the ability of a court to assess the relationship. Again, to the extent the approach has value, its value depends on the viability of the threat of private litigation.

One common thread in the various proposals is the desire to minimize transaction costs and the opportunities for regulatory arbitrage.²⁰⁵ I suggest that the best way to minimize these costs is to impose uncertain, and potentially large, costs on regulatory arbitrage transactions. Ironically, the most efficient mechanism for regulating financial derivatives may prove to be the least sophisticated—the common law. Derivatives participants exposed to common law liability—especially for fraud—may not be able to

203. See Stout, *supra* note 1, at 57 (“While conservative commentators may believe that such opportunities to do an end run around regulators are cause for celebration, observers willing to assume that existing banking, securities, and tax laws serve a public function should find the notion of ‘regulatory arbitrage’ far more troubling.”).

204. See Wallman, *supra* note 7, at 8-9.

205. See, e.g., *id.* at 8 (suggesting the most cost-effective regulatory approaches); Macey, *supra* note 2, at 92 (“Parties to derivative transactions, like market participants generally, value clear rules that provide default, standardized, off-the-rack terms so that participants can save the cost of contracting.”); Soros, *supra* note 74, at 107-08 (“All derivatives traded by banks ought to be registered with the Bank for International Settlements (B.I.S.) in Basle through the various national regulatory agencies. The B.I.S. could study them, gather data, establish capital requirements and, when necessary, discourage them by raising capital requirements or ban them altogether.”).

avoid such ex post regulation through regulatory arbitrage. Additionally, the prospect of costly litigation and/or damage awards would be devastating to most financial intermediaries. To the extent such claims might chill derivatives creation, they would tend to chill the most speculative and exotic, as well as the pure "end-run," derivatives transactions first.

Obviously, a common law approach would be limited in scope and could not directly address the numerous regulatory arbitrage opportunities based on existing tax and accounting regulation, or investment restrictions. Still, the fact that financial intermediaries are especially wary of setting precedents in current litigation is some indication of the potential power of traditional common law liability. Unfortunately, the courts are unlikely to have the opportunity to develop a common law of derivatives because derivatives case law is limited and seems unlikely to expand. Virtually all of the handful of disputed cases involving derivatives have resulted in out-of-court settlements, in part because financial intermediaries are afraid to set dangerous precedents.²⁰⁶ These fears appear to be well-founded. For example, although Bankers Trust viewed its settlement with Procter & Gamble as a victory, and it arguably was (the decision issued in the case was in Bankers Trust's favor on nearly every issue),²⁰⁷ investors and commentators quickly seized on one lingering issue: whether Bankers Trust had a "duty to disclose material information" under New York law by virtue of its "superior knowledge."²⁰⁸

To the extent the courts, perhaps with the assistance of Congress, could develop a mechanism whereby regulatory arbitrage transactions were exposed to uncertain future liability, such uncertainty might lead to efficient results. Alternatively, "bottom-up" regulations which create either (1) incentives for individual employees of financial market participants to uncover regulatory arbitrage transactions, e.g., "whistle-blower" statutes, or (2) disincentives for individual employees who are actively involved in regulatory arbitrage, e.g., personal civil and/or criminal liability, are the types of regulations that are more likely to generate benefits at minimal cost. It still is true that sunlight is the best of all disinfectants;²⁰⁹ unfortunately, in the jungle of derivatives trading, some floor-lighting may be required.

VI. CONCLUSION

In opposing new derivatives regulation, members of the investment banking community have argued that a company's decisions about whether to invest in derivatives are no different than its other decisions and therefore should not be treated differently under law.²¹⁰ However, the finance industry *is* fundamentally different from other in-

206. See, e.g., Apu Sikri, *Quietly, Bankers Eat Clients' Losses Tied to Derivatives*, WALL ST. J., Apr. 29, 1996, at B7A.

207. See *Procter & Gamble Co. v. Bankers Trust Co.*, 78 F.3d 219 (6th Cir. 1996).

208. See Warren Davis, *Spinning the P&G-Bankers Trust Settlement*, AM. BANKER, May 21, 1996, at 30.

209. See 1 LOSS & SELIGMAN, *supra* note 156, at 173 (citing LOUIS BRANDEIS, *OTHER PEOPLE'S MONEY* 62 (1914)) (commending publicity as "a remedy for social and industrial diseases generally" and charging specifically that "[s]unlight is said to be the best of disinfectants; electric light the most efficient policeman.').

210. For example, a report by ISDA asked the following question: "Why should derivatives activity be regulated in this manner while other fundamental business and financial decisions by SEC registrants are

dustries,²¹¹ and notions of fiduciary responsibility pervade the regulation of financial transactions in ways that do not exist for regulation of a firm's day-to-day decision-making.²¹² One reason why financial transactions have been, and likely will continue to be, treated differently, is that such transactions are especially susceptible to manipulation, fraud, and (I argue) regulatory arbitrage. As a general principle, greater vigilance and more careful regulation are required when the regulated industry is capable of easily avoiding the reach of regulation.

Moreover, it also is no surprise that financial intermediaries would both *fail* to have an interest in regulating themselves and *succeed* in persuading the government not to regulate them. These two notions are closely related. Even following the consolidation of the mutual funds industry,²¹³ investors remain a poorly organized pressure group; financial intermediaries, who by contrast are more concentrated and better organized, are more likely to "carry the day" politically.²¹⁴ Regulators also are cautious about intervening in an inappropriate manner, or in situations which will involve enormous expenditures of time and resources.²¹⁵ The structure of existing securities regulation was determined, in major part, by the securities industry itself. For example, regulatory exemptions exist often because of the success of a political lobby.²¹⁶ Perhaps most significantly, in the last two election cycles alone, legislators received an estimated \$100 million in contributions from banks, investment firms, and insurance companies.²¹⁷

not?" ISDA, THE GAO REPORT ON FINANCIAL DERIVATIVES: GOOD FACTS AND BAD CONCLUSIONS 12 (1994).

211. See, e.g., Wallman, *supra* note 7, at 8-9.

For example, in medicine, we frequently rely on the recommendation of one professional, although increasingly for any major procedure, second or third opinions are obtained. Never is one given a medical text and asked to come to their own conclusion. In the securities area, we frequently do just provide a potential investor with a prospectus and say the choice of investing is yours. The difference is obviously rooted, to some degree, on the differing expertise of the parties, their ability to obtain advice from others, the disinterestedness of those providing the advice, and other factors.

Id.

212. See, e.g., JOEL SELIGMAN, THE TRANSFORMATION OF WALL STREET: A HISTORY OF THE SECURITIES AND EXCHANGE COMMISSION AND MODERN CORPORATE FINANCE 65, 163 (1982) ("In a market in which there is such an enormous public interest . . . it is essential that no element of the casino be allowed to intrude . . .") (quoting WILLIAM O. DOUGLAS, DEMOCRACY AND FINANCE 70 (1940)).

213. See, e.g., Seligman, *supra* note 152, at 657-61; Note, *Investor Liability: Financial Innovations in the Regulatory State and the Coming Revolution in Corporate Law*, 107 HARV. L. REV. 1941, 1945-47 (1994).

214. See Macey, *supra* note 2, at 92-93 (arguing that it is rational for the ordinary citizen to remain entirely ignorant of derivatives regulation because the payoff from spending the resources necessary to understand the regulation is not worth the costs).

215. See, e.g., Pirrong, *supra* note 176, at 159 (noting that under transaction costs theory, selective intervention will always be inefficient because the parties will attempt to influence the decisionmakers); Stout, *supra* note 1, at 67 ("The prevailing favorable climate for derivatives undoubtedly can be attributed in part to interest-group politics and other public choice obstacles to state action.").

216. See Seligman, *supra* note 152, at 651.

217. See Arthur E. Rowse, *Golden Fleece Derivatives Dealers*, THE NATION, Dec. 25, 1995, at 813.

Although OTC derivatives recently have become an apparent concern of regulators and policymakers,²¹⁸ most proposals for new regulation have died and are unlikely to be revived for several reasons. First, it is essentially impossible for policymakers to develop rules that successfully regulate whole classes of derivatives transactions.²¹⁹ Second, it is impossible for policymakers to develop effective rules at all if they do not understand what derivatives are, and it seems that regulators are fighting a losing, albeit fast-paced, battle to understand derivatives.²²⁰ Third, the political nature of individual regulatory agencies, as well as jurisdictional battles among agencies, limits regulatory alternatives related to derivatives.²²¹ In this context, case-by-case adjudication may be the most efficient type of regulation.

The analysis and economic model presented here are an attempt to outline the circumstances under which a particular type of financial derivatives regulation would be worthwhile, i.e., efficient, and to suggest, based on the various motivations for derivatives transacting, why certain existing and proposed attempts at regulation are futile. At minimum, one conclusion is obvious: any attempt to regulate derivatives must account for the persistence of regulatory arbitrage.

218. See Seligman, *supra* note 152, at 651 n.17.

219. See Macey, *supra* note 2, at 89-90. This is a minimum requirement for effective regulation. See also *id.* at 91 (arguing that financial transactions which are functionally identical should be treated as identical); Seligman, *supra* note 152, at 651 ("In terms of information asymmetries, there is often little practical difference between financial instruments subject to the federal securities laws and those that are exempt.").

220. See, e.g., Stout, *supra* note 1, at 67-68 ("Policymakers seeking to decide whether and how to intervene in derivatives trading consequently cannot act wisely unless they first determine, as an empirical matter, exactly what forces are driving this new market."); Macey, *supra* note 2, at 90 (discussing problems resulting from regulators acting with insufficient information).

221. See, e.g., Joanne T. Medero, *Jurisdictional Issues in U.S. Regulation of Derivative Products*, 9 J. INT'L BANKING & FIN. LAW 117 (March 1994). For example, although the CFTC was created in 1974 to provide a "solid basis" for the regulation of futures and options, in reality, the CFTC has devoted a large portion of its efforts to exempting many derivatives—including swaps—from its regulatory reach. See Petzel, *supra* note 4, at 100.