

Derivatives and the Modern Prudent Investor Rule: Too Risky or Too Necessary?

ROBERT J. AALBERTS*
PERCY S. POON**

This Article first discusses the general provisions of the Modern Uniform Prudent Investor Act and the Restatement (Third) of Trusts § 227, both of which were promulgated in the early 1990s in an effort to reform trust investment practices. Their success has been undeniable. By 2005, forty-five American jurisdictions had adopted the acts' provisions in some form. Next we discuss and analyze the acts' model statutory language and commentary, as well as analogous case law and legal commentary which expressly and impliedly embrace the prudent use of derivatives. Following this, there is a general discussion of what derivatives are, and how and when they are commonly used, with a focus on the risks of speculation as well as the benefits of hedging when managing an investment portfolio within the parameters of the model acts. We conclude with hypothetical scenarios and an in-depth analysis to illustrate further how fiduciaries might find derivatives to be highly beneficial, as well as a possible "safe harbor" for shielding their trusts from a world of unpredictable economic conditions.

I. INTRODUCTION

In the early 1990s, two legal developments emerged that would profoundly change investment strategies for fiduciaries.¹ In 1992, the American Law Institute published the new Restatement (Third) of Trusts².

* Ernst Lied Professor of Legal Studies, University of Nevada, Las Vegas.

** Associate Professor of Finance, University of Nevada, Las Vegas.

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¹ Fiduciaries and trustees, for purposes of this Article, are those who manage investment portfolios on behalf of beneficiaries of a trust, guardianship, conservatorship, or a decedent's estate.

² RESTATEMENT (THIRD) OF TRUSTS § 227 (1992). By 1990, the drafters issued a "Proposed Final Draft" of the Restatement (Third) of Trusts, Prudent Investor Rule. In 1991, Illinois was the first state to adopt legislation based on the proposed authority. By 1994, three more states, Virginia, Florida, and New York, followed Illinois's lead. UNIF.

Two years later, the National Conference of Commissioners on Uniform State Laws followed with its release of the new Uniform Prudent Investor Act (UPIA).³ Since that time, forty-four states⁴ and the District of Columbia⁵ have adopted new prudent investor laws based on these related authorities.⁶ The two new acts embody a complex evolution regarding fiduciary investment practices. Indeed, changing economic conditions, the nature of

PRUDENT INVESTOR ACT (UPIA) prefatory note at 2 (1994), <http://www.law.upenn.edu/bll/ulc/fnact99/1990s/upia94.pdf> (last visited Apr. 1, 2006).

³ UPIA prefatory note at 2 (1994). The UPIA was approved by the National Conference of Commissioners on Uniform State Laws at its annual meeting July 29–August 5, 1994. See Randall Sanborn, *Model Business Laws Get Commission Make-Over*, NAT'L L.J., Aug. 15, 1994, at B1.

⁴ The UPIA has been adopted by the following states: ALASKA STAT. §§ 13.36.225 to 290 (2004); ARIZ. REV. STAT. ANN. §§ 14-7601 to 7611 (2005); ARK. CODE ANN. §§ 24-2-610 to 619 (Supp. 2005); CAL. PROB. CODE §§ 16045 to 16054 (West Supp. 2005); COLO. REV. STAT. §§ 15-1.1-101 to 115 (2004); CONN. GEN. STAT. §§ 45a-541 to 45a-541(l) (West 2004); FLA. STAT. §§ 518.11 to 112 (West 2002); HAW. REV. STAT. §§ 554C-1 to 554C-12 (2000); IDAHO CODE ANN. §§ 68-501 to 514 (LexisNexis 1999); 760 ILL. COMP. STAT. ANN. 5/5, 5/5.1 (West 1992 & Supp. 2005); IND. CODE ANN. §§ 30-4-3.5-1 to 13 (West Supp. 2005); IOWA CODE ANN. §§ 633.4301 to 4309 (West 2003); KAN. STAT. ANN. §§ 58-24a01 to 24a19 (Supp. 2004); ME. REV. STAT. ANN. tit. 18-A §§ 7-302 (1998) (repealed); MASS. ANN. LAWS Ch. 203C §§ 1 to 11 (LexisNexis 2005); MICH. COMP. LAWS ANN. §§ 700.1501 to 1512 (West 2002); MINN. STAT. ANN. §§ 501B.151 to 152 (West 2002); MO. REV. STAT. §§ 456.900 to 913 (West 2005 Supp.); MONT. REV. CODE ANN. §§ 72-34-601 to 610 (2005); NEB. REV. STAT. ANN. §§ 30-3883 to 3889 (LexisNexis Supp. 2005); NEV. REV. STAT. ANN. §§ 164-705 to 775 (LexisNexis 2003); N.H. REV. STAT. ANN. §§ 564-B:9-901 to 906 (Supp. 2005); N.J. STAT. ANN. §§ 3B:20-11.1 to 11.12 (West 2005 Supp.); N.M. Stat. Ann. §§ 45-7-601 to 612 (LexisNexis 2004); N.Y. EST. POWERS & TRUSTS LAW § 11-2.3 (West 2001); N.C. GEN. STAT. §§ 36A-161 to 173 (2003); N.D. CENT. CODE §§ 59-02-08.1 to 08.11 (2003); OHIO REV. CODE ANN. §§ 1339.52 to 61 (West 2004); OKLA. STAT. ANN. tit. 60, §§ 175.60 to 72 (West 2005 Supp.); OR. REV. STAT. §§ 128.192 to 218 (2003); 20 PA. CONS. STAT. ANN. §§ 7201 to 7214 (West 2005); R.I. GEN. LAWS §§ 18-15-1 to 13 (2003); S.C. CODE ANN. § 62-7-933 (Supp. 2005); S.D. CODIFIED LAWS §§ 55-5-7 (2004); TENN. CODE ANN. §§ 35-14-101 to 114 (Supp. 2005); TEX. PROP. CODE ANN. §§ 117.001 to 012 (Vernon Supp. 2005); UTAH CODE ANN. §§ 75-7-901 to 907 (Supp. 2005); VT. STAT. ANN. tit. 9, §§ 4651 to 4662 (Supp. 2005); VA. CODE ANN. §§ 26-45.3 to 45.14 (2004); WASH. REV. CODE ANN. §§ 11.100.010–140 (West 1998 & Supp. 2006); W.VA. CODE ANN. §§ 44-6C-1 to 15 (LexisNexis 2004); WIS. STAT. ANN. § 881.01 (West 2002 & Supp. 2005); WYO. STAT. ANN. §§ 4-10-901 to 913 (2005).

⁵ D.C. CODE ANN. §§ 28-4701 to 4712 (LexisNexis 2001 & Supp. 2005) (repealed).

⁶ It is important to note that the 1994 UPIA “draws upon the revised standards for prudent trust investment promulgated by the American Law Institute in its Restatement (Third) of Trusts: Prudent Investor Rule” UPIA prefatory note at 1 (1994). The states that now use the modern prudent investor rule have generally adopted the UPIA’s model statutory framework. Commentators generally call the rules represented by these authorities the “prudent investor rule.”

governmental regulations, as well as various investment products and strategies being used at a particular time, contributed historically to a highly vacillating legal environment for fiduciary investment practices.⁷

Even though the new acts were designed to cure some of the problems of the past,⁸ they have been found, as they too evolve, to be deficient in a number of ways.⁹ This is true despite the generally favorable reaction to them by both lawmakers and commentators.¹⁰ Indeed, as one commentator asserts regarding the modern Prudent investor rule, "few practical rules, much less safe harbors [exist, and] [t]he Restatement Third is not very

⁷ See Robert J. Aalberts & Percy S. Poon, *The New Prudent Investor Rule and the Modern Portfolio Theory: A New Direction for Fiduciaries*, 34 AM. BUS. L.J. 39, 40 (1996). This article traces the evolution of the prudent investor rule. The authors point out that, historically, there were four distinct events that influenced the level of care and competency that fiduciaries observed in order to be prudent investors. Under the English common law of the early eighteenth century, a highly risk-averse attitude was applied in reaction to the collapse of a large private investment in 1719. *Id.* at 42. After that, fiduciaries could only invest in securities backed by the British government. *Id.* This was later replaced in the U.S. by the rule enunciated in the far-sighted 1830 case of *Harvard College v. Amory*, 26 Mass. (9 Pick.) 446 (1830). Under this rule, fiduciaries could legally include in the portfolio most kinds of investments as long as they did so as "men of prudence, discretion, and intelligence manage their own affairs . . ." Aalberts & Poon, *supra* at 43 (quoting *Harvard College*, 26 Mass. at 460–61). However, some jurisdictions rejected the *Harvard College* rule, deeming it too risky. New York, among others, only allowed investments enumerated in a "legal list." Aalberts & Poon, *supra* at 43. Private securities generally were not permitted. *Id.* In the 1940s, in reaction to the poor returns earned under the legal list rule, Headley and Shattuck developed a new "Model Prudent-Man Investment Statute." *Id.* at 43–44. This model statute was adopted by some states and was the precursor to the RESTATEMENT (THIRD) OF TRUSTS (1990). *Id.* at 42–45. At the same time, other states, prior to the 1990 Restatement's creation, applied the Restatement (Second) of Trusts which represented a more constrained and inflexible standard for fiduciary investing. *Id.* at 45.

⁸ Aalberts & Poon, *supra* note 7. For example, one of two significant problems that confronted fiduciaries until the passage of the new acts was a requirement that they must invest only from a so-called "legal list." Legal lists generally yielded lower returns for trusts. *Id.* at 43. Another problem was a tendency by some courts to surcharge fiduciaries whose trusts may have suffered a loss in one stock in an otherwise diversified portfolio, when the overall return was positive. This kind of court intervention created a chilling effect on fiduciaries seeking to take on more risk for higher returns. *Id.* at 51–52 (discussing cases in which trustees were surcharged for failure of a single stock).

⁹ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. F (1992), for example, concedes to the uncertainties facing fiduciaries in carrying out their duties to invest prudently. "There are no universally accepted and enduring theories of financial markets or prescriptions for investment that can provide clear and specific guidance to trustees and courts." *See id.*

¹⁰ See *supra* note 4 for those state legislatures that have adopted the modern prudent investor rule. See *infra* text accompanying notes 15–35 for commentary on the prudent investor rule.

helpful in aiding trustees in identifying, prioritizing and balancing various purposes and circumstances in formulating trust investment policy”¹¹ Of course, the cost of mistakes by fiduciaries, whether they take on too much risk or even not enough risk, can be tragic. This being said, legal scholarship by those in related disciplines, such as finance and economics, must seek to fill the void that still confounds those who are earnestly trying to protect their clients’ investments.

The purpose of this Article is four-fold. In Part II, we will review the general provisions of the UPIA and the Restatement to demonstrate how broad and flexible these new acts are. Indeed, their underlying philosophies allow fiduciaries to maximize investment returns for their beneficiaries while protecting them from an unreasonable amount of risk. In Part III, we will discuss the current legal environment concerning a fiduciary’s use of derivatives under the new acts. Included in this section will be a discussion of statutory language, case law, and commentary that generally supports the use of derivatives. We will present, in Part IV, a broad discussion of what derivatives are, how and when they are commonly used, the risks of speculation, and the benefits of hedging, for prudently managing an investment portfolio. Finally, in Part V, we will provide hypothetical scenarios and an in-depth analysis to illustrate further how fiduciaries might find derivatives to be not only highly beneficial, but also essential for fiduciaries seeking to fulfill their duties as prudent investors.

II. THE NEW PRUDENT INVESTOR RULE

The UPIA was, according to its drafters, “undertake[n] to update trust investment law in recognition of the alterations that have occurred in investment practice.”¹² The drafters further explain that the “changes have occurred under the influence of a large and broadly accepted body of empirical and theoretical knowledge about the behavior of capital markets, often described as ‘modern portfolio theory.’”¹³ Five fundamental changes were incorporated in the UPIA to guide the prudent investor.¹⁴ Below is a brief discussion of these five important revisions.

¹¹ C. Boone Schwartzel, *Is the Prudent Investor Rule Good for Texas?*, 54 BAYLOR L. REV. 701, 706 (2002).

¹² UPIA prefatory note at 1 (1994).

¹³ *Id.*

¹⁴ *Id.* The Prefatory Note further explains that the five changes are also found in the Restatement. *Id.*

A. Look to the Portfolio as a Whole

The UPIA calls upon fiduciaries to apply the new standards of prudence to the whole portfolio rather than just to individual investments.¹⁵ Likewise, the Restatement provides that “[t]his standard requires the exercise of reasonable care, skill, and caution, and is to be applied to investments not in isolation but in the context of the trust portfolio and as a part of an overall investment strategy, which should incorporate risk and return objectives reasonably suited to the trust.”¹⁶ For fiduciaries, this new approach puts to rest concerns that they may be surcharged for the failure of one or a small number of individual investments even when the overall portfolio earns a reasonably positive return.¹⁷

¹⁵ *Id.*; see also *id.* § 2(b). “A trustee’s investment and management decisions respecting individual assets must be evaluated not in isolation but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust.” *Id.* One important dimension of the UPIA’s policy of looking at the portfolio’s total return instead of individual investments is to disconnect investment strategy from distribution needs between income and principal beneficiaries. Friction between beneficiaries often creates problems for trustees. Balancing the interests of beneficiaries has also been made considerably easier by the adoption in thirty-nine states of the Uniform Principal and Income Act (UPAIA), created in 1997. Moreover, many of the same states that have adopted the UPIA have also adopted the UPAIA. See The National Conference of Commissioners on Uniform State Laws, Summary, Uniform Principal and Income Act (1997), http://www.nccusl.org/nccusl/uniformact_summaries/uniformacts-s-upaia1997.asp (last visited Apr. 1, 2006). The UPAIA also allows the trustee to focus on making investments for the overall growth of the trust in order to enhance the total return of the trust. *Id.*

¹⁶ RESTATEMENT (THIRD) OF TRUSTS § 227(a) (1992).

¹⁷ See, e.g., Robert T. Willis, *Prudent Investor Rule Gives Trustees New Guidelines*, 19 EST. PLAN. 338, 342 (1992) (discussing the case of *Chase v. Pevear*, 419 N.E.2d 1358 (1981), in which a trustee was surcharged for a failure to sell an investment that only accounted for four percent of the portfolio); see also Jeffrey N. Gordon, *The Puzzling Persistence of the Constrained Prudent Man Rule*, 62 N.Y.U. L. REV. 52, 71 (1987) (discussing *First Alabama Bank v. Martin*, 425 So. 2d 415 (Ala.), cert. denied, 461 U.S. 938 (1983), in which a court applied a security-by-security approach for justifying a surcharge against a trustee). It is important to note that not all commentators agree with the new changes created under the UPIA and the Restatement. One notably outspoken critic of the modern portfolio theory for fiduciaries has been Paul Haskell who argues that “[w]hen this nation decides to face up to the reality of its [economic] situation, it will be enormously expensive, with uncertain consequences . . . [A]nyone who is daring with another’s money in these circumstances is not acting responsibly.” Paul G. Haskell, *The Prudent Person Rule for Trustee Investment and the Modern Portfolio Theory*, 69 N.C. L. REV. 87, 110 (1990). More recently, C. Boone Schwartzel, argued against Texas’s adoption of the modern prudent investor rule. Speaking about the proposed rule, Schwartzel states that:

B. Tradeoff Between Risk and Return

A prudent investor must consider the tradeoff between risk and return by examining circumstances that may be "relevant to the trust or its beneficiaries."¹⁸ For example, a prudent investor must examine economic conditions,¹⁹ inflation and deflation,²⁰ anticipated tax consequences,²¹ the impact every investment or action may exert on the whole portfolio,²² the projected total return from income and the extent of capital appreciation,²³ the beneficiaries' other resources,²⁴ the "needs for liquidity, regularity of income, and preservation or appreciation of capital,"²⁵ and an asset's importance or particular value to the trust or to any of its beneficiaries.²⁶ The foregoing considerations reinforce the notion that a fiduciary must now carefully identify specific circumstances while also focusing on the overarching task of forging an effective investment strategy.

C. Elimination of Categorical Restrictions

Legal proscriptions on making certain types of investments historically have been imposed on fiduciaries.²⁷ The UPIA, on the other hand, provides that "[a]ll categorical restrictions on types of investment have been abrogated"

the prudent investor rule stresses managing risk, rather than avoiding it, and investing to preserve the purchasing power of the trust principal. As a result, the prudent investor rule materially dilutes or eliminates the fiduciary investment policy's traditional bias favoring the current beneficiary and leaving trustees much more in doubt than before concerning how much risk they must assume in pursuit of higher returns.

Schwartzel, *supra* note 11, at 706.

¹⁸ UPIA § 2(c) (1994).

¹⁹ *Id.* § 2(c)(1).

²⁰ *Id.* § 2(c)(2); *see also* RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992).

²¹ UPIA § 2(c)(3) (1994); *see also* RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e, k(4) (1992).

²² UPIA § 2(c)(4) (1994); *see also* RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. g (1992).

²³ UPIA § 2(c)(5) (1994); *see also* RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. g (1992).

²⁴ UPIA § 2(c)(6) (1994).

²⁵ *Id.* § 2(c)(7); *see also* RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. g (1992).

²⁶ UPIA § 2(c)(8) (1994).

²⁷ After the state of New York, in 1889, codified the rule enunciated in the case of *King v. Talbot*, 40 N.Y. 76 (1869), a majority of the states followed this so-called "legal list" rule. *See* Gordon, *supra* note 17, at 87.

allowing fiduciaries to select any kind of investment that is appropriate in advancing the trust's goals.²⁸ Moreover, the Restatement makes clear that "[s]pecific investments or techniques are not per se prudent or imprudent."²⁹

D. *Fiduciaries Have a Duty to Diversify*

Quite likely the most important provision in these acts is the duty to diversify. The UPIA explicitly requires a trustee to diversify unless special circumstances exist that might suggest otherwise.³⁰ The Restatement elevates the duty to diversify to the august position of one of the fundamental elements of prudent investing.³¹ Even so, neither act dictates how and to what degree a fiduciary should diversify the portfolio.³²

E. *Delegation of Duties*

In what is one of the biggest departures from the previous prudent investor rule, the new acts allow a fiduciary to delegate investment and management functions.³³ Thus, if fiduciaries do not feel that they can competently handle complex investment issues, such as those presented with

²⁸ UPIA prefatory note at 1 (1994). The UPIA further states: "A trustee may invest in any kind of property or type of investment consistent with the standards of this [Act]." *Id.* § 2(e) (alteration in original); *see, e.g.*, Gary S. Moore, *Real Estate in a Fiduciary Portfolio?*, 33 REAL EST. L.J. 154 (2004) (discussing how real estate, which was once prohibited by some state laws from being in a fiduciary's portfolio, may now represent significant investment opportunities).

²⁹ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. f(2) (1992). "The premise of subsection of 2(e) is that trust beneficiaries are better protected by the Act's emphasis on close attention to risk/return objectives as prescribed in subsection 2(b) than in attempts to identify categories of investment that are per se prudent or imprudent." UPIA § 2 cmt. at 8 (1994).

³⁰ UPIA § 3 (1994).

³¹ RESTATEMENT (THIRD) OF TRUSTS § 227(b) (1992). "In making and implementing investment decisions, the trustee has a *duty to diversify* the investments of the trust unless, under circumstances, it is prudent not to do so." *Id.* (emphasis added).

³² UPIA § 3 cmt. at 11 (1994). "There is no automatic rule for identifying how much diversification is enough." *Id.*; *see also* RESTATEMENT (THIRD) OF TRUSTS § 227, general note on cmts. e–h (1992) (discussing various approaches for diversifying a portfolio).

³³ UPIA § 9 (1994); *see also* RESTATEMENT (THIRD) OF TRUSTS § 171 (1992). According to Aalberts and Poon, "[t]his is a significant departure from prior law inasmuch as many states, as well as the Restatement (Second) of Trusts, permitted only ministerial duties, not discretionary investment decision-making, to be delegated." Aalberts & Poon, *supra* note 7, at 51.

derivatives,³⁴ they should delegate the function to those who are more competent to do so.³⁵

III. DERIVATIVES AND THE NEW PRUDENT INVESTMENT ACT

Derivatives are quite possibly the most controversial of all investments.³⁶ Indeed, there are several examples of derivatives devastating investors,³⁷ ranging from the infamous downfall of the Barings Bank, one of England's oldest financial institutions,³⁸ to a Chapter 9 bankruptcy of Orange County,

³⁴ See *infra* text accompanying notes 374–99 (discussing various issues related to hedging strategies with derivatives).

³⁵ Still, the UPIA does require that the delegation be performed prudently as well. For example a delegator must exercise “reasonable care, skill and caution in [] selecting an agent,” as well as other obligations. UPIA § 9(a) (1994).

³⁶ A derivative is defined as “a financial instrument, or contract, between two parties that derives its value from some other underlying asset or underlying reference price, interest rate, or index.” Edward S. Adams & David E. Runkle, *The Easy Case for Derivatives Use: Advocating a Corporate Fiduciary Duty to Use Derivatives*, 41 WM. & MARY L. REV. 595, 600 (2000); see *infra* text accompanying notes 120–22 (discussing derivatives in more detail).

³⁷ Among well-publicized incidents in which derivatives were said to have caused large losses are:

Gibson Greetings (\$20.7 million); Proctor [sic] & Gamble (\$157 million); MG Corp., the U.S. subsidiary of Germany's Metallgesellschaft AG (\$1.5 billion); Dell Computer (\$43 to \$53 million); Atlantic Richfield Co. (\$22 million); . . . Paramount Communications (\$20 million); Caterpillar Financial Services Unit (\$11.5 million); City Colleges of Chicago (approximately \$48 million); Odessa College (\$10 million to \$22 million); Escambia County, Florida (\$25 million); and Wisconsin's investment fund (\$95 million).

Adams & Runkle, *supra* note 36, at 596–97 (internal citations omitted).

³⁸ The collapse of the Barings Bank possibly represents the most negative publicity associated with derivatives. However, as explained by Adams and Runkle, it was the result of extremely risky, not to mention, unauthorized, trading activity by a young, renegade bank employee.

Even Barings, the venerable 234 year-old British bank was not immune to the misuses of derivatives. Nicholas Leeson, one of its traders in Singapore . . . bought thousands of exchange-traded futures contracts based on the Nikkei Average and traded on the Tokyo Stock Exchange. Leeson bought these contracts . . . believing the Nikkei would rise. He took these positions without hedging, hoping to maximize his gain, but also exposing himself to the potential for a huge loss. “When the Nikkei [index] fell and the contracts became due . . . Barings could not cover the losses . . . and collapsed.”

Adams & Runkle, *supra* note 36, at 626–27 (internal citations omitted).

California, one of the nation's richest counties.³⁹ All of this has contributed to what Adams and Runkle call a kind of "derivaphobia."⁴⁰ Despite the strong criticism leveled against derivatives,⁴¹ there are a growing number of commentators who advocate their use by fiduciaries in certain circumstances as a means of reducing potential losses.⁴²

³⁹ Orange County's derivatives problems were, like those of Barings Bank, due to bad judgment.

The true reason for the bankruptcy of Orange County was the misuse of highly leveraged government securities used for speculation. These securities were tied to a particular form of derivative known as highly structured notes. Thus, the value of the securities would fall as interest rates rose and vice versa. Orange County borrowed money to invest in the structured notes. When the interest rates increased, the payments to the owners decreased much more quickly. . . . Problems began to occur in 1994 when the Federal Reserve raised interest rates six times in one year. Each increase in interest rates caused the earnings on the bonds and the market value of the securities to drop.

Adams & Runkle, *supra* note 36, at 622 (internal citations omitted).

⁴⁰ Adams and Runkle refer to those who have raised derivatives to a level of hysteria as "derivaphobes," but admit that "good reason exists to be wary." Adams & Runkle, *supra* note 36, at 595. Not surprisingly, the popular press has published articles that have similarly raised alarms about derivatives. One particularly well-publicized event was investment guru Warren Buffet's assertion of derivatives as "'financial weapons of mass destruction' that could cause economic havoc." Robert J. Samuelson, *A Financial 'Time Bomb'?*, WASH. POST, Mar. 12, 2003 at A21. Buffett, however, does not deny that derivatives, in some form, confer benefits.

⁴¹ Adams and Runkle explain that the term "risky," often associated with derivatives, is commonly misunderstood because of confusion caused by the terms "risk" and "downside risk." Adams & Runkle, *supra* note 36, at 616.

The term "risk" refers to the volatility, or the range of fluctuation, in the price of an investment instrument and not the direction of the fluctuation itself. For every loss resulting from the use of derivatives there is a corresponding gain of an equal amount and vice versa. Although large derivative losses make the headlines, equally large gains often go unnoticed. In other words, the more "risky" the investment, the greater the possible gain and the greater the possible loss.

Id. (internal citations omitted).

⁴² Among commentators who call for fiduciaries to use derivatives are Adams & Runkle, *supra* note 36, at 599 (discussing why "directors have a duty to shareholders to investigate and evaluate how derivatives could minimize risk to their organization"); Randall H. Borkus, *A Trust Fiduciary's Duty to Implement Capital Preservation Strategies Using Financial Derivative Techniques*, 36 REAL PROP., PROB. & TR. J. 127 (2001) (discussing trust fiduciaries' duty to implement and understand hedging techniques); George Crawford, *A Fiduciary Duty to Use Derivatives*, 1 STAN. J.L. BUS. & FIN. 307 (1995) (presenting a hypothetical scenario in which hedging could have been useful in avoiding losses for a particular beneficiary); Geoffrey B. Goldman, Note, *Crafting a Suitability Requirement for the Sale of Over-The-Counter Derivatives: Should*

The following discussion will touch on the legal sources sanctioning the use of derivatives by fiduciaries, including provisions in the two model acts, analogous case law, and commentary. This will be followed, in Parts IV and V, with a presentation of what derivatives are and a demonstration of how derivatives might function in harmony with the two acts in various situations. Indeed, an argument will be advanced that not only are derivatives generally warranted, but also that fiduciaries may be required to employ them in circumstances such as principal distribution and portfolio rebalancing.

A. *Derivatives: The Stance of the UPIA and the Restatement*

Neither the UPIA nor the Restatement contains extensive provisions or commentary regarding the role of derivatives.⁴³ Yet, both include some language permitting their use. As stated earlier, one of the five major changes under the UPIA provides that no particular type of investment is proscribed in a prudent investor's portfolio.⁴⁴ This would presumptively include derivatives. More specifically, the UPIA's comments provide that "[i]nvestments that were at one time thought too risky, such as equities, or more recently, *futures*, are now used in fiduciary portfolios."⁴⁵

The Restatement contains more support for derivatives. In its commentary, it provides:

Regulators "Punish the Wall Street Hounds of Greed"?, 95 COLUM. L. REV. 1112, 1115 (1995) (discussing how use of derivatives should be subject to a "two-tier suitability requirement" in which less sophisticated investors would be subjected to more regulation while more sophisticated investors would have a safe harbor analogous to Rule 144 of the Securities Act of 1933). This scheme could be applied by analogy to fiduciary investments.

⁴³ It should be noted that, despite their reputation, derivatives are fully supported by the finance and accounting establishment. For example, both the Federal Reserve Board and Financial Accounting Standards Board (FASB) support derivatives. See Adams & Runkle, *supra* note 36, at 672-73. Moreover, the Financial Accounting Standard Number 133 (FAS 133) supports derivatives, but calls for careful disclosure when they are used. See generally Adams & Runkle, *supra* note 36; *Accounting for Derivative Instruments and Hedging Activities*, STATEMENT OF FIN. ACCOUNTING STANDARD NO. 133 (Fin. Accounting Standards Bd. 1998), available at <http://www.fasb.org/pdf/fas133.pdf>.

⁴⁴ See *supra* text accompanying notes 27-29 (discussing the elimination of categorical restrictions).

⁴⁵ UPIA § 2 cmt. at 8 (1994) (emphasis added). "Futures" refers to futures contracts, a type of derivative in which a party contracts for exchange of a specific asset at a future date. Futures contracts are also standardized (there is a continuity of contract terms such as maturity date, contract size, and delivery date) and have to be traded on an organized exchange. See Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 MD. L. REV. 1, 10-11 (1996). See also *infra* text accompanying notes 131-40 for a more detailed description of futures.

The riskiness of a specific property, and thus the propriety of its inclusion in the trust estate, is not judged in the abstract but in terms of its anticipated effect on the particular trust's portfolio. . . . The same is true of specific courses of actions, such as the "defensive" use of *options* seeking to reduce the risk of an investment strategy and to do so at a lower "price" in terms of program goals than might be exacted by converting to a more conservative portfolio of assets.⁴⁶

The Restatement also suggests that, in some situations, a fiduciary may be required to take greater risks when it is necessary to obtain higher returns for the beneficiary.⁴⁷ Following that opinion, the Restatement cites several studies and a Delaware state statute in support of the "role of options and futures in a portfolio."⁴⁸

Although neither model act contains an abundance of language and commentary in support of derivatives, there is no apparent opposition to them either. The overall key to understanding the drafters' intent is quite likely manifested in the language of the Restatement, which explains that "[e]ven in these cases of less conservative investment strategy, . . . prudent management of others' properties still calls for *sound and careful fiduciary behavior* in carrying out programs that deliberately involve *the taking of higher risk in quest of greater return.*"⁴⁹

⁴⁶ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. f(2) (1992) (emphasis added). "Options" provide its holder with a right "to buy or sell an [underlying] asset at a [predetermined] price . . . on or before a [particular] date." Romano, *supra* note 45, at 40. See also *infra* text accompanying notes 146–52 for a more detailed description of options.

⁴⁷ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992). "It is virtually inevitable that in some periods the trustee will be unable to succeed in the effort to preserve purchasing power. It is also to be expected that the pursuit of this objective carries with it some increase in risk." *Id.*

⁴⁸ *Id.* The Restatement cites the following sources: FED. RES. BD., COMMODITY FUTURES TRADING COMM'N, SEC, A STUDY OF THE EFFECTS ON THE ECONOMY OF TRADING IN OPTIONS AND FUTURES (1984); HERBERT FILER, UNDERSTANDING PUT AND CALL OPTIONS: HOW TO USE THEM TO REDUCE RISK IN YOUR STOCK MARKET OPERATION (1960); HARVEY E. BINES, THE LAW OF INVESTMENT MANAGEMENT, § 7.059(1)(c) (1978). The Restatement also cites a Delaware statute as offering guidance: DEL. CODE ANN. tit. 12, § 3302(b) (1974). The Delaware statute, passed before the UPIA and the Restatement, provided that fiduciaries could use "options" and "futures."

⁴⁹ RESTATEMENT (THIRD) OF TRUSTS § 228 cmt. e (1992) (emphasis added). It should be noted that derivatives actually can be used to create less risk even when more risky investments, such as equities, are involved. Such conservatism would obviously be sanctioned under the new acts. See *infra* text accompanying notes 271–74.

In the end, derivatives are appropriate and perhaps in certain circumstances even necessary.⁵⁰ Still, any strategy embracing them must be accompanied by thoughtful, prudent, and professional conduct by the trustee.⁵¹ This may include the delegation of this specific function to those who more thoroughly understand the benefits of derivatives as well as the pitfalls.⁵²

B. Derivatives and Supporting Case Law

Although no cases directly address the issue of a trustee using derivatives, there are several cases in which there have been legal consequences for corporate fiduciaries that have used derivatives.⁵³ These cases, by analogy, may provide useful support and guidance.⁵⁴ The first case, *Brane v. Roth*,⁵⁵ involved a shareholder derivative suit against the corporate fiduciaries of a commercial grain cooperative (hereinafter Co-op) for their failure to hedge against commodity price risk.⁵⁶ In *Brane*, the Co-op's directors, following the recommendations of their Certified Public Accountant (CPA), elected to hedge the Co-op's grain positions in order to protect the corporation against future losses.⁵⁷ However, the amount they hedged, \$20,050, was relatively small compared to the \$7.3 million the Co-

⁵⁰ See *infra* text accompanying notes 251–60 (discussing how a fiduciary could employ derivatives to minimize the uncertainty of a security's selling price when distributing the trust principal to the remaindermen and to guarantee the purchasing price of a security in rebalancing the trust portfolio).

⁵¹ See *infra* text accompanying notes 374–99 (discussing prudent investment practices involving derivatives).

⁵² See *infra* text accompanying notes 373–99, 409–12 (discussing the need for professionalism when derivatives are involved); see also Goldman, *supra* note 42, at 1114–16 (advocating a new standard of professionalism for those who use derivatives).

⁵³ For commentary on the issue of corporate fiduciaries and derivatives, see generally Adams & Runkle, *supra* note 36 (arguing that corporate fiduciaries should have a duty to use derivatives to maximize returns and reduce risk); see also Henry T. C. Hu, *Hedging Expectations: 'Derivative Reality' and the Law and Finance of the Corporate Objective*, 73 TEX. L. REV. 985, 987 (1995) (discussing how corporate fiduciaries are unable to evaluate the true benefits of using derivative instruments for hedging purposes).

⁵⁴ Predictably, there are a number of cases in which fiduciaries are sued for being excessive and incompetent in their use of derivatives. See, e.g., Adams & Runkle, *supra* note 36, at 643. This is in contrast to the following discussion, see *infra* text accompanying notes 63–68, in which it is alleged that defendants did not take advantage of the benefits that derivatives could have brought to a portfolio.

⁵⁵ *Brane v. Roth*, 590 N.E.2d 587 (Ind. Ct. App. 1992).

⁵⁶ *Id.* at 589.

⁵⁷ *Id.*

op had made in grain sales.⁵⁸ Later it was revealed that the Co-op had experienced a gross loss of \$227,329. A new CPA, after reviewing the financial statements, concluded that “the primary cause of the gross loss was the failure to hedge [adequately].”⁵⁹ The trial court entered a judgment in the shareholders’ favor, ruling that the directors breached their duties by, *inter alia*, “retaining a manager inexperienced in hedging” and “failing to attain knowledge of the basic fundamentals of hedging to be able to direct the hedging activities and supervise the manager properly”⁶⁰

The *Brane* case, although involving corporate fiduciaries, may offer some important guidance to trustees applying the modern prudent investor rule. As one commentator opined, “[t]he *Brane* case may be a particular source of discomfort for bank or pension trustees, since corporate directors are held to a *less stringent standard* than the Prudent Investor Rule”⁶¹ *Brane* also suggests that the fiduciaries in some circumstances, particularly when certain degrees of risk are involved, should use derivatives to minimize their exposure to losses; however, they must do so only if their complexities are sufficiently understood.⁶²

⁵⁸ *Id.*

⁵⁹ *Id.* The hedge was inadequate and ineffective because it underhedged the value of the \$7.3 million. *See also infra* text accompanying notes 391–92 (discussing the quantity risk in hedging due to the contract standardization by the options and futures exchanges).

⁶⁰ *Id.* at 589–90. The Co-op’s directors’ use of derivatives, despite the inadequate care that they took in supervising their CPA’s actions, reflected their common usage by corporate fiduciaries even in the 1990s. According to Adams and Runkle, in a 1993 study, 82% of corporations used derivatives to hedge against market risks, 77% used derivatives to manage or modify their existing assets and liabilities and 33% used them as a hedge against foreign currency exposure. Adams & Runkle, *supra* note 36, at 602. Guay and Kothari found that 234, or 56.7%, of the 413 largest U.S. nonfinancial companies used derivatives in 1997. *See generally* Wayne Guay & S. P. Kothari, *How Much Do Firms Hedge with Derivatives?*, 70 J. FIN. ECON. 423 (2003).

⁶¹ Crawford, *supra* note 42, at 330 (emphasis added). Crawford further explains that the business judgment rule generally protects corporate fiduciaries “so long as they act in good faith, free of conflict of interest, and with at least a minimal level of attention to the corporation’s affairs.” *Id.* Prudent investors, on the other hand, must under the UPIA, comply with at least five, often complex and involved, duties of care. *See supra* text accompanying notes 15–35.

⁶² *See Brane*, 590 N.E.2d at 591. As stated by the court in *Brane*:

[W]e find that there was probative evidence that Co-op’s losses were due to a failure to hedge. Coulter testified that grain elevators should engage in hedging to protect the co-op from losses from price swings. One expert in the grain elevator business and hedging testified that co-ops should not speculate and that Co-op’s losses stemmed from the failure to hedge.

Id. (internal citations omitted).

Another case that may offer guidance regarding a fiduciary's use of derivatives, as well as the opportunity and extent to which they should be employed, is *Levy v. Bessemer Trust Co.*⁶³ In *Levy*, the plaintiff, a client of the defendant Bessemer Trust Company, alleged that Bessemer should be held liable for, inter alia, failing to protect the client against the immediate downward movement of his Corning stock.⁶⁴ After his stock fell to a level that Levy felt was unacceptable, he consulted with another broker who advised about hedging strategies to protect him against even more downward movements.⁶⁵ Unfortunately for Levy, his time had run out. By the time the new broker was able to employ a type of derivative called a European options collar (a combination of put and call options), the price floor and cap were materially lower than they had been when Levy first requested the defendant to protect the stock's value.⁶⁶ Two years later, the same court revisited the *Levy* case after the defendant filed a motion for summary judgment.⁶⁷ The court denied the motion, stating that there were still issues of material fact that needed to be resolved.⁶⁸

At least two cases under ERISA have addressed the issue of derivatives and prudent investing. These cases may also provide important analogies to the Restatement and the UPIA, as ERISA has its own prudent investor rule.⁶⁹ In the case of *Gilbert v. EMG Advisors, Inc.*⁷⁰ the Ninth Circuit ruled that an

⁶³ *Levy v. Bessemer Trust Co.*, No. 97 Civ. 1785 (JFK), 1997 WL 431079 (S.D.N.Y. July 30, 1997).

⁶⁴ *Id.* at *1. The plaintiff's stated claims were negligence, gross negligence, negligent misrepresentation, breach of fiduciary duty, breach of a duty to supervise, breach of contract, and fraud. *Id.* at *2. In the instant case the defendant (1) claimed that the plaintiff failed to state a claim, and (2) sought a dismissal. All claims were preserved except for breach of contract. *Id.* at *5.

⁶⁵ *Id.* at *2.

⁶⁶ *Id.* at *1-2. See also *infra* text accompanying notes 275-77 for a more detailed discussion of a collar.

⁶⁷ *Levy v. Bessemer Trust Co.*, No. 97 Civ. 1785 (JFK), 1999 WL 199027 (S.D.N.Y. Apr. 8, 1999).

⁶⁸ *Id.* at *5. The case presumably was settled because no further developments have been reported.

⁶⁹ See generally Bill Shaw et al., *Investment Prudence and Fiduciary Responsibility in Managing Defined Benefit Pensions Funds Under ERISA*, 22 SUFFOLK U. L. REV. 83 (1988); Roger B. Blair et al., *Fiduciaries Under ERISA: A Narrow Path to Tread*, 30 VAND. L. REV. 1 (1977); Timothy R. Garage, Note, *Economic Analysis and the Prudent Man Rule Under ERISA: Efficiency Versus the Public Interest*, 7 LOY. U. CHI. L.J. 683 (1976); Note, *Fiduciary Standards and the Prudent Man Rule under the Employment Income Security Act of 1974*, 88 HARV. L. REV. 960 (1975).

⁷⁰ *Gilbert v. EMG Advisors, Inc.*, No. 97-17256, 1999 WL 160382 (9th Cir. Mar. 8, 1999).

investment manager was liable “by failing to conduct a thorough, independent investigation before investing the Plans’ assets in complex derivative securities, known as inverse floaters . . .”⁷¹ The investment subsequently lost value, resulting in losses for several pension funds.

Hatch based his argument largely on the fact that the Plans’ investment guidelines did not “expressly prohibit investment in inverse floaters or *derivatives*.”⁷² The court made it clear, however, that ERISA does require that the “fiduciary act ‘with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character with like aims.’”⁷³

In *Laborers National Pension Fund v. Northern Trust Quantitative Advisors, Inc.*,⁷⁴ a pension fund sued the defendant, an institutional trustee, accusing it of imprudent investing when it purchased interest-only mortgage-backed securities—more commonly called IOs.⁷⁵ The appeals court, reversing the lower court’s ruling,⁷⁶ ruled in the trustee’s favor.⁷⁷ Indeed, after discussing the plaintiff’s detailed guidelines for its own pension fund and applying the pertinent ERISA provisions, the court resolved that the trustees had fulfilled their fiduciary duties.⁷⁸ The court, moreover, cited a Letter of Guidance and Statement on Derivatives, issued by the Department of Labor and Comptroller, that offered support for derivatives. The guideline stated that “[i]nvestments in *derivatives* are subject to the fiduciary responsibility rules in the same manner as are any other plan

⁷¹ *Id.* at *1–2.

⁷² *Id.* at *1.

⁷³ *Id.* at *2 (citing 29 U.S.C. § 1104(a)(1)(B) (2000)).

⁷⁴ *Laborers Nat’l Pension Fund v. Northern Trust Quantitative Advisors, Inc.*, 173 F.3d 313 (5th Cir. 1999).

⁷⁵ According to the court, IOs are a derivative because their “performance is derived in whole or part from the performance of an underlying asset.” *Id.* at 318.

⁷⁶ *Laborers Nat’l Pension Fund v. Northern Trust Quantitative Advisors, Inc.*, No. 3:95-CV-2504-T, 1997 WL 608956 (N.D. Tex. Aug. 15, 1997).

⁷⁷ *Laborers Nat’l Pension Fund*, 173 F.3d at 313.

⁷⁸ *Id.* at 318.

Under a proper application of the correct legal principles to the evidence in the present case, there is not a reasonable basis for concluding that ANB or Mr. Pierce acted prudently or in violation of their fiduciary responsibilities with regard to the 1991 investment in IOs. ANB considered the characteristics of IOs and utilized stress simulation models to project the performance of IOs and the Fund’s portfolio under various market conditions before investing in IOs.

Id. at 332. The court, moreover, in making its ruling, cited the Letter of Guidance and Statement on Derivatives, issued by the Department of Labor-Comptroller.

investments”⁷⁹ The guideline further provided that a trustee who invests in derivatives would have to consider “how the investment fits within the plan’s investment policy, what role the particular derivative plays in the plan’s portfolio, and the plan’s potential exposure to losses.”⁸⁰

Of significance, the court issued a telling signal of its position concerning derivatives when it rebutted one of the plaintiffs’ strongest arguments—that the trustees should be liable for violating one of the Fund’s guidelines. The pertinent clause provided that investments should only be made “with care in those vehicles that should preserve the *principal* while recognizing the need for income and appreciation with a minimal risk.”⁸¹ The court brushed aside the argument, countering that the “Fund’s equity and fixed-income portfolios have long contained many investments having risk of principal losses.”⁸² Furthermore, the plaintiffs’ Fund guidelines expressly disallowed investments “‘involving stock options, short sales, purchases on margin, letter stock, private placement debt, commodities [or] venture capital’ IOs are not among the prohibited investments.”⁸³ A reasonable interpretation of the ruling suggests that, in the absence of express language in a trust instrument, use of derivatives, such as IOs, is a perfectly sound investment strategy so long as the trustee exercises prudent investment practices.⁸⁴

⁷⁹ *Id.* at 318 (quoting Department of Labor-Comptroller Letter of Guidance and Statement on Derivatives from Assistant Labor Secretary Olena Berg to the Honorable Eugene Ludwig, the Comptroller of the Currency (Mar. 28, 1996)) (emphasis added).

⁸⁰ *Id.* (quoting Department of Labor-Comptroller Letter of Guidance and Statement on Derivatives from Assistant Labor Secretary Olena Berg to the Honorable Eugene Ludwig, the Comptroller of the Currency (Mar. 28, 1996)).

⁸¹ *Laborers Nat’l. Pension Fund*, 173 F.3d at 321 (quoting Department of Labor-Comptroller Letter of Guidance and Statement on Derivatives from Assistant Labor Secretary Olena Berg to the Honorable Eugene Ludwig, the Comptroller of the Currency (Mar. 28, 1996)).

⁸² *Id.*

⁸³ *Laborers Nat’l. Pension Fund*, 173 F.3d at 321 (quoting Department of Labor-Comptroller Letter of Guidance and Statement on Derivatives from Assistant Labor Secretary Olena Berg to the Honorable Eugene Ludwig, the Comptroller of the Currency (Mar. 28, 1996)).

⁸⁴ The court also cited the *BNA Pension Benefits Report* No. 23, at 1046 (Apr. 15, 1996), which cited the Department of Labor-Comptroller Letter of Guidance and Statement on Derivatives signed by Assistant Labor Secretary Olena Berg on March 28, 1996. The examples of derivatives cited in the report include “futures, options, options on futures, forward contracts, swaps, structured notes and collateral mortgage obligations, and interest-only and principal-only strips.” *Laborers Nat’l Pension Fund*, 173 F.3d at 318.

C. Derivatives and Fiduciaries: A Matter for the Commentators

Although there is relatively little support in the model acts and case law on the subject of fiduciaries using derivatives, there is a growing number of commentators who subscribe to the idea. A few of the pre-Restatement and pre-UPIA commentators of the 1980s, some of whom were influential in the creation of these model acts, also believed that a prudent investor should indeed be able to invest in derivatives. One notable example is Bevis Longstreth, a former Securities and Exchange Commission (SEC) commissioner and one of the most respected commentators on the subject. In 1986, Longstreth wrote perhaps the most definitive book on the subject of the modern prudent investor rule, entitled *Modern Investment Management and the Prudent Man Rule*.⁸⁵ In his book, Longstreth advances a “modern paradigm of prudence” that continues to influence investment practices today.⁸⁶ The book discusses the potentially positive use of derivative instruments such as the increasing use of options and financial futures.⁸⁷ Still, Longstreth points out that even though some derivatives are designed to manage financial risk, they are tainted by perceptions that they are too speculative and thus too risky to be used in a trustee’s portfolio.⁸⁸ The foregoing position reinforced the contentions made by Longstreth and other commentators at the time that a dramatic disparity existed between “legal and marketplace notions of prudence.”⁸⁹

Longstreth also discusses various kinds of derivatives and how they may be used by a fiduciary to prudently manage a portfolio. Hedging debt

⁸⁵ BEVIS LONGSTRETH, *MODERN INVESTMENT MANAGEMENT AND THE PRUDENT MAN RULE* (1986).

⁸⁶ *Id.* at 7; see also Lynn Nichols, *Review of Modern Investment Management and the Prudent Man Rule*, 43 *BUS. LAW.* 779, 782 (1988).

⁸⁷ LONGSTRETH, *supra* note 85, at 133–41.

⁸⁸ *Id.* at 134. Longstreth argues that historically derivatives gained their negative reputation as investments that were “imprudent per se” for fiduciaries because of the tendency for derivatives to be traded on margin. “‘Margin’ in the securities market refers to the investor’s down payment for the purchase of a stock, with the balance of the purchase price being loaned by the broker or other lender to consummate the transaction.” *Id.*

⁸⁹ Nichols, *supra* note 86, at 780. Nichols explains that the disparity resulted “from the conflicting views of prudence in investment management as set forth in the law, on the one hand, and as espoused by economist and investment managers, on the other.” *Id.* Longstreth also contended that after the word “speculative” was affixed to these derivative products it did not matter that “vast changes in these markets and in the general understanding of how they can be used by institutional investors to limit and manage risk” had occurred. LONGSTRETH, *supra* note 85, at 134.

securities,⁹⁰ hedging equity securities,⁹¹ equivalences,⁹² option writing,⁹³ and arbitrage⁹⁴ are among the derivatives investment strategies that he maintains can be applied and still fall within the parameters of the incipient prudent investor rule.⁹⁵ Another important pre-UPIA and pre-Restatement commentator was Edward C. Halbach, Jr., who served as the reporter for the Restatement (Third) of Trusts.⁹⁶ In widely-cited and notable seminal works based on his reporter notes, that subsequently appeared in both the American Bar Association's *Real Property, Probate and Trust Journal*,⁹⁷ as well as in the *Iowa Law Review*,⁹⁸ Professor Halbach discusses the development and formulation of the new Restatement. In regard to derivatives and the proposed prudent investor rule, Halbach maintains that:

[s]pecific investments or techniques are not [s] prudent or imprudent per se. Suitability of risk and the prudence of holding particular assets, including abstractly risky investments like venture capital and junk bonds, should be judged not in isolation but in terms of their role and context in a particular portfolio and strategy. The same is true of specific courses of actions, like borrowing or the *defensive use of options or futures in a realistic effort to help with the management of risks or costs*.⁹⁹

A third prominent pre-UPIA and pre-Restatement commentator is Jeffrey N. Gordon, a distinguished law professor at New York University. For his 1987 article, Gordon meticulously researched the history of the prudent

⁹⁰ LONGSTRETH, *supra* note 85, at 135.

⁹¹ *Id.* at 136.

⁹² *Id.* Equivalence refers to an equivalent portfolio an investor can use, with the use of options, futures, and other financial securities to duplicate the payoff of another investment portfolio. See, e.g., JOHN C. COX & MARK RUBINSTEIN, *OPTIONS MARKETS* 47-50 (1985).

⁹³ LONGSTRETH, *supra* note 85, at 137.

⁹⁴ *Id.* Longstreth's vision of a new prudent investor rule would in just a few years materialize when the UPIA and the Restatement were promulgated. See Martin D. Begleiter, *Does the Prudent Investor Need the Uniform Prudent Investor Act—An Empirical Study of Trust Investment Practices*, 51 ME. L. REV. 27, 42 (1999) (discussing Longstreth's singular contributions to the creation of the UPIA and Restatement).

⁹⁵ LONGSTRETH, *supra* note 85, at 134.

⁹⁶ UPIA prefatory note at 2 (1994).

⁹⁷ Edward C. Halbach, Jr., *Trust Investment Law in the Third Restatement*, 27 REAL PROP. PROB. & TR. J. 407 (1992) [hereinafter Halbach 1].

⁹⁸ Edward C. Halbach, Jr., *Trust Investment Law in the Third Restatement*, 77 IOWA L. REV. 1151 (1992) [hereinafter Halbach 2].

⁹⁹ Halbach 1, *supra* note 97, at 434 (emphasis added); see also Halbach 2, *supra* note 98, at 1166.

investor rule.¹⁰⁰ He found that, although the prudent investor rule was designed at one time to protect beneficiaries, it had, in light of new investment theories and opportunities, become paradoxically constrained.¹⁰¹ This, he argues, has discouraged fiduciaries from doing what is best for those whom they are supposed to protect.¹⁰² Gordon maintains that investing in some form of derivatives is entirely consistent with prudent investing even if it may have been viewed as too risky at the time.¹⁰³ Indeed, in Gordon's view, "[t]he use of options and futures may be thought of as a kind of insurance."¹⁰⁴

Since the passage of the UPIA and the Restatement, commentary approving fiduciary investment in at least certain types derivatives has continued, if not accelerated. One of the earliest post-UPIA and post-Restatement articles by Robert A. Levy compares and analyzes the new prudent investor rule with the older, constrained rule and concludes that the former, particularly with its requirement of diversification,¹⁰⁵ beneficially outweighs the older rule.¹⁰⁶ As Levy explains it through the use of several investment scenarios, certain derivatives can be a part of a diversified portfolio helping to preserve capital while maximizing returns.¹⁰⁷

A year after Levy penned his article, George Crawford expanded upon the idea that derivatives might not only be legal and useful under the new

¹⁰⁰ See generally Gordon, *supra* note 17.

¹⁰¹ *Id.* Gordon maintains that "[a]lthough 'prudence' ordinarily conjures up images of judiciousness and wisdom, the received understanding of the Prudent Man Rule operates as an unfortunate constraint on sound investment management." *Id.* at 52.

¹⁰² *Id.* "This constrained conception of the Rule discourages trustees (and other fiduciaries) from making many investments now regularly favored by prudent investors including start-up enterprises, venture capital pools, many kinds of real-estate-based investments, foreign stocks, short sales, and *options* and *futures*." *Id.* at 52–53 (emphasis added).

¹⁰³ *Id.*

¹⁰⁴ Gordon, *supra* note 17, at 53 n.3. Gordon also argues that "[b]oth futures and options permit the investor to reshape the risk associated with owning a particular security. A fiduciary can enter into a hedging transaction that reduces the risk of adverse price or interest rate movement; the risk is absorbed by the party on the other side, a speculator." *Id.*

¹⁰⁵ See *supra* text accompanying notes 30–32 (discussing the diversification requirement under the new prudent investor rule).

¹⁰⁶ Robert A. Levy, *The Prudent Investor Rule: Theories and Evidence*, 1 GEO. MASON L. REV. 1 (1994). Levy bases his conclusions on both theoretical and empirical grounds.

¹⁰⁷ *Id.* at 23–24. Levy argues that "[c]learly, conservation of capital is well served when high risk assets with low correlation, e.g. *futures contracts*, are added to personal trust portfolios." *Id.* at 24 (emphasis added).

prudent investor rule, but also that fiduciaries may even have a duty to understand how they work and be able to apply them when appropriate.¹⁰⁸ In advancing his argument, Crawford takes a hypothetical situation of a trustee's estate, whose beneficiary is in her eighties and has been diagnosed with Alzheimer's disease.¹⁰⁹ The hypothetical estate, moreover, is dominated by just one stock, Philip Morris.¹¹⁰ The trustee, however, does not choose to make use of derivatives because he deems them too risky.¹¹¹ Later, the stock falls from \$78, which is what it was worth when the beneficiary sent the stock to the trustee, to \$52 when she dies.¹¹² Crawford's contention is that the trustee should have used derivatives as a hedge to reduce the risk of price fluctuations.¹¹³

A third article, written by Michael T. Johnson, discusses the changing perception of the word "speculation" in the context of prudent fiduciary investing.¹¹⁴ Johnson explores how derivatives have been used with disastrous consequences, thereby tainting them as investments.¹¹⁵ Johnson suggests that there is a need for a higher level of professionalism in fiduciary investing so that derivatives may be used in a manner that can be both beneficial and safe.¹¹⁶

¹⁰⁸ See generally Crawford, *supra* note 42.

¹⁰⁹ *Id.* at 307–08.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 313.

¹¹² *Id.*

¹¹³ *Id.* at 331. Crawford furthermore suggests that the trustee's argument, that he wished to hold onto the stock in order to shield the beneficiary from tax consequences, is outweighed by the fact that derivatives can also help in achieving tax objectives. Crawford, *supra* note 42, at 325. See *infra* text accompanying notes 251–59, in which the authors expand the hedging thesis as a means of protecting the trust under the modern prudent investor rule.

¹¹⁴ Michael T. Johnson, Note, *Speculating on the Efficacy of Speculation: An Analysis of the Prudent Person's Slipperiest Term of Art in Light of Modern Portfolio Theory*, 48 STAN. L. REV. 419, 419 (1996).

¹¹⁵ *Id.* at 433–37 (discussing, among other disasters, the collapse of the Barings Bank caused by highly speculative and leveraged deal making by Nick Leeson, a young, reckless and relatively inexperienced banker). See also Goldman, *supra* note 42, at 1115, in which the author proposes a "two-tier suitability requirement" so that less sophisticated investors would be subjected to more regulation while more sophisticated, professional investors would have a safe harbor analogous to Rule 144 of the Securities Act of 1933. This scheme could be applied by analogy to fiduciary investors.

¹¹⁶ Johnson, *supra* note 114, at 447. See also *infra* text accompanying notes 374–99, in which the authors discuss the need for rules and parameters for fiduciaries to deal more competently and professionally with their beneficiaries' trust portfolios.

Lastly, Randall Borkus similarly proposes that fiduciaries should use derivatives in some circumstances to take full advantage of the potential of their portfolios.¹¹⁷ Borkus, much like Johnson,¹¹⁸ emphasizes that fiduciaries might not only have a duty to use derivatives, but also to be able to understand them and to apply them appropriately and professionally.¹¹⁹

IV. A PRIMER FOR DERIVATIVES

A. *What Are Derivatives?*

Derivatives are financial instruments or contracts between two parties whose promised payoffs, and, hence, values, are derived in part from the values and characteristics of other assets, the underlying assets.¹²⁰ The underlying asset is often a financial security such as a stock. But it can also be any asset that the contracting parties are interested in trading. For example, a gold futures contract is a derivative because its value depends on the value of gold, the underlying asset. Orange juice futures contracts, perhaps the most famous futures contracts,¹²¹ are derivatives because their values are derived from the orange crops which in turn are affected by the weather. Derivatives markets, unlike stocks, bonds, and mutual funds, are zero-sum markets because, before commissions and taxes, for every dollar the derivative buyer makes in a transaction, the derivative seller loses a dollar, and vice versa. Hence, in every one of those well-publicized losses in derivative trading, there must be, though seldom mentioned in the press,

¹¹⁷ See generally Borkus, *supra* note 42, at 161–64.

¹¹⁸ See generally Johnson, *supra* note 114.

¹¹⁹ See generally Borkus, *supra* note 42, at 161–64.

¹²⁰ A derivative is defined by the Commodity Futures Trading Commission as:

[A] financial instrument, traded on or off an exchange, the price of which is directly dependent upon (i.e., “derived from”) the value of one or more underlying securities, equity indices, debt instruments, commodities, other derivative instruments, or any agreed upon pricing index or arrangement (e.g., the movement over time of the Consumer Price Index or freight rates). Derivatives involve the trading of rights or obligations based on the underlying product, but do not directly transfer property.

Commodity Futures Trading Commission, The CFTC Glossary, <http://www.cftc.gov/files/opa/cftcglossary.pdf> [hereinafter CFTC Glossary] (last visited Apr. 1, 2006); see also *supra* text accompanying notes 36–40 (discussing what a derivatives are and why they are controversial).

¹²¹ Orange juice futures were made famous by the 1983 movie “Trading Places” directed by John Landis and starring Eddie Murphy, Dan Aykroyd, and Jamie Lee Curtis. TRADING PLACES (Paramount Pictures 1983).

derivative traders on the other side who profited by the exact same amount.¹²²

There are four major types of derivatives: forwards, futures, options, and swaps. Put simply, derivatives can be used by fiduciaries to hedge the risk of trust investments because the future price of an investment can be predetermined in a derivative contract, thereby reducing the uncertainty of the future price of the investment.

1. *Forwards*

Forward contracts are probably the oldest of the four derivatives, the most simple to understand, and the most common in our daily lives.¹²³ A forward is basically an agreement between a buyer and a seller that calls for the delivery of a specified quantity and quality of an asset, for example, gold, at a future date (the maturity date) with a price agreed upon today.¹²⁴ At maturity, the buyer is obligated to purchase the agreed upon quantity of gold from the seller, who is obligated to deliver the gold, at the contract price. A forward contract is different from a spot contract, which requires an immediate delivery of the asset. By entering into the forward contract today, both the buyer and seller eliminate the uncertainty of the gold's price at the maturity date.

Forwards are not traded on an exchange such as the Chicago Mercantile Exchange (CME), but rather in the over-the-counter (OTC) market.¹²⁵ Contracting parties, typically two financial institutions or a financial institution and one of its corporate clients,¹²⁶ negotiate the contract terms, which are basically asset price, asset quantity, and maturity. Forward contracts on foreign exchanges have existed for many years and are very

¹²² See *supra* text accompanying notes 37–41.

¹²³ See, e.g., CLIFFORD W. SMITH, JR. ET AL., *MANAGING FINANCIAL RISK* 45 (1990) [hereinafter SMITH].

¹²⁴ See generally CFTC Glossary, *supra* note 120; see also SMITH, *supra* note 123, at 45; DON M. CHANCE, *AN INTRODUCTION TO DERIVATIVES & RISK MANAGEMENT* 3 (6th ed. 2004).

¹²⁵ The OTC market involves trading that does not occur in a physical facility. There is no formal corporate entity organized, such as the market, that exists in an exchange—for example, the New York Stock Exchange. Traders instead are connected via phone and computer networks. See, e.g., CHANCE, *supra* note 124, at 3; see also JOHN C. HULL, *FUNDAMENTALS OF FUTURES AND OPTIONS MARKETS* 3 (4th ed. 2002). The term “OTC market” originated “at a time when you actually bought stock over the counter from a local broker.” See KENNETH M. MORRIS & ALAN M. SIEGEL, *GUIDE TO UNDERSTANDING MONEY & INVESTING* 64 (1993).

¹²⁶ See generally HULL, *supra* note 125, at 34.

popular.¹²⁷ Most forward contracts are privately negotiated, binding contracts. Hence, it is difficult for either contracting party to transfer or to get out of the contract.¹²⁸ There are two other important features of a forward contract. First, the value of the contract is conveyed only at the maturity date and no payment at either the origination or during the life of the contract is required.¹²⁹ Second, both contracting parties (the buyer and the seller) face default or credit risk.¹³⁰

2. Futures

Futures are similar to forwards. Futures are also contracts to buy or sell a certain quantity of an underlying asset at a future date with a predetermined price.¹³¹ The oldest futures can be traced back to the Japanese “rice tickets” in the seventeenth century.¹³² However, unlike forwards, futures are traded on exchanges such as the Chicago Board of Trade (CBOT) and the CME, the two largest futures exchanges in the U.S.¹³³ The futures exchanges standardize the terms of futures contracts, such as the contract size, maturity date, delivery location, and acceptable quality of the commodity.¹³⁴ The standardization provides the homogeneity of futures contracts that results in the liquidity of the futures market.¹³⁵ While it is difficult for a trader to back

¹²⁷ See, e.g., *id.* at 3; see also ROBERT W. KOLB, *FUTURES, OPTIONS, AND SWAPS* 281 (4th ed. 2003); CHANCE, *supra* note 124, at 3.

¹²⁸ Commodity Futures Trading Commission, *The Economic Purpose of Futures Markets*, <http://www.cftc.gov/opa/brochures/opaeconpurp.htm> [hereinafter *The Economic Purpose of Futures Markets*] (last visited Apr. 1, 2006).

¹²⁹ See, e.g., SMITH, *supra* note 123, at 46; see also HULL, *supra* note 125, at 34.

¹³⁰ See, e.g., SMITH, *supra* note 123, at 46; see also CHANCE, *supra* note 124, at 271.

¹³¹ See CFTC Glossary, *supra* note 120.

¹³² MORRIS & SIEGEL, *supra* note 125, at 135. Landlords in Japan who collected rice as rents sold warehouse receipts or rice tickets for their stored rice. Rice ticket holders were entitled, at a future date, to a specific quantity of rice with a certain quality.

¹³³ There are seven major futures exchanges in the U.S. and each one specializes in particular commodities or financial securities. They are the Chicago Board of Trade, the Chicago Mercantile Exchange, the Kansas City Board of Trade, the Minneapolis Grain Exchange, the New York Board of Trade, the New York Mercantile Exchange, and the Philadelphia Board of Trade. For more details of futures changes, visit the Commodity Futures Trading Commission website at <http://www.cftc.gov>.

¹³⁴ *The Economic Purpose of Futures Markets*, *supra* note 128.

¹³⁵ See, e.g., SMITH, *supra* note 123, at 118–41.

out of a forward contract, most of the futures contracts are not delivered.¹³⁶ Instead, most traders close out their positions prior to expiration by executing an offsetting order; that is, if one has bought a contract (a long position), one can just sell the contract to the market or vice versa.

The credit risk of futures contracts is virtually eliminated by three institutional features of the futures exchanges.¹³⁷ The three features are (1) the exchange clearinghouse, (2) the margin requirement, and (3) the daily settlement or "marking to market." Each futures exchange operates its own independent clearinghouse, which acts as an intermediary and guarantor to every futures contract traded in the exchange.¹³⁸ The clearinghouse does not take a position in any transaction but instead interposes itself between the buyer and seller in each trade, and therefore adopts the position of seller to every buyer and vice versa.¹³⁹ Thus, the credibility of each trader is substituted with the credibility of the well-capitalized clearinghouse.¹⁴⁰ On the other hand, the forward market is an OTC market and there is no clearinghouse to guarantee the performance of each trader.¹⁴¹

To further ensure the performance of each futures contract, the clearinghouse requires every trader (both buyers and sellers) to post a margin, called the initial margin, generally in amounts between two percent and ten percent of the total value of the contract.¹⁴² The margin is similar to a performance bond in that it is designed to ensure the performance of each trader. In a forward contract, the gain and loss are conveyed at the end of the contract when delivery is made.¹⁴³ However, in the futures market, the gains and losses are conveyed at the end of each trading day; hence, they are called the daily settlement or marking to market.¹⁴⁴ If the futures price increases, the gain in the futures contract value will be credited to the margin account

¹³⁶ For example, generally less than 1% of all futures contracts are settled by either physical delivery or cash settlement whereas more than 90% of forward contracts are settled by actual delivery. *See* KOLB, *supra* note 127, at 280.

¹³⁷ *See, e.g.*, SMITH, *supra* note 123, at 142; *see also* RENÉ M. STULZ, RISK MANAGEMENT & DERIVATIVES 131–33 (2003).

¹³⁸ *See, e.g.*, KOLB, *supra* note 127, at 17; *see also* CHANCE, *supra* note 124, at 284–85.

¹³⁹ *See, e.g.*, KOLB, *supra* note 127, at 17; *see also* CHANCE, *supra* note 124, at 284–85.

¹⁴⁰ *See, e.g.*, KOLB, *supra* note 127, at 17; *see also* CHANCE, *supra* note 124, at 284–85.

¹⁴¹ *See, e.g.*, KOLB, *supra* note 127, at 17; *see also* CHANCE, *supra* note 124, at 284–85.

¹⁴² The Economic Purpose of Futures Markets, *supra* note 128.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

of the trader, usually the buyer, who holds a long position. At the same time, the loss in the contract value will be deducted from the trader's margin account, generally that of the seller, who holds a short position. Moreover, if the funds in the margin account drop below the specified maintenance margin, which is typically 75% of the initial margin, the trader will receive a margin call from the broker and is required to post additional funds, called the variation margin, to bring the account up to the initial margin. If the trader fails to replenish the margin account, the position will be closed out by the broker.¹⁴⁵

3. Options

Unlike the owner of a forward or futures contract who has an obligation to perform, an option owner (buyer) is entitled to the right to buy an asset in a call option or the right to sell an asset in a put option before the expiration date.¹⁴⁶ Unlike a buyer of futures, the option buyer has to pay an option premium or price to the seller or writer for this right.¹⁴⁷ However, similar to a forward or futures contract, the price and the quantity of the asset are agreed upon when the option is traded.¹⁴⁸ Before 1973, options were traded in the OTC market. But in 1973, the CBOT formed an exchange exclusively for options, the Chicago Board Options Exchange (CBOE).¹⁴⁹ The success of the CBOE paved the way for the creation of other option exchanges.¹⁵⁰ Much like futures exchanges, option exchanges standardize the terms and conditions, such as the contract size, underlying asset, exercise price, and expiration date, of option contracts, resulting in the liquidity of option trading.¹⁵¹ Option traders can effortlessly cancel their positions by placing offsetting orders.¹⁵² For instance, a put options buyer can offset the position by selling the put options to the market. About 62% of stock call options and

¹⁴⁵ *Id.*

¹⁴⁶ See generally Chicago Board Options Exchange, Equity Option Concepts, <http://www.cboe.com/strategies/Basics.aspx> [hereinafter Equity Option Concepts] (last visited Apr. 1, 2006). American-style options may be exercised any time before the expiration date. European-style options can be exercised only during a specified period of time or just prior to expiration.

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ See, e.g., CHANCE, *supra* note 124, at 21; see also KOLB, *supra* note 127, at 314.

¹⁵⁰ See, e.g., CHANCE, *supra* note 124, at 25.

¹⁵¹ See, e.g., *id.* at 21; see also KOLB, *supra* note 127, at 314. It should be noted that these options are still traded in the OTC market.

¹⁵² See, e.g., CHANCE, *supra* note 124, at 35.

49% of stock put options were closed out in this manner in 1999.¹⁵³ Only a small portion, about 10% of stock options, was exercised.¹⁵⁴

To guarantee the performance, especially that of the sellers or writers of option contracts, the Options Clearing Corporation (OCC), an independent entity, performs functions similar to those of the clearinghouse in the futures market.¹⁵⁵ Specifically, to further reduce the credit risk of options transactions, the OCC also requires an initial margin for sellers of call and put options who are obligated to perform when the options are exercised by the buyers.¹⁵⁶ The OCC, similar to the role played by futures clearinghouses, practically eliminates the default risk in options trading.¹⁵⁷

4. Swaps

A swap is simply an agreement between two counterparties to exchange or swap specified cash flows over a specific period in the future.¹⁵⁸ The swap market has grown rapidly since 1981 after swaps were publicly introduced when International Business Machines Corporation and the World Bank agreed to a currency swap.¹⁵⁹ A forward can be viewed as a simple example of a swap because there is only one exchange of cash flow at the maturity date, whereas a true swap generally involves a series of cash flow exchanges on specified future dates.¹⁶⁰ In essence, a swap can be viewed as a series of forward contracts. Like forwards, swaps are traded in the OTC market and swap traders are exposed to the credit risk of counterparties.¹⁶¹ Nevertheless, the International Swaps and Derivatives Association (ISDA), an industry organization, provides swap traders with standardized swap agreements and maintains records of swap activities.¹⁶² There are four primary types of

¹⁵³ See generally KOLB, *supra* note 127, at 310.

¹⁵⁴ *Id.*

¹⁵⁵ See Equity Option Concepts, *supra* note 146.

¹⁵⁶ See CHANCE, *supra* note 124, at 49–50; see also HULL, *supra* note 125, at 173–74.

¹⁵⁷ See Equity Option Concepts, *supra* note 146.

¹⁵⁸ See CFTC Glossary, *supra* note 120. See generally CHANCE, *supra* note 124, at 425; KOLB, *supra* note 127, at 671.

¹⁵⁹ See, e.g., KOLB, *supra* note 127, at 671.

¹⁶⁰ See, e.g., HULL, *supra* note 125, at 133.

¹⁶¹ The Chicago Board of Trade in 2001 started trading swap futures with ten-year interest rates. See Ed Rombach, *Exchange-Traded Instruments: Where Futures Meet Swaps*, INT'L TREASURER, Nov. 2001, at 8–9, available at <http://www.cbot.com/cbot/docs/25860.pdf>.

¹⁶² See generally KOLB, *supra* note 127, at 672.

swaps: currency swaps, interest rate swaps, equity swaps, and commodity swaps.¹⁶³ A common type of swap is a plain vanilla interest rate swap.¹⁶⁴ In this swap, one counterparty agrees to pay a series of cash interest payments at a predetermined fixed rate to the opposing counterparty, which in return agrees to pay the counterparty a series of cash, interest payments based on a floating rate.¹⁶⁵ Both payments, fixed and floating, are based on the same notional principal; that is, that the principal is not to change hands.¹⁶⁶ Generally, only the differences in the fixed and floating payments change hands.¹⁶⁷ A swap like this is typically arranged by a financial institution.¹⁶⁸ A company can convert fixed rate payments to floating rate payments or vice versa with this interest rate swap, which allows the counterparties to transfer interest rate risk among themselves.¹⁶⁹ Swaps, similar to forwards, are designed to be held until the termination date.¹⁷⁰ Therefore, it is not as simple as futures and options if a trader desires to exit a swap early. A trader can negotiate with the dealer for an offsetting swap or use other securities such as forwards or options on the swap to terminate the swap.¹⁷¹

5. Growth of the Derivatives Market

Although derivatives may be obscure financial products to some investors, the futures and options markets have enjoyed phenomenal growth since the 1970s.¹⁷² The major reasons for this growth are the exchange standardization of the contracts, the advancement of the pricing theory of derivatives, and the changes in economic conditions.¹⁷³ There was a twelve-fold increase in the use of derivatives in the 1990s alone.¹⁷⁴ The growth of the futures and options markets can be illustrated easily by their contract volumes. In 1997, there were 417 million futures contracts and 353 million

¹⁶³ See, e.g., CHANCE, *supra* note 124, at 425.

¹⁶⁴ See generally *id.* See also KOLB, *supra* note 127, at 673.

¹⁶⁵ See generally CHANCE, *supra* note 124, at 427; KOLB, *supra* note 127, at 673. The notional amount is used because it is a proxy for the value of the underlying asset. See STULZ, *supra* note 137, at 7.

¹⁶⁶ See, e.g., KOLB, *supra* note 127, at 674.

¹⁶⁷ See, e.g., *id.*

¹⁶⁸ See, e.g., HULL, *supra* note 125, at 137.

¹⁶⁹ See, e.g., *id.* at 136.

¹⁷⁰ See generally CHANCE, *supra* note 124, at 457.

¹⁷¹ *Id.*

¹⁷² See, e.g., STULZ, *supra* note 137, at 5.

¹⁷³ *Id.*

¹⁷⁴ *Id.*

options contracts.¹⁷⁵ In 2003, there were 986 million and 908 million, respectively.¹⁷⁶

The size of the OTC forwards and swaps markets are more difficult to estimate because they are private transactions—that was, until 1998 when the Bank for International Settlements of Switzerland began regular global surveys of OTC derivative transactions.¹⁷⁷ At the end of 2004, the notional principal amount¹⁷⁸ of interest rate forwards was \$12.805 trillion while that of interest rate swaps was \$147.366 trillion.¹⁷⁹ To get a glimpse of the size of these two markets, the gross domestic product of the U.S. was \$11.734 trillion in 2004.¹⁸⁰ The next section will compare and contrast the two major uses of derivatives—speculation and hedging.

B. *Speculation Versus Hedging with Derivatives*

The stigma of derivatives continues to overshadow the benefit of derivatives to risk management.¹⁸¹ This springs, to a large extent, from the well-publicized misuses by investors in their speculations.¹⁸² A simple yet effective way to differentiate between speculation and hedging is to define each term. A speculator can be viewed as a trader who enters the derivatives market with an intention to seek profit by willingly accepting increased risk.¹⁸³ Derivatives are appealing securities for speculation because of the

¹⁷⁵ See COMMODITY FUTURES TRADING COMMISSION, FY 2003 ANNUAL REPORT 97–98 (2003), available at <http://www.cftc.gov/files/anr/anr2003ar.pdf>; CHICAGO BOARD OPTIONS EXCHANGE, 2003 MARKET STATISTICS 65 (2004), available at <http://www.cboe.com/data/marketstats-2003.pdf>.

¹⁷⁶ See COMMODITY FUTURES TRADING COMMISSION, FY 2003 ANNUAL REPORT 97–98 (2003), available at <http://www.cftc.gov/files/anr/anr2003ar.pdf>; CHICAGO BOARD OPTIONS EXCHANGE, 2003 MARKET STATISTICS 65 (2004), available at <http://www.cboe.com/data/marketstats-2003.pdf>.

¹⁷⁷ See generally KOLB, *supra* note 127, at 671.

¹⁷⁸ See, e.g., STULZ, *supra* note 137, at 7.

¹⁷⁹ *Statistical Annex*, BANK FOR INT’L SETTLEMENTS Q. REV., June 2005, at A99, available at http://www.bis.org/publ/qtrpdf/r_qa0506.pdf.

¹⁸⁰ Bureau of Economic Analysis, National Economic Accounts, Current-Dollar and “Real” GDP, <http://www.bea.gov/bea/dn/home/gdp.htm> (last visited Apr. 1, 2006).

¹⁸¹ See generally Johnson, *supra* note 114. See also *supra* text accompanying notes 36–40 (discussing the apparent phobia associated with derivatives).

¹⁸² See *supra* text accompanying notes 37–39.

¹⁸³ See, e.g., KOLB, *supra* note 127, at 100.

leverage they provide.¹⁸⁴ On the other hand, a hedger is a trader who enters the market with an intention to reduce or eliminate a preexisting risk.¹⁸⁵

Consider a U.S. speculator who bets that the U.S. Dollar will lose its strength against the British Pound in the next three months from the current rate of \$1.83 to £1 on June 14, 2005. The speculator could either enter a three-month forward contract to buy £62,500¹⁸⁶ or take a long position of a British Pound futures contract to buy £62,500¹⁸⁷ at an exchange rate of \$1.84 to £1.¹⁸⁸ If the spot exchange rate on the date that the forward and the futures contract mature rises above \$1.84 to £1,¹⁸⁹ the speculator will realize a profit; otherwise, there is a loss.¹⁹⁰

Now suppose that on June 14, 2005, a U.S. sports import company has just ordered some soccer merchandise from a British supplier. The merchandise will be delivered in three months and requires a payment of £625,000. The current exchange rate is \$1.83 to £1. The import company is planning to hedge against the uncertainty of the exchange rate between the U.S. Dollar and the British Pound at the time the payment is due. The import company could either buy £625,000 from a financial institution in the three-

¹⁸⁴ An investment is to provide an investor leverage if the profit and loss of the investment are greater than that of the underlying asset of the investment; that is, the profit and loss of the underlying asset are magnified by the investment. *See generally* Chicago Board Options Exchange, Options Dictionary, http://www.cboe.com/LearnCenter/glossary_g-l.aspx#L [hereinafter Options Dictionary] (last visited Apr. 1, 2006). *See also supra* text accompanying note 200.

¹⁸⁵ *See, e.g.,* KOLB, *supra* note 127, at 111.

¹⁸⁶ The amount of this forward contract is set to equal £62,500 because the value of a British Pound futures contract is £62,500. It will be easier to compare the results of using the forward and the futures when the contract amount is the same. *See infra* notes 187, 190.

¹⁸⁷ The standard size of a British Pound futures contract is £62,500. *See* Chicago Mercantile Exchange, CME British Pound Futures, http://www.cme.com/trading/prd/contract_spec_BP2451.html [hereinafter CME British Pound Futures] (last visited Apr. 1, 2006).

¹⁸⁸ The forward price and futures price would be the same when they have the same maturity date. This depends on factors such as interest rate uncertainties and default risk. *See, e.g.,* CHANCE, *supra* note 124, at 309–10; HULL, *supra* note 125, at 66.

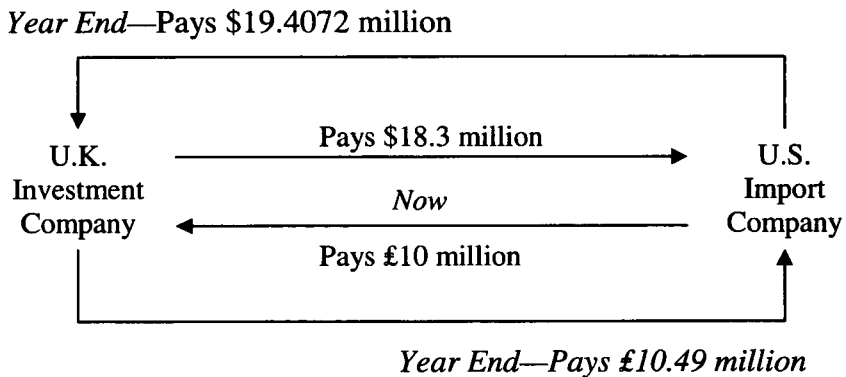
¹⁸⁹ We assume that the forward contract and the futures contract have the same maturity day. They could be different because futures are standardized contracts, whereas forward contracts are not. *See supra* text accompanying note 134.

¹⁹⁰ The profit or loss for either the forward or futures contract can be determined by $\$62,500 \times (\text{spot rate} - 1.84)$. *See generally* HULL, *supra* note 125, at 35. Suppose that the spot exchange rate on the maturity day is \$1.86 to £1, that is, the British Pound strengthens as compared to today's rate. The speculator realizes a profit of \$1250. On the other hand, if the spot rate on the maturity day is \$1.79 to £1, the speculator will suffer a loss of \$3125. *See supra* note 186.

month forward market or take a long position of ten futures contracts with three months maturity to buy £625,000. Suppose that the contract exchange rate for both the forward contract and the futures contracts is \$1.84 to £1.¹⁹¹ Therefore, regardless of what the spot exchange rate is when the payment is to be made, the £625,000 will cost the import company, a hedger, \$1,150,000.¹⁹²

Suppose that a U.K. investment company speculates that the U.S. Dollar will further strengthen against the British Pound in one year. The current exchange rate is \$1.83 to £1 as of June 14, 2005, and the company bets that the exchange rate will be at the \$1.60 to £1 level in a year. Consider a U.S. import company that needs to make a payment to a U.K. soccer merchandise supplier in a year and desires to hedge against the foreign exchange risk between the U.S. Dollar and British Pound. Suppose that the U.K. company and the U.S. import company agree to a hypothetical one-year currency swap,¹⁹³ which is depicted in Figure 1 below.

Figure 1—Currency Swap



In essence, these two companies exchange payments now and one year later. This currency swap is initiated when the U.K. company receives £10 million from the U.S. company and pays a fixed interest rate of 4.9% for its payment, whereas the U.S. company obtains \$18.3 million from the U.K. company and pays a fixed interest rate of 6.05% for its payment. One year later, the U.K. company will get back \$19.4072 million, whereas the U.S.

¹⁹¹ We assume that the forward contract and the futures contract have the same maturity day. *See supra* note 189.

¹⁹² The payment is $\$625,000 \times \$1.84 = \$1,150,000$.

¹⁹³ Typical swaps are supposed to have a series of payments, not just one. *See supra* text accompanying notes 158–61.

company will have £10.49 million.¹⁹⁴ If the spot exchange rate at that time is below the implied forward rate of \$1.85 to £1,¹⁹⁵ say, \$1.62 to £1; that is, the U.S. Dollar is stronger against the British Pound than the forward exchange rate implies, the U.K. company profits from this swap. On the other hand, the U.S. company will receive £10.49 million at the end of the swap regardless of the spot exchange rate at that time,¹⁹⁶ therefore eliminating the exchange rate risk.

It is evident from the above examples that forwards, futures, and swaps could be utilized easily either to hedge or to speculate on foreign currency. Let us next consider the use of options to speculate or hedge stock investments. Suppose that a speculator, after some extensive research, is convinced that the stock of General Motors Corporation (GM) will climb back to and beyond its fifty-two-week high of \$48 per share from its current price of \$35 (as of June 14, 2005) in three months. To profit from this prediction, the speculator could buy twenty GM call option contracts with an exercise price of \$35 that will expire in September 2005. Suppose that the call premium is \$3 per share. Because each call contract gives the speculator the right to buy 100 shares of GM stock at \$35 per share, the total cost or premium of buying the option contracts is \$6000.¹⁹⁷

Consider a college student who has just graduated and her grandparents promise the delivery of a graduation gift of \$70,000 in cash in three months (September 2005). The grandparents, both GM retirees, tell her that GM's stock price will regain its glory in the next six months due to the recent management change and cost-cutting programs. Acting on this advice, the college graduate decides to invest the \$70,000 in GM stock when she receives the money in three months. To hedge against potential increases (from the current price of \$35 per share) in GM's stock price in three months, which will cost her \$70,000 to purchase less than 2000 shares, she could buy twenty GM call option contracts with an exercise price of \$35, a call

¹⁹⁴ The payment to the U.K. company at year-end is \$18.3 million + (\$18.3 million x 6.05%) = \$19.4072 million. The payment to the U.S. company at year-end is £10 million + (£10 million x 4.9%) = £10.49 million.

¹⁹⁵ The implied forward exchange rate can be determined by the interest rate parity, which specifies the relationship between two countries' risk-free interest rates, spot exchange rates, and forward exchange rates. See generally SMITH *supra* note 123, at 339–40; CHANCE, *supra* note 124, at 326–28; HULL, *supra* note 125, at 57–59; KOLB, *supra* note 127, at 727–28. The implied forward rate of \$1.85 to £1 is obtained by $(1.83 \times 1.605)/1.049$.

¹⁹⁶ See *supra* note 194 (showing how the payments are determined).

¹⁹⁷ The cost is $20 \times \$3 \times 100 = \6000 . See, e.g., Chicago Board Options Exchange, Equity Option Strategies, Buying Calls, <http://www.cboe.com/Strategies/BuyingCalls.aspx> [hereinafter Buying Calls] (last visited Apr. 1, 2006).

premium of \$3, and an expiration month of September 2005. The total cost of hedging is therefore \$6000.¹⁹⁸

If GM's stock price is \$40 on the option expiration day, the speculator would realize a profit of \$4000, a return of 67.7% in three months.¹⁹⁹ The return is quite extraordinary due to the leverage that options provide.²⁰⁰ The college student can buy 2000 shares at \$35, the strike price, by exercising the call options.²⁰¹ On the other hand, if the stock price of GM is below \$35 per share on the expiration day, say \$33, the speculator will suffer a total loss of \$6000 or 100% because the call will expire with no value.²⁰² If the college student still wants to invest in GM stock, she will let the call options expire and buy 2000 shares at the market price, \$33 per share. In other words, she will never have to pay more than the strike price of \$35 to buy 1000 shares of GM stock in the next three months at a cost of \$6000.²⁰³

The above discussion shows that while speculators could easily employ derivatives to seek profits by accepting more risks, hedgers could also use derivatives as an effective tool to reduce or even eliminate risks. The next section will discuss which of the four major types of derivatives—forwards, futures, options, and swaps—are most suitable for fiduciaries who wish to hedge trust investments.

C. *The Suitability of Derivatives in Hedging Trust Investments*

Even though all four major types of derivatives are effective tools in managing the risk of a trust asset, they might not be equally suitable candidates for fiduciaries to use in hedging trust investments. The Restatement and the UPIA, while generally supporting the use of derivatives, do not specify which derivatives may be more suitable for managing the risk of a trust.²⁰⁴ However, the institutional features of the derivatives and the

¹⁹⁸ The total cost is $20 \times \$3 \times 100 = \$6,000$. See *id.* (discussing the cost of the options contracts).

¹⁹⁹ The profit is $20 \times (\$40 - \$35) \times 100 - \$6000 = \4000 and rate of return $\$4000/\$6000 = 67.7\%$. See *id.* (discussing the profit and loss of options trading).

²⁰⁰ The return on GM stock is only $\$5/\35 , or 14.3%, while the return on the call options is 67.7%. *Id.*; see also, *supra* note 184.

²⁰¹ See, e.g., *Buying Calls*, *supra* note 197.

²⁰² *Id.*

²⁰³ *Id.*

²⁰⁴ RESTATEMENT (THIRD) OF TRUSTS § 227, cmt. f(2) (1992).

Specific investments or techniques are not per se prudent or imprudent. The riskiness of a specific property, and thus the propriety of its inclusion in the trust estate, is not judged in the abstract but in terms of its anticipated effect on the particular trust's portfolio. The same is true of specific courses of action, such as the

provisions contained in the Restatement and the UPIA could determine a derivative's suitability for trust investment hedging. Exchange-traded futures and options are regulated at several levels.²⁰⁵ In addition to the federal and state regulatory agencies, the industry also regulates itself according to rules established by the exchanges.²⁰⁶ The SEC, a federal regulatory authority, regulates the securities markets, including futures and options.²⁰⁷ The Commodity Futures Trading Commission (CFTC) was federally established in 1974 to specifically regulate the futures industry.²⁰⁸ In 1982, some of the responsibilities of the CFTC were shifted to the National Futures Association (NFA), an industry self-regulatory body.²⁰⁹ The futures exchanges and clearinghouse at the same time govern the conduct of exchange and clearinghouse members and the behavior of traders.²¹⁰

The SEC is the primary regulatory authority of the options market.²¹¹ The options exchanges and the OCC play an important role in regulating the industry.²¹² Some states, such as New York and Illinois, where futures and options exchanges are located, also have their own regulatory agencies enforcing their own laws on futures and options transactions.²¹³ Regardless of the level of regulation, the primary objective of the futures and options regulation is to protect the public interest by governing the operations of

“defensive” use of options seeking to reduce the risk of an investment strategy and to do so at a lower “price” in terms of program goals than might be exacted by converting to a more conservative portfolio of assets.

Id. (internal signals omitted); *see supra* text accompanying notes 27–29, 43–52 (discussing both expressed and implied language in the acts supporting derivatives).

²⁰⁵ *See, e.g.*, CHANCE, *supra* note 124, at 44–45, 296–97; HULL, *supra* note 125, at 30–31, 175; KOLB, *supra* note 127, at 32–36.

²⁰⁶ More detailed information concerning laws and regulations on futures trading and options trading can be found on the internet. *See* Commodity Futures Trading Commission, Law and Regulation, <http://www.cftc.gov/cftc/cftclawreg.htm#regs> (last visited Apr. 1, 2006); *see also* Chicago Board Options Exchange Legal Site, <http://www.cboe.org/Legal> (last visited Apr. 1, 2006).

²⁰⁷ *See generally* CHANCE, *supra* note 124, at 296–97; HULL, *supra* note 125, at 30–31; KOLB, *supra* note 127, at 32–36.

²⁰⁸ *See generally* CHANCE, *supra* note 124, at 296–97; HULL, *supra* note 125, at 30–31; KOLB, *supra* note 127, at 32–36.

²⁰⁹ *See generally* CHANCE, *supra* note 124, at 296–97; HULL, *supra* note 125, at 30–31; KOLB, *supra* note 127, at 32–36.

²¹⁰ *See generally* CHANCE, *supra* note 124, at 296–97; HULL, *supra* note 125, at 30–31; KOLB, *supra* note 127, at 32–36.

²¹¹ *See, e.g.*, CHANCE, *supra* note 124, at 44–45; HULL, *supra* note 125, at 175.

²¹² *See, e.g.*, CHANCE, *supra* note 124, at 44–45; HULL, *supra* note 125, at 175.

²¹³ *See, e.g.*, CHANCE, *supra* note 124, at 44–45; HULL, *supra* note 125, at 175.

exchanges and monitoring exchange transactions.²¹⁴ Some of the functions provided by various regulatory agencies include approval of new contracts, ensuring public availability of price information, scrutiny of organizations and individuals who provide services related to futures and options trading, and prevention of price manipulation.²¹⁵

Forwards and swaps, traded in the OTC market, are not directly regulated.²¹⁶ Most of the OTC derivatives in the U.S. are handled by roughly fifteen banking and securities companies.²¹⁷ These participating institutions are regulated by both federal and state agencies based on the institutions' other activities.²¹⁸

One of the primary duties of a fiduciary, prescribed in the UPIA and the Restatement, is to exercise reasonable care, skill, and caution in managing a trust.²¹⁹ Therefore, in implementing trust hedging strategies, it is probably more prudent for a fiduciary to employ regulated securities, such as futures and options. Consider mishaps, such as when a default risk happens after a fiduciary utilizes unregulated forwards or swaps in hedging trust investments. The fiduciary might be subject to a surcharge because regulated securities, like futures and options, were not used.²²⁰ For this reason alone, regulated futures and options should already be more suitable tools than are unregulated forwards and swaps for fiduciaries in hedging strategies.²²¹

The second reason that futures and options might be more suitable for fiduciaries is that the default or credit risk is practically eliminated by the exchanges. Exchange-traded futures and options contracts are standardized, and thus, the default risk is virtually eliminated.²²² On the other hand, forwards and swaps are traded in the OTC market where contracts are

²¹⁴ See generally CHANCE, *supra* note 124, at 45; KOLB, *supra* note 127, at 35.

²¹⁵ See generally CHANCE, *supra* note 124, at 45; KOLB, *supra* note 127, at 35.

²¹⁶ See, e.g., Goldman, *supra* note 42, at 1118; see also CHANCE, *supra* note 124, at 296–97; KOLB, *supra* note 127, at 672–73.

²¹⁷ *Financial Derivatives: Actions Needed to Protect the Financial System: Testimony Before the Subcomm. on Environment, Credit, and Rural Development of the Comm. on Agriculture*, 103d Cong. 1–4 (1994) (statement of James L. Bothwell, Director, Financial Institutions and Market Issues), available at <http://archive.gao.gov/t2pbat3/151816.pdf>, at 3 (last visited Apr. 1, 2006).

²¹⁸ See Goldman, *supra* note 42, at 1121; see also CHANCE, *supra* note 124, at 297.

²¹⁹ See UPIA § 2(a) (1994); RESTATEMENT (THIRD) OF TRUSTS § 227(a) (1992).

²²⁰ See *infra* text accompanying notes 222–26 (discussing how a trustee's exposure to a surcharge is minimized by trading on the proper exchange).

²²¹ See Goldman, *supra* note 42, at 1115–16 (proposing a “two-tier suitability requirement” to protect less sophisticated investors of OTC derivatives).

²²² See *supra* text accompanying notes 134–40, 155–57.

individualized and default risk exists.²²³ Both forwards and swaps are generally privately negotiated contracts, though a bank or financial institution in many instances is either a counterparty or facilitator.²²⁴ Thus, there will be some degree of default risk inherent in a forward or swap.

Consider a trustee who, in order to preserve the trust capital in a forthcoming principal distribution,²²⁵ uses an OTC derivative such as a forward contract to hedge the value of the principal. Assume further that the contracting party of the forward defaults, resulting in a significant loss in the value of the trust principal. The trustee could have avoided the default risk by employing exchanged-traded futures instead. The trustee could be found liable for taking this default risk under the Restatement in this hedging strategy.²²⁶ Consequently, fiduciaries should view regulated futures and options as a more prudent means of managing risk.

The third reason behind the suitability of futures and options as trust hedging tools is the issue of loyalty and good faith. The UPIA and the Restatement stress that a trustee must invest and manage the trust solely in the interest of its beneficiaries and with undivided loyalty and good faith.²²⁷ The appearance of a personal conflict of interest might occur when a fiduciary uses forwards and swaps that are generally privately negotiated contracts, particularly if the fiduciary has an ongoing business relationship with the contracting party.²²⁸ On the contrary, a fiduciary is dealing with the exchanges when using futures and options.²²⁹ Exchange-traded futures and options will not, nor appear to, compromise a trustee's loyalty and good faith.

The last but equally important reason for the suitability of futures and options is trading cost. Both the UPIA and the Restatement provide that only reasonable and appropriate investment costs can be incurred relative to what

²²³ See *supra* text accompanying notes 125–30, 161.

²²⁴ See, e.g., CHANCE, *supra* note 124, at 283; KOLB, *supra* note 127, at 686–89.

²²⁵ Both the Restatement and the UPIA stress the preservation of capital. See RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992); UPIA § 2(c)(7) (1994).

²²⁶ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992) provides that “this requirement of caution requires the trustee to invest with a view both to safety of the capital and to securing a reasonable return.” The Restatement continues to stress that “risk management is concerned with more than failure of collection and loss of dollar value. It takes account of all hazards that may follow from inflation, volatility of price and yield, lack of liquidity, and the like.” *Id.*

²²⁷ UPIA § 5 (1994); RESTATEMENT (THIRD) OF TRUSTS § 227 (c)(1) (1992). The Restatement also restricts a trustee from undertaking investments that will give rise to a personal conflict of interest. See RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. c (1992).

²²⁸ See *supra* text accompanying notes 125–26, 161.

²²⁹ See *supra* text accompanying notes 139–40, 155–57.

fiduciaries expend in their investment duties.²³⁰ There are two major transaction costs of trading futures and options, namely, commissions and bid-ask spreads.²³¹ Discount brokers offer the lowest options commissions, typically a fixed minimum fee and a per contract charge.²³² For instance, E*Trade charges up to \$14.95, plus \$1.75 per contract.²³³ The commissions of trading futures are very low and much less documented than those of trading stocks and options.²³⁴ A round-trip commission of \$10 is not uncommon.²³⁵

The second major trading cost is the bid-ask spread, the difference between the ask price, the price for which a market maker is willing to sell a security, and the bid price, the price for which a market maker is willing to buy a security.²³⁶ The spread is a cost of the immediacy of the trade.²³⁷ For options, the spread could be quite high, up to several percentage points of the option price.²³⁸ For futures, the spread is usually the value of the minimum price change of the specific futures contract. This is called a "tick."²³⁹ For example, the British Pound futures contract's minimum price change is \$6.25.²⁴⁰ Forwards and swaps are generally private; and, therefore, transaction costs are less publicized.²⁴¹ However, because they could be customized for a trader's specific needs, the costs could be potentially high. In the forwards market, a trader would generally deal with a dealer who charges processing costs and the bid-ask spread—and both costs could be quite high.²⁴² In the swaps market, a swap broker charges a service fee from both counterparties while a swap dealer charges a spread between both counterparties, similar to the bid-ask spread.²⁴³

²³⁰ UPIA § 7 (1994); RESTATEMENT (THIRD) OF TRUSTS § 227 (c)(3) (1992).

²³¹ See, e.g., CHANCE, *supra* note 124, at 42–43, 295–96.

²³² See *id.* at 42.

²³³ E*Trade, View Commissions & Fees, <https://us.etrade.com/e/t/estation/pricing?id=1206010000> (last visited Apr. 1, 2005).

²³⁴ See generally CHANCE, *supra* note 124, at 295.

²³⁵ *Id.*

²³⁶ See, e.g., Options Dictionary, *supra* note 184.

²³⁷ See generally CHANCE, *supra* note 124, at 43.

²³⁸ *Id.*

²³⁹ *Id.* at 297.

²⁴⁰ The minimum price change is $0.0001 \times \$62,500 = \6.25 . See CME British Pound Futures, *supra* note 187.

²⁴¹ See, e.g., CHANCE, *supra* note 124, at 295; KOLB, *supra* note 127, at 672. See *supra* note 161 for a discussion of exchange-traded swaps.

²⁴² See generally CHANCE, *supra* note 124, at 296.

²⁴³ See, e.g., KOLB, *supra* note 127, at 687–88.

Table 1 below compares and contrasts the four major types of derivatives. Based on the previous reasoning, we conclude that exchange-traded futures and options are probably more suitable tools in implementing hedging strategies for fiduciaries. However, by no means do we imply that a fiduciary should never use OTC forwards or swaps. The UPIA and the Restatement already state that no specific investments are per se prudent or imprudent.²⁴⁴ Nevertheless, after considering regulation, default risk, fiduciary duties, and trading costs, exchange-traded futures and options appear to be a more suitable choice than OTC forwards and swaps.

Table 1—Comparison of Forwards, Futures, Options, and Swaps

	Forwards	Futures	Options	Swaps
Where Traded	OTC Market	Exchange	Exchange	OTC Market
Contracts	Individualized	Standardized	Standardized	Individualized
Owner's Obligation or Right	Obligation	Obligation	Right	Obligation
Transaction Costs	Generally higher	Generally lower	Generally lower	Generally higher
When Settled	At contract maturity	Daily	At contract maturity	At contract maturity
Default Risk	Yes	No	No	Yes
Regulated	No	Yes	Yes	No
Suitable for Hedging by Fiduciaries	Generally Not	Yes	Yes	Generally Not

The next section will provide three common trust examples to illustrate potential strategies that a fiduciary might employ with futures and options as a means of managing the risk of a trust investment.

V. HEDGING STRATEGIES WITH FUTURES AND OPTIONS: WHAT SHOULD A FIDUCIARY DO?

To demonstrate the hedging advantages that derivatives may offer under the Restatement and the UPIA, we present three common trust scenarios and

²⁴⁴ RESTATEMENT (THIRD) OF TRUSTS § 227, cmt. f(2) (1992); *see supra* text accompanying notes 27–29.

discuss two typical aspects of managing these trusts—the distribution of principal and portfolio rebalancing.

Marital Trust. Under this scenario, Sam Settlor creates a trust, operated by the trust department of the Northern National Bank and Trust Company, worth \$4 million in cash and securities. The trust is set up for the benefit of Sam's wife, Sarah. We will assume that Sam dies at seventy and at the time of Sam's death, Sarah is sixty-four. Sarah will be the only income beneficiary of the trust and will live solely on its income. Sam and Sarah have two adult children, Peter and Paula, who are the principal beneficiaries or remaindermen. They will share equally in the trust corpus when Sarah dies. At sixty-four, Sarah is in generally good health and has a life expectancy of eighty.²⁴⁵ Unfortunately, two years after Sam passes away, Sarah is diagnosed with inoperable brain cancer and the doctors give her about three months to live. Suppose that all the medical bills have and will continue to be covered by her health insurance and Medicare at the time she turns sixty-five. Accordingly, the trustee is preparing to make the principal distribution in the near future.

Credit Shelter Trust. Joe Settlor creates a testamentary trust consisting of \$8 million in cash and securities. Joe dies at sixty-two, and Jenny, his wife, survives him at age sixty-five in generally good health. Joe and Jenny's children are Alice and Amy, who are sixteen and nineteen, respectively. Jenny and the two children are the income beneficiaries. The trustee, the Northern National Bank and Trust Company, is given a "spray" provision in the trust instrument that enables it to distribute or spray both income and principal to any or all of the beneficiaries according to their particular needs. For example, Amy is now a sophomore at the local state university and needs money for tuition, room and board, and other basic student needs. The trust also provides that Alice and Amy will be the principal beneficiaries. The trustee is instructed to begin distributing one-third of the corpus to each child, at three five-year intervals, when Alice turns twenty-seven and Amy turns thirty. Thus, when Alice is thirty-two and Amy is thirty-five, both will receive one half of the balance of their share in the principal and at thirty-seven and forty, they will receive the remaining amount. Joe feels that this spendthrift provision will be in the best interest of his children.

Children's Trust. Under our last scenario, Tom and Terri, husband and wife, create an irrevocable trust with \$6 million of cash and securities with the Northern National Bank and Trust Company as trustee. Chuck, eighteen, and Cherri, twenty, are income beneficiaries. They are also the principal beneficiaries but with a spendthrift provision that states that when Chuck

²⁴⁵ NATIONAL CENTER FOR HEALTH STATISTICS, HEALTH, UNITED STATES, 2004: WITH CHARTBOOK ON TRENDS IN THE HEALTH OF AMERICANS 143 (2004), available at <http://www.cdc.gov/nchs/data/hus/hus04trend.pdf>.

reaches the age of thirty, both children will receive one third of the corpus in three five-year intervals. Thus, beginning when Chuck is thirty-five and Cheri is thirty-seven, each will receive one half of what remains in the corpus and the remainder when they are forty and forty-two, respectively. Tom and Terri want the children to be treated exactly alike, so there is no spray provision in this trust.

For a trust with both income and principal beneficiaries exemplified in the above three scenarios, it is a common practice in the trust management business, and it is financially prudent, to assume that the majority of the trust fund is allocated between equity and debt.²⁴⁶ A typical trust would likely have all three major types of assets: cash, debt, and equity. Cash is for immediate liquidity, debt provides income, and equity has the greatest growth potential.

For example, our hypothetical marital trust contains 5% cash, 44% debt securities, and 51% equity securities. Because Sarah, the surviving wife, is the only income beneficiary, the trustee might decide to allocate 51%, or \$2.04 million, of the trust in a well-diversified portfolio of large cap stocks and 44%, or \$1.76 million, in diversified Treasury debt securities for the principal beneficiaries, Peter and Paula.²⁴⁷ If the diversified bond portfolio can yield 4.5% interest income and the 2% stock investment dividend income, Sarah would have an annual income before tax of about \$120,000.²⁴⁸ Sarah, the children, and the trustee feel that this income should be sufficient for Sarah to live comfortably since she has no debt obligations.

For the other two trusts, there may be more funds allocated to debt securities to provide more interest income because there are more income beneficiaries in the credit shelter trust and the children's trust.²⁴⁹ For example, a prudent portfolio might consist of 5% cash, 65% debt, and 30% equity in the credit shelter trust.²⁵⁰

²⁴⁶ See, e.g., Aalberts & Poon, *supra* note 7, at 68; see also Joel C. Dobris, *Why Trustee Investors Often Prefer Dividends to Capital Gain and Debt Investments to Equity—A Daunting Principal and Income Problem*, 32 REAL PROP. PROB. & TR. J. 255, 258–60 (1997).

²⁴⁷ A trustee has a duty to diversify trust investments under the Restatement and the UPIA. See *supra* text accompanying notes 30–32.

²⁴⁸ The income of the portfolio is \$1.76 million x 0.045 + \$2.04 million x 0.02 = \$120,000. For simplicity, we assume that the return on the cash portion of this portfolio is de minimis.

²⁴⁹ See generally Aalberts & Poon, *supra* note 7, at 68. See also Dobris, *supra* note 246, at 258–60.

²⁵⁰ See, e.g., Aalberts & Poon, *supra* note 7, at 68.

A. Distribution of Principal

In each of the three hypothetical trusts, the fiduciary is fully aware of the forthcoming principal distributions. Sarah in the marital trust is expected to live three more months. In the other two trusts, due to the spendthrift provision, the trustee recognizes the exact dates that a portion of the trust principal will be distributed. In distributing the trust principal, whether it is the total or partial amount, the fiduciary will be required to sell the securities in the trust portfolio and therefore has the duty to protect the value of the securities from sudden declines before the distribution.²⁵¹

In the marital trust, one may be tempted to suggest to the trustee that she could convert the trust portfolio (\$2.04 million of equity securities and \$1.76 million of debt securities) into cash now and wait for three months to distribute the cash to Peter and Paula. The drawback to this conservative approach is the concession of interest income from the debt portfolio, dividend income from the equity portfolio, and potentially significant price appreciation of the trust portfolio, especially with regard to the equity securities should equity prices rise. This kind of conservative strategy appears to be inconsistent with the specific language contained in the Restatement. Although the Restatement states that no investments and specific courses of action are per se prudent or imprudent,²⁵² it also points out that “the ‘defensive’ use of *options* seeking to reduce the risk of an investment strategy and to do so at a lower ‘price’ in terms of program goals [is more likely] than might be exacted by converting to a more conservative portfolio of assets.”²⁵³ Consequently, a better strategy for the fiduciary of the marital trust is to protect the values of the equity and debt securities rather than converting them to cash before the principal distribution occurs.

Failure to hedge the value of the trust portfolio could be detrimental to Peter and Paula, the marital trust’s remaindermen. Imagine that, in the week preceding the principal distribution, the stock market declines ten percent because of unfavorable shocks to the economy. A fiduciary might be found negligent, and thus subject to a surcharge, if she has not hedged the value of the trust securities, although the Restatement stresses that a fiduciary is to be judged at the time investment decisions are made, not with the benefit of hindsight after the decisions were made.²⁵⁴ However, when the trustee is

²⁵¹ A fiduciary is required to preserve the trust capital under the UPIA and the Restatement. UPIA § 2(c)(7) (1994); RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992). See the *Levy* case, *supra* text accompanying notes 63–68, for support of the acts.

²⁵² See *supra* text accompanying notes 27–29.

²⁵³ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. f(2) (1992) (emphasis added).

²⁵⁴ *Id.* § 227 cmt. b. “The trustee’s compliance with these fiduciary standards is to be judged as of the time the investment decision in question was made, not with the

aware of the forthcoming principal distribution, she has a duty to protect the principal value with reasonable care, skill, and caution.²⁵⁵ Futures and options are excellent for defensive or hedging purposes and therefore necessary tools for the trustee to utilize to protect the values of the securities that will be sold to fulfill the distributions optimally.²⁵⁶ In the end, the failure to use them, and to use them properly, may expose trustees to accusations of incompetence.

B. Portfolio Rebalancing

Fiduciaries in many instances are required to monitor and, if necessary, to rebalance the trust portfolio's mix of equity and debt. Assume that the income beneficiaries in our hypothetical credit shelter trust and children's trust have stable careers. In such a case, they depend less on the income from the trust and hence prefer more principal growth. Consequently, the trustees might need to sell debt securities and buy equity securities.²⁵⁷

In other instances, the trustees might need to change the mix of equity and debt after periodic principal distributions have been made. The equity/debt mix of the remaining trust principal might be different after the distribution that involves selling a portion of the trust investment. For example, after several spray distributions in the credit shelter trust, the equity/debt mix might be different from the trustee's intended mix. In other words, rebalancing a trust portfolio requires a fiduciary to sell and buy securities. In the process of rebalancing the trust portfolio, a trustee could hedge both the values of the securities to be sold and the securities to be purchased.²⁵⁸ The reason why the values of securities that will be purchased need to be protected is quite evident. With the use of options and futures, a trustee could lock in the purchasing price of a security now. This type of hedge would reduce potential additional costs, which in turn will lead to

benefit of hindsight or by taking account of developments that occurred after the time of a decision to make, retain, or sell an investment." *Id.*

²⁵⁵ *Id.* § 227(a).

²⁵⁶ See *supra* text accompanying notes 105–19 (discussion by commentators advocating the use of derivatives to manage the risk of trust investments).

²⁵⁷ See UPIA § 2 cmt. at 8 (1992). “‘Managing’ embraces monitoring, that is, the trustee’s continuing responsibility for oversight of the suitability of investments already made as well as the trustee’s decisions respecting new investments.” *Id.* Equity securities provide a much higher compounding rate of return than debt securities. For instance, the compounding return of large-cap stocks for the period of 1926 to 2002 was 10% and only 5.4% for T-bonds. Therefore, over a long period of time, stocks offer much more growth potential than debt. Of course, stocks are also riskier than debt. See, e.g., ZVI BODIE ET AL., *ESSENTIALS OF INVESTMENTS* 149 (6th ed. 2005).

²⁵⁸ See also LONGSTRETH, *supra* note 85, at 136.

lower returns due to rising security values when the purchase actually occurs.²⁵⁹

The following sections will focus on how a fiduciary could utilize futures and options in the two important, but common, aspects of trust management discussed above—trust principal distribution and portfolio rebalancing. Specifically, this discussion will entail some common hedging strategies for both equity and debt securities. In either hedging equity or debt, whether in principal distribution or portfolio rebalancing, the ultimate objective is that the potential change in the value of the hedged security is offset as much as possible by the potential change in value or the payoff of the hedging security.²⁶⁰

C. Hedging Equity Securities

1. Sale Anticipation

a. Protective Put

A protective put, which involves buying put options on the owner's stock, is a popular and effective tool for hedging the value of a stock.²⁶¹ A protective put is similar to purchasing an insurance policy, which guarantees a minimum selling price for the stock.²⁶² The fiduciary of our hypothetical

²⁵⁹ This might be significant under the Restatement, which maintains that a trustee is required to secure a reasonable trust return with caution. RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992).

²⁶⁰ See generally CHANCE, *supra* note 124, at 347–48. Prudence in trust principal distribution and portfolio rebalancing also can reduce friction between income and principal beneficiaries. See *supra* note 15 for a discussion of the Uniform Principal and Income Act.

²⁶¹ See, e.g., Chicago Board Options Exchange, Equity Option Strategies, Protective Puts, <http://www.cboe.com/Strategies/ProtectivePutsAsHedge.aspx> [hereinafter Protective Puts] (last visited Apr. 1, 2006).

²⁶² *Id.* To illustrate the insurance characteristics of a protective put, suppose that an investor in January of 2005 has bought 100 shares of Google stock for \$180 per share, which is worth \$280 as of June 14, 2005. The investor plans to sell the stock in three months and just bought one put option contract to hedge against declines in Google's stock value. The put option contract has a strike price of \$280, expires in September 2005, and costs \$1800. Recall that a stock put option gives the owner the right to sell the stock at the strike price before expiration. If Google's stock price drops below \$280, the strike price of the put options, the investor can exercise the put options and sell the stock at the strike price. The minimum sell price of the 100 shares of Google stock is guaranteed at \$280 before the put expires. If Google's stock price is above \$280 on the put expiration day, the investor will let the put expire. Hence, the put option acts like an insurance policy and the insurance premium is the put premium of \$1800.

marital trust might employ this protective put strategy to hedge the \$2.04 million current value of the S&P 500 Index mutual fund.²⁶³ Assume that today is June 14, 2005, the S&P 500 Index is at 1200, and the trustee is planning the principal distribution to the beneficiaries, Peter and Paula, which in all likelihood will happen in three months, due to their mother's failing health. The trustee could buy the CBOE's S&P 500 Index put options to hedge against declines of the mutual fund value in the next three months. Suppose that the put options have a strike price of \$1200 and expire in September 2005, and that the put options expire on the days the principal distribution is made.²⁶⁴ In such a case, each put option contract has a value of \$120,000.²⁶⁵ To hedge the \$2.04 million mutual fund value, the trustee therefore needs to purchase seventeen contracts.²⁶⁶ Assume that the option premium is \$2000 for each contract, placing the total cost of the protective put strategy at \$34,000.²⁶⁷

To obtain the hedging results of this protective put, the fiduciary of the marital trust can aggregate: (1) the change in value of the trust investment; that is, the S&P 500 Index mutual fund; (2) the payoff of the put options; and (3) the premium of purchasing the put options, \$34,000. If on the option expiration day, the S&P 500 Index drops to 1080, (i.e., a 10% decline in the stock market), the fund's value drops 10% too, or \$204,000.²⁶⁸ The payoff of the put options on the expiration day can be determined as follows. If the stock market remains stable or rises above today's level, i.e., the S&P 500 Index is at or above 1200, the trustee shall let the put expire, because the payoff is zero or negative should the trustee exercise the put and sell the put options at the strike price of \$1200. On the other hand, if the S&P 500 Index is at any level below 1200, the trustee will exercise the put options and the

²⁶³ An S&P 500 Index mutual fund, for example, is assumed to fulfill a trustee's duty to diversify, as required by the Restatement, because there are 500 different large stocks in the fund. See *supra* text accompanying notes 30–32.

²⁶⁴ See *infra* text accompanying notes 387–90 for a discussion of the situation in which the option expiration day and principal distribution day are different.

²⁶⁵ The value of each put contract is $\$1200 \times 100 = \$120,000$. See, e.g., Protective Puts, *supra* note 261.

²⁶⁶ The number of contracts required for the hedge is $\$2,040,000/\$120,000 = 17$. *Id.*

²⁶⁷ Total cost is $\$2000 \times 17 = \$34,000$. *Id.*

²⁶⁸ We assume that the S&P 500 Index mutual fund and the S&P 500 Index have a perfect correlation and have similar dividend yields; therefore, the fund and the Index will have similar changes in values. If the S&P 500 Index mutual fund and the S&P 500 Index do not have a perfect correlation and/or different dividend yields, the hedge will be less effective. See *infra* text accompanying notes 393–99.

payoff will exactly offset the loss in the fund's value. For instance, if the Index drops 10%, (i.e., to 1080), the payoff of the put options is \$204,000.²⁶⁹

Below, Table 2 summarizes the results of this protective put strategy at various possible S&P 500 Index values on the put expiration day for the marital trust.

Table 2—Marital Trust Example: Hedging Equity with Protective Put

S&P 500 Index Value	Change in the S&P 500 Index Mutual Fund's Value	Payoff of Put Options	Put Premium	Hedge Result
0	-\$2,040,400	\$2,040,400	-\$34,000	-\$34,000
1080	-\$204,000	\$204,000	-\$34,000	-\$34,000
1200	0	0	-\$34,000	-\$34,000
1320	\$204,000	0	-\$34,000	\$170,000
1440	\$408,000	0	-\$34,000	\$374,000

On the downside, if the Index is at any level below the strike price, 1200, the trustee will exercise the put options and the payoff will exactly offset the loss in the fund's value. The cost for this protection is the put premium. On the other hand, if the Index is above 1200, the trustee will let the put expire. In theory, the gain from the mutual fund is unlimited, though the gain will always be \$34,000 less than the unhedged fund.²⁷⁰

For Peter and Paula, the remaindermen of the marital trust, the net outcome will be quite favorable. For a cost of \$34,000, or 1.67% of the mutual fund's current value, plus put transaction costs, the value of the mutual fund is insured not to fall below \$2.04 million on the principal distribution day, and the potential gain from the mutual fund is still unlimited. Given the inherent uncertainty in the financial market and the increased volatility of the market in the last two decades,²⁷¹ it is deemed necessary for the fiduciary to hedge the value of the mutual fund in the marital trust.²⁷² Options by themselves, especially when used speculatively,

²⁶⁹ The payoff of the put options on the expiration day is 0, if the S&P 500 Index on the expiration day is at or above 1200, the put's strike price. If the Index is below 1200 on the expiration day, the payoff on the put options is equal to $17 \times (\$1200 - \text{the Index level on the expiration day}) \times 100$. See, e.g., HULL, *supra* note 125, at 261-62.

²⁷⁰ See Protective Puts, *supra* note 261.

²⁷¹ Stocks are more volatile investments than bonds. See, e.g., BODIE ET AL., *supra* note 257, at 149.

²⁷² See *supra* text accompanying notes 251-56 (discussing investment strategies when principal distributions are imminent).

are extremely risky.²⁷³ However, when included as part of the trust portfolio, options indisputably can lower the overall risk of the trust investment. This hedging strategy might be obligatory because both the Restatement and the UPIA urge the trustee to manage trust investments with reasonable care, skill, and caution and to apply the standards of prudence to the overall portfolio, rather than individual investments.²⁷⁴

b. Collar

If the fiduciary of the marital trust in our example is concerned with the cost of employing the protective put strategy, he could add a short position in call options to the protective put. This strategy is referred to as a “collar” in which the call premium, received by writing or selling call options, is intended to reduce the cost of buying the put options.²⁷⁵ A common practice in using a collar is choosing the exercise price of the call options to make the call premium completely offset the put premium. In our case, as of June 14, 2005, consisting of call options with a \$2500 premium and the same expiration month, September 2005, the puts of have a strike price of 1240. Hence, the collar consists of the S&P 500 Index mutual fund with a current value of \$2.04 million, buying seventeen contracts of S&P 500 Index put options with a strike price of 1200, and selling seventeen contracts of S&P 500 Index call options with a strike price of 1240.²⁷⁶ The premiums of the put and of the call offset each other completely. Excluding the transaction costs of buying the put options and selling the call options, there are no other cash outlays. This type of collar is referred to as a “zero-cost” collar.²⁷⁷

To obtain the hedging effect of this collar, the fiduciary of the marital trust could combine: (1) the change in the value of the trust investment, the S&P 500 Index mutual fund; (2) the payoff of the put options; and (3) the payoff of the call options. The change in the value of the S&P 500 Index mutual fund and the payoff of the put options can be determined, as before,

²⁷³ See *supra* text accompanying note 202.

²⁷⁴ See *supra* text accompanying notes 15–17; see also the *Levy* and *Brane* cases, *supra* text accompanying notes 53–68. A reasonable interpretation of the two cases suggests that a fiduciary is required to use derivatives with caution to manage the risk of trust investments. *Id.*

²⁷⁵ See, e.g., Chicago Board Options Exchange, Who Should Use Equity Collars?, <http://www.cboe.com/Strategies/pdf/EquityCollarStrategy.pdf> [hereinafter Equity Collars] (last visited Apr. 1, 2006).

²⁷⁶ The number of call contracts written or sold equals the number of put contracts purchased. See *id.*

²⁷⁷ *Id.*

in the protective put strategy.²⁷⁸ The payoff of the short position in the call options can be decided in the following fashion. If the S&P 500 Index is at or below 1240—the strike price—the buyer of the call options will let the options expire, because there is no value in exercising them. Nonetheless, if the S&P 500 Index is above 1240, the call buyer shall exercise due to the positive payoff, which in turn implies that the fiduciary, who sold the call options, incurs a negative payoff. For example, if the S&P 500 Index rises ten percent from the current level of 1200; that is, at 1320, the payoff of the call options is \$136,000.²⁷⁹

Table 3 below demonstrates the results of this collar strategy at different possible S&P 500 Index levels on the options expiration day. If the Index is at or below the current level of 1200, the fiduciary will exercise the put options, and the payoff will offset the loss in the fund's value.²⁸⁰ Recall the premiums of the put and call offset each other completely, so there is no loss on the downside. On the upside, the potential gain in the value of the mutual fund is reduced proportionally by the call options. The call options will be exercised by the call buyer if the Index rises above 1240 due to the call's strike price.²⁸¹ Indeed, the maximum gain of this collar strategy is \$68,000.²⁸²

²⁷⁸ See *supra* note 268 and accompanying text (discussing how the change in the mutual fund's value can be estimated); see also *supra* note 269 and accompanying text (discussing the payoff determination of the index put options).

²⁷⁹ The payoff of the call options on the expiration day is 0 if the S&P 500 Index on the expiration day is at or below 1200, the call's strike price; and equal to $17 \times (\$1240 - \text{the Index level on the expiration day}) \times 100$, if the Index is above 1240 on the expiration day. See, e.g., CHANCE, *supra* note 124, at 198–200.

²⁸⁰ See *supra* text accompanying note 269 and accompanying text (discussing how to determine the payoff of the index put options).

²⁸¹ See *supra* text accompanying note 279.

²⁸² The maximum gain could be computed as $17 \times (\$1240 - \$1200) \times 100 = \$68,000$. See Equity Collars, *supra* note 275.

Table 3—Marital Trust Example: Hedging Equity with a Collar

S&P 500 Index Value	Change in the S&P 500 Index Mutual Fund's Value	Payoff of the Put Options	Payoff of the Call Options	Hedge Result
0	-\$2,040,400	\$2,040,400	0	0
1080	-\$204,000	\$204,000	0	0
1200	0	0	0	0
1320	\$204,000	0	-\$136,000	\$68,000
1440	\$408,000	0	-\$340,000	\$68,000

This is the major difference from the protective put strategy, which in theory has an unlimited potential gain on the upside.²⁸³ Contrast it with the protective put strategy. This collar strategy trades off the zero premium for the limited potential gain from the mutual fund when the market rises.²⁸⁴

Therefore, the net outcome of the collar strategy for protecting Peter and Paula is as follows: For just the options transaction costs, the fiduciary has insured the value of the S&P 500 Index mutual fund to be between the current value of \$2.04 million and \$2.108 million²⁸⁵ on the principal distribution day. Again, this hedging strategy might be necessary under a reasonable interpretation of the Restatement and the UPIA.²⁸⁶

c. Short Futures Hedge

Instead of options, the trustee of the marital trust could sell or take a short position in the S&P 500 Index futures to hedge the value of the S&P 500 Index mutual fund. This is referred to as a short hedge.²⁸⁷ Suppose that on June 14, 2005, the CME offers such futures that have a future price of \$1,210 and mature in September 2005. The value of one such contract is \$302,400.²⁸⁸ Accordingly, the number of contracts required to hedge the Index mutual fund with a current value of \$2,040,000 is six contracts.²⁸⁹

²⁸³ See *supra* text accompanying note 270.

²⁸⁴ See Equity Collars, *supra* note 275.

²⁸⁵ The \$2.108 million represents \$2,040,000 + \$68,000, the maximum gain of the collar strategy. See, e.g., *id.*

²⁸⁶ See *supra* text accompanying notes 251–56. See, for example, text accompanying *supra* notes 18–26 for the discussion of the fiduciary's duty to consider tradeoff between risk and return.

²⁸⁷ See The Economic Purpose of Futures Markets, *supra* note 128.

²⁸⁸ See Chicago Mercantile Exchange, CME S&P 500 Futures, http://www.cme.com/trading/prd/contract_spec_SP701.html [hereinafter CME S&P 500

Again, we assume that the futures mature on the same day the principal distribution occurs.²⁹⁰ The fiduciary of the marital trust can combine the change in value of the S&P 500 Index mutual fund with the gain or loss from the futures contracts to determine the result of this short futures hedge strategy on the principal distribution day. The change in the mutual fund's value may be computed as it was in the protective put strategy.²⁹¹

The gain and loss of the futures contracts could be calculated in the following manner: On the futures maturity day, the trustee will have to offset the futures position by buying six similar contracts. There will be a gain if the S&P 500 Index is below the contract futures price of \$1210, otherwise there will be a loss.²⁹²

The effect of this short futures hedge is demonstrated in Table 4 below. The decrease or increase in the value of the S&P 500 Index mutual fund is partially offset by the gain or loss of the short futures position. For instance, the 10%, or \$204,000, loss of the mutual fund when the stock market rises by 10%²⁹³ is offset by the gain of \$195,000 from the futures. Thus, the short hedge reduces the loss to \$9000.

Table 4—Marital Trust Example: Hedging Equity with Short Index Futures

S&P 500 Index Value	Change in the S&P 500 Index Mutual Fund's Value	Gain or Loss from Futures	Hedge Result
0	-\$2040,400	\$1,815,000	-\$225,000
1080	-\$204,000	\$195,000	-\$9,000
1200	0	-\$15,000	-\$15,000
1320	\$204,000	-\$165,000	\$39,000
1440	\$408,000	-\$345,000	\$63,000

Futures] (last visited Apr. 1, 2006). The value of a contract is $\$1210 \times 250 = \$302,400$. *Id.*

²⁸⁹ The actual number of contracts required for the hedge is $\$2,040,000/\$302,400 = 6.74$. Due to the standardization of futures contracts by exchanges, one cannot trade a fraction of a contract. *See, e.g.,* The Economic Purpose of Futures Markets, *supra* note 128. The number of contracts is rounded down to the nearest whole. *See also infra* text accompanying notes 391–92.

²⁹⁰ *See infra* text accompanying notes 387–90 for a discussion of the hedging results if the two days are different.

²⁹¹ *See supra* text accompanying note 268.

²⁹² The equation for the gain or loss of the short futures is $6 \times (\$1210 - \text{S\&P 500 Index on futures maturity day}) \times 250$. *See also* HULL, *supra* note 125, at 74–76.

²⁹³ *See supra* text accompanying note 268.

The net outcome of this short futures hedge for Peter and Paula, the remaindermen of the marital trust, is that both gains and losses of the mutual fund in the trust are reduced by the losses and gains, respectively, from the short futures position. And, the costs of this hedge are the futures transaction costs and the costs associated with the margin requirements and the process of marked to market.²⁹⁴

2. Purchase Anticipation

a. Long Equity Call

Suppose that the first “spendthrift” distribution is to be made in September, three months from now, to Chuck and Cherri, the income and principal beneficiaries of our hypothetical children’s trust. The fiduciary, after monitoring the trust, is planning to rebalance the trust portfolio on the same day that the “spendthrift” distribution takes place. The fiduciary has determined that \$1 million more of equity investment is required to rebalance the portfolio. Assume that the target equity portfolio is the Vanguard S&P 500 Index Mutual Fund.²⁹⁵ Assume also that today is June 14, 2005, the fund price is \$111.34 per share, and the trustee is planning to purchase 9000 shares of this fund in September; therefore, the total cost is \$1,002,060 as of June 14, 2005. To hedge the purchasing power of the \$1,002,060, the trustee could use call equity options. An excellent choice is the S&P 500 Index call option. On June 14, 2005, the CBOE offers an S&P 500 Index call option with a strike price of \$1200 and an expiration month of September 2005. Assume that the options expire on the day the trustee plans to purchase the mutual fund.²⁹⁶ Each call contract has a value of \$120,000 and a premium of \$4000.²⁹⁷ To hedge the purchasing power of \$1,002,060, the trustee could purchase eight such option contracts with a total cost of \$32,000.²⁹⁸

²⁹⁴ See *supra* notes 142–45 and accompanying text.

²⁹⁵ Visit Vanguard’s web site for the fund’s information: <http://flagship2.vanguard.com/VGApp/hnw/FundsSnapshot?FundId=0040&FundIntExt=INT> (last visited Apr. 1, 2006).

²⁹⁶ If the two days are different, the hedge would be less effective. See *infra* text accompanying notes 387–90.

²⁹⁷ Chicago Board Options Exchange, S&P 500 Index Options, http://www.cboe.com/Products/indexopts/spx_spec.aspx (last visited Apr. 1, 2006). The value of each contract is strike price x 100. *Id.*

²⁹⁸ The actual number of contracts required for the hedge is $\$1,002,060/\$120,000 = 8.35$. But exchange-traded options are standardized, and no fractions of a contract can be

The hedge results could be calculated by adding the following: (1) the change in the purchasing cost of the target investment, that is, the Vanguard S&P 500 Index mutual fund; (2) the payoff of the call options; and (3) the call premium, \$32,000. For simplicity, we assume that the Vanguard mutual fund and the S&P 500 Index have parallel movements in value.²⁹⁹ That is, if the Index rises by five percent, the fund's price will also increase by five percent. The payoff of the call options could be determined in the following fashion. If the S&P 500 Index is at or below 1200, the call's strike price, the fiduciary will let the call options expire because exercising them will yield negative payoff.³⁰⁰ If the Index increases by ten percent to 1320 on the call expiration day, the trustee will exercise the eight call contracts and receive a payoff of \$96,000.³⁰¹

Table 5 below provides the results of this long call strategy at various possible S&P 500 Index levels on the option expiration day, the day the fiduciary of the children's trust plans to purchase 9000 shares of the Vanguard S&P 500 Index mutual fund.

Table 5—Children Trust Example: Hedging Equity with Long Equity Call

S&P 500 Index Value	Change in the Purchasing Cost of the Target S&P 500 Index Mutual Fund	Payoff of Call Options	Call Premium	Hedge Results
960	\$200,412	0	-\$32,000	\$168,412
1080	\$100,206	0	-\$32,000	\$68,206
1200	0	0	-\$32,000	-\$32,000
1320	-\$100,206	\$96,000	-\$32,000	-\$36,206
1440	-\$200,412	\$192,000	-\$32,000	-\$40,412

If the Index stays at or below the current level of 1200, the trustee will let the options expire and buy the 9000 shares of mutual fund at a price lower

traded. *See supra* note 150 and accompanying text; *see also infra* text accompanying notes 391–92.

²⁹⁹ The S&P 500 Index and the Vanguard S&P 500 Index mutual fund will have parallel movements when the S&P 500 Index and the mutual fund have perfect correlation and similar dividend yields. *See also supra* note 268. *See infra* text accompanying notes 387–90 for a discussion of the hedge results if these two do not have parallel movements.

³⁰⁰ The payoff of the call options on the expiration day is 0, if the S&P 500 Index is at or below 1200 or equal to $8 \times (x - 1200) \times 100$; if the Index is above 1200, the call's strike price, on the expiration day. *See, e.g.*, CHANCE, *supra* note 124, at 198–200.

³⁰¹ The payoff is $8 \times (\$1320 - \$1200) \times 100 = \$96,000$. *See id.*

than the current price of \$111.34. However, the savings in the purchasing cost is reduced by the call premium. If the S&P 500 Index rises by ten percent to 1320, the mutual fund price would increase as well by ten percent to \$122.47. Accordingly, 9000 shares of the fund would cost \$1,102,266, which is \$100,206 more than the cost of \$1,002,060 as of June 14, 2005. But the payoff of the call options is \$96,000.³⁰² Therefore, the increase of the purchasing cost of the 9000 shares is reduced to \$36,206. The outcome of this long call strategy is that the rising cost of purchasing the 9000 shares of the mutual fund would be reduced to a great extent after the call premium of \$32,000 is covered.

The net hedging effect for Chuck and Cherri of the hypothetical children's trust is as follows: For a cost of \$32,000, the potential increase of the purchasing cost of the 9000 shares of the Vanguard S&P 500 Index mutual fund is greatly reduced. A prudent fiduciary should not underestimate the consequence of not hedging the purchasing costs of target securities. Imagine if the trustee of the children's trust had not hedged the \$1,002,006 purchasing cost of the Vanguard S&P 500 Index mutual fund and the stock market rises ten percent on the purchase day. That is, it costs \$100,206 more now to buy 9000 shares of the fund. This increase in cost would have a negative impact on the trust's capital, especially over a long period of time.³⁰³ This potential loss in trust capital might be regarded as imprudent behavior by a fiduciary under both the UPIA and the Restatement, as they maintain that a fiduciary shall consider preservation or appreciation of trust capital in making investment decisions.³⁰⁴

b. Long Futures Hedge

If the fiduciary of the children's trust above would like to minimize the upfront cost of \$32,000 associated with the long call strategy, the fiduciary could use index futures to hedge the purchasing cost of the 9000 shares of the

³⁰² *Id.*

³⁰³ The loss of trust principal due to the increase in purchasing cost can be determined by compounding the increase in cost, \$100,206, at 10%, the return of the Vanguard S&P 500 Index mutual fund for the last ten years, per year. Visit Vanguard's web site for this fund's performance: <http://flagship2.vanguard.com/VGApp/hnw/FundsPerformance?FundId=0040&FundIntExt=INT&DisplayBarChart=false> (last visited Apr. 1, 2006). The losses in trust principal are \$260,546 and \$676,427 over ten years and twenty years, respectively.

³⁰⁴ See UPIA § 2(c)(7) (1994); RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. g (1992). See also text accompanying notes 18–26 regarding a fiduciary's duty to preserve as well as to seek appreciation of the corpus's value.

Vanguard S&P 500 Index mutual fund.³⁰⁵ Specifically, the trustee could employ a long hedge strategy by buying CME's S&P 500 Index futures. This is the exact opposite strategy for short hedges discussed in the previous section above.³⁰⁶ To hedge the anticipated cost of buying 9000 shares of the Vanguard S&P 500 Index mutual fund at today's (June 14, 2005) price of \$111.34, the trustee needs to buy enough S&P 500 Index futures contracts that mature in September 2005. The value of each contract as of June 14, 2005 is \$302,400.³⁰⁷ As a result, three contracts are required.³⁰⁸

The effect of this long futures hedge, similar to the short index futures hedge,³⁰⁹ is that the gain or loss of the long futures position will partially offset the increase or decrease, respectively, in the purchasing cost of the 9000 shares of the Vanguard S&P 500 Index mutual fund. The change in the purchasing cost of the mutual fund could be determined as it is in the long call strategy.³¹⁰ The gain and loss of the futures position could be determined in the following fashion. The fiduciary must offset the long position by selling three similar contracts. Hence, there will be a gain if the S&P 500 Index is above the contracted futures price \$1210 on the maturity day, or loss otherwise.³¹¹

The long futures hedge's effect on the children's trust is contained in Table 6 below. The decrease or increase in the purchasing cost of the mutual fund is partially offset by the loss or gain from the long futures position, respectively. For example, a ten percent increase in the purchasing cost is reduced to \$17,706 by the gain from the futures.

³⁰⁵ Recall that there is no premium in futures. *See supra* text accompanying note 147.

³⁰⁶ *See supra* text accompanying note 287.

³⁰⁷ *See* CME S&P 500 Futures, *supra* note 288.

³⁰⁸ The actual number of contracts needed is $\$1,002,060/\$302,400 = 3.31$. We round down to the nearest whole number. *See infra* notes 391–92 and accompanying text.

³⁰⁹ *See* Table 4 for the results of the short index futures hedge.

³¹⁰ *See supra* note 299 and accompanying text.

³¹¹ The equation for the gain or loss of the long futures is $3 \times (\text{S\&P 500 Index on futures maturity day} - \$1210) \times 250$. *See, e.g.*, HULL, *supra* note 125, at 74–76.

Table 6—Children's Trust Example: Hedging Equity with Long Index Futures

S&P 500 Index Value	Change in the Purchasing Cost of the Target S&P 500 Index Mutual Fund	Gain or Loss from Futures	Hedge Result
960	\$200,412	-\$187,500	\$12,912
1080	\$100,206	-\$97,500	\$2,706
1200	0	-\$7,500	-\$7,500
1320	-\$100,206	\$82,500	-\$17,706
1440	-\$200,412	\$172,500	-\$27,912

The net outcome for Chuck and Cherri, the remaindermen of the children's trust, is that the variations of the purchasing cost of \$1,002,060 for the 9000 shares of the Vanguard S&P 500 Index mutual fund are immensely limited by the gains and losses in the long index futures position. And the costs of this hedge are the futures transaction costs and the cost associated with the margin requirements and the process of marked to market.³¹²

D. Hedging Debt Securities

1. Sale Anticipation

As it is shown in the above discussion, the value of a stock portfolio would be easily hedged with options or futures. Now we turn to the bond portfolio in our hypothetical marital trust. Again, the trustee is preparing to distribute the principal that includes the debt securities with a current value of \$1,760,000.³¹³ For simplicity, assume that the bond investment is comprised of various U.S. Treasury notes and bonds.³¹⁴ One of the factors that affects bond values is the volatility of the market interest rates.³¹⁵ And the prices of Treasury debt securities, like that of other fixed income securities, are inversely related to interest rates; that is, a rise in interest rates

³¹² See *supra* notes 142–45 and accompanying text.

³¹³ See *supra* text accompanying note 247.

³¹⁴ *Id.*

³¹⁵ CHICAGO BOARD OPTIONS EXCHANGE, INTEREST RATE OPTIONS: A DISCUSSION OF HOW INVESTORS CAN HELP CONTROL INTEREST RATE EXPOSURE AND MAKE THE MOST OF THE INTEREST RATE MARKET 8 (2000), available at <http://www.cboe.com/LearnCenter/pdf/IRO.pdf> [hereinafter INTEREST RATE OPTIONS].

leads to a fall in bond values and vice versa.³¹⁶ Hence, the trustee of the marital trust ought to hedge the value of the bond investment for the next three months—the time the trust capital will be distributed—against interest rate hikes. This is especially important lately due to the numerous interest rate hikes by the Federal Reserve.³¹⁷ Fiduciaries could employ either interest rate options or futures to protect the values of debt securities from rising interest rates.

a. Long Interest Rate Call

CBOE offers interest rate options that are based on the spot yield of Treasury securities and are available on a short-term yield, medium-term yield, and long-term yield.³¹⁸ The strike price of such a yield-based option is ten times the underlying Treasury yield.³¹⁹ For example, if the ten-year T-note yield is 4%, the strike price of a call option of a ten-year T-note will be $10 \times 4 = \$40$, and the value of one such call option contract, \$4000.³²⁰ Recall that a call option gives the holder the right to buy the underlying asset at the strike price. Hence, a buyer of this call option will profit if the T-note's yield rises above the underlying yield, 4%, on the expiration day.³²¹ If the yield at expiration is 5%, then the payoff of one call contract is \$1000.³²²

One strategy which the trustee of the marital trust could employ to hedge the bond investment's current value of \$1,760,000 against interest rate hikes

³¹⁶ *Id.* To illustrate this inverse relationship, assume that a Treasury note [hereinafter T-note] has only one year left to maturity, a coupon interest rate of 4%, and a principal or par value of \$10,000. For simplicity, suppose that the note pays coupon interest payments annually. Therefore, an investor purchasing this note today will receive the coupon interest of \$400 and the principal amount of \$10,000 one year from today. If the current market interest rate is 4%, the note's current value, which reflects the interest rate at which the market discounts this note's payments, will be \$10,000. In other words, the investor is investing \$10,000 to receive \$400 and the par amount of \$10,000 in one year. If the current market interest rate is higher than 4%, say 6%, the investor should invest less than \$10,000 to receive the \$400 payments. The exact amount is \$9811. So the T-note's price drops from \$10,000 to \$9811 when the interest rate rises from 4% to 6%.

³¹⁷ The Federal Reserve raised the federal funds rate by twenty-five basis points to 3.5% on August 9, 2005, the tenth consecutive quarter-percent-point increase since June 2004. See E. S. Browning, *Stocks Manage to Shrug Off Rate Increase*, WALL ST. J., Aug. 10, 2005, at C1.

³¹⁸ INTEREST RATE OPTIONS, *supra* note 315, at 4–5.

³¹⁹ *Id.* at 6.

³²⁰ The strike price is $10 \times \$4 = \40 and the value of one contract is $100 \times \$40 = \4000 . *Id.* at 9.

³²¹ *Id.*

³²² The payoff is $100 \times 10 \times (\$5 - \$4) = \$1000$. *Id.*

is to buy interest rate call options. The goal is to purchase enough call options so that if the interest rate does go up in three months, the payoff of the call will be approximately sufficient to cover the loss in the bond investment's value. Two steps are required.³²³ First, the price sensitivity or modified duration of the bond portfolio must be determined.³²⁴ Assume that the bond portfolio has a modified duration of eight years. That means a 1% increase in interest rates will lead to an 8% decline in the bond's current value of \$1,760,000 or \$140,800. The trustee could use the ten-year T-note interest rate call options to protect the bond portfolio's current value.³²⁵ Assume that the trustee chooses a call with a strike price of \$40 and a September 2005 expiration. A 1% increase in interest rates will result in a \$1000 payoff for each call contract.³²⁶ Suppose that the trustee anticipates that there should not be more than a 1% increase in interest rates in the next three months.³²⁷ Consequently, the number of this particular interest rate call options contracts required is 140 contracts.³²⁸ And suppose that the premium as of June 14, 2005 is \$200 per contract; therefore, the total cost of hedging the bond portfolio is \$28,000.

Assume that the calls expire on the same day that the fiduciary of the marital trust will liquidate the bond portfolio and distribute the proceeds to Peter and Paula, the remaindermen.³²⁹ To obtain the result of this long interest call hedge, the fiduciary could aggregate: (1) the change in the bond portfolio's value; (2) the payoff of the interest call options; and (3) the call premium, \$28,000. As mentioned earlier, the exact change in the bond value

³²³ *Id.* at 36–37.

³²⁴ INTEREST RATE OPTIONS, *supra* note 315, at 4–5. The modified duration can be defined as the percentage change in a bond's price for a small change in its yield. Hence, the approximate change in bond value due to an interest rate change can be computed by multiplying: (1) the current bond value; (2) the modified duration; and (3) the change in the interest rate. See R. STAFFORD JOHNSON, BOND EVALUATION, SELECTION, AND MANAGEMENT 97 (2004).

³²⁵ The hedge will be more effective if the maturity of the T-note is closer to the modified duration of the bond portfolio that needs to be hedged. See also *infra* text accompanying notes 393–99.

³²⁶ See *supra* text accompanying note 322 (presenting the calculation).

³²⁷ The Federal Reserve holds eight regularly scheduled meetings during the year to decide monetary policies, including interest rates. See Federal Reserve Board, Federal Open Market Committee, <http://www.federalreserve.gov/FOMC/default.htm#calendars> (last visited Apr. 1, 2006). Therefore, it is highly unlikely that the Federal Reserve would raise interest rates by more than 1% in three months under normal circumstances.

³²⁸ The actual number of contracts is $\$140,800/\$1000 = 140.80$. We round down to 140. See *infra* text accompanying notes 391–92.

³²⁹ See *infra* text accompanying notes 387–90 for a discussion of the hedge if the two days are different.

on the call expiration day depends on two factors: the change in its yield and its price sensitivity—which in turn depends on the yield on that day.³³⁰ If the ten-year T-note's yield is at or below 4%, the trustee will let the call expire because it has no positive payoff.³³¹ If the yield is above 4%, and the call's underlying value is 5%, then the payoff from exercising the call is \$140,000.³³² This gain can offset the loss of the bond portfolio value because its value will drop at higher interest rates.³³³

Table 7 below provides some results of this hedging strategy with various scenarios, assuming possible changes in the T-notes' value³³⁴ at different yields.

Table 7—Marital Trust Example: Hedging Debt with Long Interest Rate Call

Yield of Ten-Year T-Note at Call Expiration	3.5%	4%	4.5%	5%
Change in Bond Portfolio Value	\$70,400	0	-\$70,400	-\$140,800
Payoff of Interest Rate Call Options	0	0	\$70,000	\$140,000
Call Premium	-\$28,000	-\$28,000	-\$28,000	-\$28,000
Net Change in Hedged Position	\$42,400	-\$28,000	-\$28,000	-\$28,000

The net outcome of this hedge for Peter and Paula, the remaindermen of the marital trust, is as follows: For a cost of \$28,000, or 1.6% of the current bond portfolio value of \$1,760,000, the potential losses in bond value due to interest rate hikes are immensely reduced by the payoff of the call options. There is no constraint on how much the bond portfolio's value could rise if the yield is below 4%, though the increase in value is abridged by the premium of the interest rate call. The fiduciary of the marital trust might be obligated under both the UPIA and the Restatement to hedge the price risk of

³³⁰ See *supra* note 324 (discussing the price sensitivity of a bond portfolio).

³³¹ INTEREST RATE OPTIONS, *supra* note 315, at 40.

³³² The payoff of the long interest call options is zero if the yield of the T-note on the expiration day is at or below 4% of the underlying value and equal to $140 \times (\text{the yield on expiration day} - 4) \times \1000 . *Id.*

³³³ *Id.* at 38–39.

³³⁴ The possible changes in the T-notes' portfolio value in Table 7 are estimated by multiplying: (1) \$1,760,000, the current bond portfolio's value; (2) the portfolio's modified duration, eight years; and (3) the change in the yield from the original yield of 4%. See, e.g., JOHNSON, *supra* note 324, at 97–98.

this bond portfolio as they stress a trust should be managed with reasonable care, skill, and caution.³³⁵

b. Short Interest Rate Futures

Alternatively, the fiduciary of the marital trust could employ a short hedge by selling interest rate futures to protect the bond portfolio value.³³⁶ The CBOT offers futures contracts of T-notes with two-, five-, and ten-year maturities and thirty-year T-bonds.³³⁷ The fiduciary could choose the ten-year T-note futures contract to hedge the bond portfolio value in the marital trust.³³⁸ Suppose that, as of June 14, the price of one such futures contract that expires in September 2005 is \$112 16/32. With a contract size of \$100,000, the value of one such contract is \$112,500.³³⁹ The trustee has to determine how many contracts are required to hedge the bond portfolio. One simple and naïve method is to hedge each dollar of the bond investment with one dollar of the futures.³⁴⁰ Accordingly, fifteen contracts are required.³⁴¹

Assume that the futures mature on the same day that the trust bond portfolio is to be liquidated for the principal distribution to Peter and Paula.³⁴² The hedge results could be determined by adding the change in the value of the trust bond portfolio to the gain or loss of the short futures position. As before, the exact changes in the bond value depend on the change in its yield and its price sensitivity, which in turn depends on the

³³⁵ See *supra* text accompanying note 16 (discussing a trustee's fiduciary duties).

³³⁶ Chicago Board of Trade, A Simple Treasury Short Hedge, http://www.cbot.com/cbot/pub/cont_detail/0,3206,1175+11678,00.html [hereinafter A Simple Treasury Short Hedge] (last visited Apr. 1, 2006).

³³⁷ Chicago Board of Trade, Products, Interest Rate, <http://www.cbot.com/cbot/pub/page/0,3181,830,00.html> [hereinafter Interest Rate Products] (last visited Apr. 1, 2006).

³³⁸ But see *infra* text accompanying notes 393–99 (discussing the risk that arises when the trust security being hedged is not identical to the underlying security of the options or futures).

³³⁹ See Interest Rate Products, *supra* note 337.

³⁴⁰ See, e.g., JOHNSON, *supra* note 324, at 338. The optimal number of futures contracts required for a better hedge can be determined by incorporating the price sensitivities of the futures and of the hedge bond portfolio. See generally *id.* at 341; CHANCE, *supra* note 124, at 341.

³⁴¹ The actual number of contracts required for the hedge is $\$1,760,000/\$112,500 = 15.64$. The number of contracts required for the hedge is rounded down to the nearest whole number. See also *infra* text accompanying notes 391–92.

³⁴² See *infra* text accompanying notes 387–90 (discussing hedging results if the two days are different).

yield on the day the futures position is offset.³⁴³ The gain or loss of the interest rate futures depends on various factors, including which T-notes are available for delivery when the futures mature.³⁴⁴

Table 8 below provides the hedge results under different possible scenarios. If interest rates rise, the gain from the short futures position would offset the loss in the bond investment value.³⁴⁵ On the other hand, the loss from the futures would also reduce the increase in the bond portfolio value as interest rates drop.³⁴⁶

Table 8—Marital Trust Example: Hedging Debt with Short Interest Rate Futures

Yield of Ten-Year T-Note at Futures Maturity	3.5%	4%	4.5%	5%
Change in Bond Portfolio Value	\$70,400	0	-\$70,400	\$140,800
Gain/Loss from Short Futures	-\$67,500	0	\$67,500	\$135,000
Result of Short Hedge	\$2900	0	-\$2900	-\$5800

The net outcome of this short interest rate futures hedge for Peter and Paula is that the gain or loss in the value of the bond portfolio in their trust is greatly offset by the loss or gain from the short futures position. The costs, moreover, are the futures trading cost and the costs from the margin requirements and marked to market.³⁴⁷

³⁴³ See Interest Rate Products, *supra* note 337.

³⁴⁴ See, e.g., CHANCE, *supra* note 124, at 387–97; JOHNSON, *supra* note 324, at 347–53.

³⁴⁵ The gain and loss of the long interest rate futures are estimated as follows. We assume that the change in value of each futures contract per 0.5% change in yield from the original yield of 4% to be \$67,500. Therefore, the gain and loss could be projected by multiplying: (1) fifteen, the number of long contracts; (2) \$67,500; and (3) the change in the yield. See generally HULL, *supra* note 125, at 123–25.

³⁴⁶ See A Simple Treasury Short Hedge, *supra* note 336.

³⁴⁷ See *supra* text accompanying notes 142–45 (discussing futures trading costs).

2. Purchase Anticipation

a. Long Interest Rate Put

Suppose that after several “spray” distributions have been made to both Alice and Amy, our hypothetical credit shelter trust’s income beneficiaries, the fiduciary sees a need to rebalance the trust portfolio by investing more in debt securities. Specifically, assume that the fiduciary has decided to purchase \$1 million of bond investments on the day after the next “spray” distribution is made, which will occur in three months. To hedge the cost of purchasing debt securities, the fiduciary could utilize interest rate put options. Specifically, suppose that today is June 14, 2005, and the trustee of the credit shelter trust expects to purchase \$1 million of various issues of T-notes in three months. The trustee could buy the CBOT interest rate put options to hedge to the \$1 million purchasing cost of T-notes. Similar to the interest rate call options, the put’s strike price is ten times the underlying Treasury yield.³⁴⁸ If the ten-year T-note yield is 4%, the strike price of the put will be \$40 and the value of one such contract will be \$4,000.³⁴⁹ Recall that a put option gives the buyer the right to sell the underlying asset at the strike price. A buyer of such put options will profit if the yield of the T-note drops below the underlying yield of 4% on the expiration day.³⁵⁰ Such payoff will reduce the rising cost of the \$1 million of T-notes as the value of T-notes will increase when the yield declines.

The fiduciary of the credit shelter needs to determine how many contracts of interest rate puts are required to hedge the \$1 million cost of purchasing the target T-notes portfolio. Similar to buying an interest rate call to hedge the value of a T-notes portfolio, two steps are required.³⁵¹ The first step is to determine the price sensitivity or modified duration³⁵² of the target T-notes portfolio. Suppose that it is eight years. That is, a 1% decline in the interest rate will result in an 8% or \$80,000 rise in the purchasing cost of the target T-notes portfolio. The trustee could choose a September 2005 ten-year note interest rate put option with a strike price of \$40.³⁵³ Hence, a 1% drop in

³⁴⁸ See INTEREST RATE OPTIONS, *supra* note 315, at 6–7.

³⁴⁹ *Id.*

³⁵⁰ *Id.*

³⁵¹ See *supra* text accompanying notes 323–28 (discussing the interest rate call hedge scenario).

³⁵² See *supra* note 324 (discussing the modified duration).

³⁵³ The hedge is more effective if the maturity of the T-note put option is closer to the modified duration of the hedged bond portfolio. See *infra* text accompanying notes 393–99.

interest rate implies a \$1000 payoff for each contract.³⁵⁴ If the trustee expects that there should not be more than a 1% drop in interest rates in the next three months,³⁵⁵ the number of put contracts required is 80 contracts.³⁵⁶ Suppose that the premium for each contract is \$150 as of June 14, 2005—then the total cost of hedging is \$12,000.

Assume that the options expire on the same day that the fiduciary of our hypothetical credit shelter trust plans to purchase the \$1 million of T-notes.³⁵⁷ To determine the result of this hedge, the fiduciary could aggregate: (1) the change in the purchasing cost of the target T-notes portfolio; (2) the payoff of the interest rate put options; and (3) the premium of buying the put options, which is \$12,000. As in the hypothetical marital trust example, the change in the purchasing cost of the T-notes portfolio depends on the change in its yield and its price sensitivity.³⁵⁸ The payoff of the interest put options could be computed in the following fashion: If the yield is at or above 4% on the put expiration day, the trustee would let the put options expire because the payoff would be negative.³⁵⁹ On the other hand, if the yield declines, the trustee would exercise the put and receive a positive payoff.³⁶⁰

Table 9 below contains some hedging results under various possible scenarios, assuming possible changes in the purchasing cost.³⁶¹ If interest rates rise, the put premium of \$12,000 will be offset by the decrease in the purchasing cost of the target T-note portfolio. On the other hand, if the yield declines, the trustee would exercise the put, and the payoff exactly offsets the increase in the purchasing cost of the T-notes portfolio.³⁶²

³⁵⁴ The payoff is $100 \times (\$4 - \$3) \times 10 = \$1000$. See INTEREST RATE OPTIONS, *supra* note 315, at 24–26.

³⁵⁵ See *supra* note 327.

³⁵⁶ The number of contracts required is $\$80,000/\$1000 = 80$.

³⁵⁷ See *infra* text accompanying notes 387–90 (discussing what occurs if the two days are different, resulting in the hedge being less effective).

³⁵⁸ See *supra* note 324 (discussing how the change in bond value can be approximated).

³⁵⁹ INTEREST RATE OPTIONS, *supra* note 315, at 24–26. The payoff of the long interest rate put options on the expiration day is 0, if the yield is at or above 4%, which is the underlying yield of the put. If the yield is below 4%, then the payoff is $80 \times (4 - \text{the yield on the expiration day}) \times \1000 .

³⁶⁰ *Id.*

³⁶¹ The possible changes in the purchasing cost of the target T-notes portfolio are estimated by multiplying \$1 million, the modified duration, and the change in the yield from the original yield of 4%. See *supra* note 324 (discussing how the change in bond value can be estimated).

³⁶² See INTEREST RATE OPTIONS, *supra* note 315, at 24–26.

Table 9—Credit Shelter Trust Example: Hedging Debt with Long Interest Rate Put

Yield of Ten-Year T-Note at Put Expiration	3%	3.5%	4%	4.5%
Change in Purchasing Cost of Target T-Notes Portfolio	-\$80,000	-\$40,000	0	\$40,000
Payoff of Interest Rate Put Options	\$80,000	\$40,000	0	0
Put Premium	-\$12,000	-\$12,000	-\$12,000	-\$12,000
Net Change in Hedged Position	-\$12,000	-\$12,000	-\$12,000	\$28,000

The net outcome of this hedge for Alice and Amy, the beneficiaries of our hypothetical credit shelter trust, is that, at a cost of \$12,000, the \$1 million purchasing cost of the T-notes portfolio is guaranteed by the interest on the put options. And, if interest rates do rise, there is no limit on how much the purchasing cost would drop, though the cost savings will be lessened by the put premium.

b. Long Interest Rate Futures

Alternatively, the trustee of the credit shelter trust could take a long position in interest rate futures to hedge the purchasing cost of the target T-notes portfolio.³⁶³ The trustee could select the ten-year T-note futures offered by the CBOT.³⁶⁴ Referring back to the discussion of short interest rate futures, as of June 14, 2005, the value of a contract that matures in September of 2005 is \$112,500.³⁶⁵ Following the same naïve approach,³⁶⁶ the number of contracts required to hedge the \$1 million purchasing cost of the target T-notes portfolio is eight.³⁶⁷

³⁶³ Chicago Board of Trade, A Simple Treasury Long Hedge, http://www.cbots.com/cbot/pub/cont_detail/0,3206,1175+11676,00.html (last visited Apr. 1, 2006).

³⁶⁴ See *infra* text accompanying notes 393–99 (discussing the risk that arises when the trust security being hedged is not identical to the underlying security of the options or futures).

³⁶⁵ See Interest Rate Products, *supra* note 337.

³⁶⁶ See *supra* note 340 (discussing how the optimal number of futures contracted required for a hedge can be determined).

³⁶⁷ The actual number of contracts required is $\$1,000,000/\$112,500 = 8.89$. We round down to eight. See *infra* notes 391–92 and accompanying text.

Assume that the futures mature on the same day that the fiduciary of the credit shelter trust plans to purchase the target T-notes portfolio.³⁶⁸ To determine the effect of this hedge, the fiduciary could combine the change in the purchasing cost of the target T-note portfolio with the gain or loss from the long futures position. The change in the purchasing cost could be estimated in the previous long interest put example.³⁶⁹ The exact gain and loss from the futures depends on various factors, including what the deliverable T-notes are when the futures mature.³⁷⁰

Table 10 below provides some hedging results under various scenarios, assuming different possible changes in the target T-notes' portfolio value and gains or losses from the long futures position.³⁷¹ If interest rates fall on the futures maturity day, the gain from this long futures position may offset the increase in the purchasing cost of the target T-notes portfolio. On the other hand, if interest rates rise, the futures position will suffer a loss.

Table 10—Credit Shelter Trust Example: Hedging Debt with Long Interest Rate Futures

Yield of Ten-Year T-Note at Futures Maturity	3%	3.5%	4%	4.5%
Change in Purchasing Cost of Target T-Notes Portfolio	-\$80,000	-\$40,000	0	\$40,000
Gain or Loss from Long Futures	\$72,000	\$36,000	0	-\$36,000
Result of Long Hedge	-\$8000	-\$4000	0	\$4000

The net outcome of this long interest rate futures hedge for Alice and Amy, the beneficiaries of our hypothetical credit shelter trust, is that the volatility of the \$1 million purchasing cost of the target T-notes portfolio is greatly reduced by the gain and loss from the futures. Furthermore, the costs

³⁶⁸ See also *infra* notes 390–93.

³⁶⁹ *Id.*

³⁷⁰ See, e.g., JOHNSON, *supra* note 324, at 347–53.

³⁷¹ The gain and loss of the long interest rate futures are estimated as follows: We assume that the change in value of each futures contract per 0.5% change in yield from the original yield of 4% to be \$36,000. Therefore, the gain and loss could be projected by multiplying: (1) eight, the number of long contracts; (2) \$36,000; and (3) the change in the yield. See generally HULL, *supra* note 125, at 123–25.

of this strategy arise from trading the futures, the margin requirements, and the marked to market.³⁷²

E. Final Remarks

Table 11 summarizes the hedging strategies discussed above. Of course, by no means are these strategies exhaustive. For example, a trustee could use options on interest rate futures in lieu of yield-based interest rate options to hedge the value of debt securities.³⁷³ A fiduciary should explore these and other hedging strategies in searching for the best ones that fit the needs of the trust.

Table 11—Hedging Strategy Summary

	Options	Futures
Stock:		
Sale Anticipation	Protective put collar	Sell equity futures
Purchase Anticipation	Buy equity call	Buy equity futures
Bond:		
Sale Anticipation	Buy interest rate call	Sell interest rate futures
Purchase Anticipation	Buy interest rate put	Buy interest rate futures

As is demonstrated in Table 11 above, a fiduciary usually has more than one hedging strategy, and sometimes the choice is between options and futures. For example, a trustee could buy equity put options or futures to hedge the value of equity securities in a sale anticipation. Options and futures are distinct securities and therefore provide different hedging results. A buyer has to pay premiums to purchase options, but not to purchase futures.³⁷⁴ Buying and selling futures impose initial margin requirements.³⁷⁵ Futures also require daily adjustment of the account to reflect the change in value—

³⁷² See *supra* notes 142–45 (discussing futures trading costs).

³⁷³ See generally HULL, *supra* note 125, at 273–76.

³⁷⁴ See *supra* text accompanying note 147 (discussing an option buyer's obligation to pay the option premium to the seller).

³⁷⁵ *Supra* note 142 (discussing the requirement that each trader must post an initial margin between 2% and 10% of the futures contract's value).

the process of marking to market.³⁷⁶ Options also generally provide more potential payoff patterns than do futures. The protective put provides a limited loss and an unlimited potential gain.³⁷⁷ But the short equity futures hedge offers limited loss and limited gain because the gain in the futures will be partially offset by the loss in the equity securities and vice versa.³⁷⁸

Disposition of options and futures—either through exercise, offsetting transactions by buying or selling, or expiration—gives rise to taxable profit and loss.³⁷⁹ The choice between options and futures also results in different tax treatment.³⁸⁰ This could potentially influence the choice between options and futures in hedging trust investments because both the Restatement and the UPIA maintain that a trustee shall consider the expected tax consequences of investment strategies.³⁸¹ Determining the applicable taxation of derivatives transactions is a complex process and demands tax professionals.³⁸² For instance, in futures trading, the tax rules that apply to speculative transactions are different from those that apply to hedging transactions.³⁸³

A hedge is perfect when the risk of the hedged security is completely eliminated; that is, the change in the value of the hedged security is entirely offset by the change in the value or the payoff of the hedging security.³⁸⁴ In practice, a perfect hedge is more of the exception to the rule.³⁸⁵ Hedging with either options or futures is subject to three risks: timing, quantity, and quality.³⁸⁶ In each of the scenarios discussed, in either a sale or purchase anticipation, we assume that the day of selling the trust security or buying the

³⁷⁶ See *supra* text accompanying notes 142–45 (discussing the marked to market process).

³⁷⁷ See Table 2, which shows the hedging results with a protective put.

³⁷⁸ See Table 4, which summarizes the hedging results with long index futures.

³⁷⁹ See, e.g., CHANCE, *supra* note 124, at 51–52, 381–82; HULL, *supra* note 125, at 31–33, 175–77.

³⁸⁰ See, e.g., CHANCE, *supra* note 124, at 51–52, 381–82; HULL, *supra* note 125, at 31–33, 175–77.

³⁸¹ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. e (1992); see also UPIA § 2(c)(3) (1994) (discussing tax implications for trustees).

³⁸² See, e.g., CHANCE, *supra* note 124, at 51–52, 381–82.

³⁸³ *Id.*

³⁸⁴ See generally *id.* at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁸⁵ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁸⁶ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

security coincides with the day that the options or futures expire.³⁸⁷ However, the two dates are more likely to be different. The greater the difference between the two dates, the higher the timing risk and the less effective the hedge.³⁸⁸ One way to reduce the timing risk when the sale or purchase date occurs after the expiration day of options or futures is to roll the hedge forward;³⁸⁹ that is, take a new position after closing out a position when the options or futures expire.³⁹⁰ The quantity risk is a direct result of the contract standardization by the options and futures exchange.³⁹¹ Therefore, a fiduciary cannot buy or sell a fraction of an options or futures contract. As a result, we round down the number of contracts required in a hedge in our hypothetical trust examples.³⁹²

Finally, quality risk exists because the trust security being hedged is not identical to the underlying security of the options or futures.³⁹³ For instance, we assume that the bond investment of the marital trust comprises various T-notes and bonds and has a modified duration of eight years.³⁹⁴ The T-notes options that have a modified duration close to eight years are chosen in our hedging examples because the hedge will be more effective.³⁹⁵ This is

³⁸⁷ See, e.g., *supra* notes 264, 290.

³⁸⁸ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31. For instance, in the case of principal distribution in our hypothetical marital trust, if the S&P 500 Index futures mature after the day on which the trust's S&P 500 Index mutual fund is supposed to be sold, the spot S&P 500 Index level, which directly affects the index mutual fund's value, will not be the same as the futures' index value because there is still time left in the contract. This will lead to a less effective hedge because the change in the mutual fund's value is offset to a smaller extent by the change in the futures contract's value. See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁸⁹ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁹⁰ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁹¹ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁹² Though it is a common practice to round down the number of derivatives contracts required in a hedge, a fiduciary ought to be certain not to underhedge. See generally *supra* note 336. See also *Brane v. Roth*, 590 N.E.2d 587 (Ind. Ct. App. 1992); *supra* text accompanying notes 55–62. The court found the corporate fiduciary liable for underhedging. *Brane*, 590 N.E.2d at 591–92.

³⁹³ See generally CHANCE, *supra* note 124, at 352–54; HULL, *supra* note 125, at 79–84; JOHNSON, *supra* note 324, at 330–31.

³⁹⁴ See *supra* text accompanying notes 323–25.

³⁹⁵ See *supra* notes 264, 290.

because the hedged bond portfolio and the options will then have similar price movements when interest rates change.³⁹⁶ The effectiveness of this hedge is reduced if the bond investment consists of corporate bonds.³⁹⁷ Also, we assume that the S&P 500 Index mutual fund and the S&P 500 Index in the marital trust have perfect correlation.³⁹⁸ In practice, the correlation will be less than perfect, which means that the change in value of the S&P 500 Index mutual fund could not be completely offset by that in the S&P 500 Index futures. As a result, the effectiveness of the hedge will be further reduced.³⁹⁹

VI. CONCLUSION

The Restatement and the UPIA provide fiduciaries with the flexibility they need to effectively manage trust investments in a world of unpredictable economic conditions, a rapidly changing investment environment, and ever-evolving investment products. In line with this broad investment philosophy, the acts provide that no specific investments or techniques are per se prudent or imprudent.⁴⁰⁰

At the same time, neither the Restatement nor the UPIA contains extensive provisions or commentary regarding a fiduciary's use of derivatives such as options and futures.⁴⁰¹ It should be noted that both acts include some language,⁴⁰² as well as imply,⁴⁰³ that a fiduciary may use them. In recent cases, courts have ruled that corporate fiduciaries are liable for not hedging⁴⁰⁴ or underhedging.⁴⁰⁵ These decisions, by analogy, also appear to support this position.

³⁹⁶ See generally CHANCE, *supra* note 124, at 352-54; HULL, *supra* note 125, at 79-84; JOHNSON, *supra* note 324, at 330-31.

³⁹⁷ See generally CHANCE, *supra* note 124, at 352-54, 369-71.

³⁹⁸ See generally *id.* at 352-54; HULL, *supra* note 125, at 79-84; JOHNSON, *supra* note 324, at 330-31.

³⁹⁹ See generally CHANCE, *supra* note 124, at 352-54; HULL, *supra* note 125, at 79-84; JOHNSON, *supra* note 324, at 330-31.

⁴⁰⁰ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. b (1992).

⁴⁰¹ See *supra* text accompanying notes 43-49.

⁴⁰² See, e.g., UPIA § 2 cmt. at 8 (1994). "[I]nvestments that were at one time thought too risky, such as equities, or more recently, *futures*, are now used in fiduciary portfolios." *Id.* (emphasis added).

⁴⁰³ See text accompanying *supra* note 49 (discussing language that implies the use of derivatives under the acts).

⁴⁰⁴ See *Levy v. Bessemer Trust Co.*, No. 97CIF (JFK), 1997 WL 431079, *1 (S.D.N.Y. July 30, 1997); see also *supra* notes 63-68 and accompanying text.

In line with the acts' broad language and flexibility toward fiduciary investing, this Article takes the view that exchanged traded options and futures are probably more suitable than are unregulated forwards and swaps in hedging trust investments. To support our contention, we present some common hedging strategies with options and futures that a trustee could employ in two critical aspects of trust investment—trust principal distribution and portfolio rebalancing.⁴⁰⁶

Under the Restatement, a fiduciary is not to be judged after investment decisions are made, but rather at the time they were made.⁴⁰⁷ Even so, when a fiduciary is fully aware of certain transactions involving trust investments—for example, when securities are to be sold for the purpose of principal distribution—the fiduciary has a duty to protect the values of these securities with reasonable care, skill, and caution.⁴⁰⁸ This, in our opinion, would include instances in which utilizing financial derivatives, such as options and futures, could become necessary. Options and futures are extremely effective in hedging the value of a security, although they are highly risky when used in speculation. Under certain circumstances, such as trust principal distribution, the use of exchange-traded options and futures might provide the fiduciary with a “safe harbor” for protecting the value of trust investments.

Hedging strategies with options and futures can be complex and as such, demand specialized skill and knowledge. Therefore, a fiduciary, who is not an expert, might be wise to delegate the hedging functions to those who are.

⁴⁰⁵ See *Brane v. Roth*, 590 N.E.2d 587, 591–92 (Ind. Ct. App. 1992); see also *supra* notes 55–62 and accompanying text.

⁴⁰⁶ See text accompanying *supra* notes 251–60. It should be noted that the hedging examples we employ greatly further the earlier legal research in this area. For instance, Crawford discusses descriptively how derivatives can be utilized to hedge the value of one stock, Philip Morris. See text accompanying *supra* notes 108–13 (discussing Crawford's use of derivatives for protecting a beneficiary). Borkus also descriptively contends how the value of 10,000 shares of stock can be hedged with derivatives. See text accompanying *supra* notes 117–19 (discussing hedging strategies). The hedging examples in this Article go further to demonstrate how a trustee can utilize options and futures to protect the values of both equity and debt securities, which are an integral part of a typical trust portfolio. More than protecting the values of a trust portfolio that will be sold, we also show the use of options and futures to hedge the purchasing costs of buying equity or debt portfolios. This Article provides possible hedging results with numerical analysis and actual options and futures.

⁴⁰⁷ RESTATEMENT (THIRD) OF TRUSTS § 227 cmt. b (1992). “The trustee's compliance with these fiduciary standards is to be judged as of the time the investment decision in question was made, not with the benefit of hindsight or by taking account of developments that occurred after the time of a decision to make, retain, or sell an investment.” *Id.*

⁴⁰⁸ See *supra* notes 251–56 and accompanying text.

Indeed, both the Restatement and the UPIA remind fiduciaries that they have the power and may, in certain circumstances, have a duty to delegate investment activities.⁴⁰⁹ In doing so, the fiduciary is required to exercise care, skill, and caution in establishing the scope and specifications of the delegation.⁴¹⁰ Furthermore, in order to monitor and supervise the execution of the hedging decisions, the fiduciary should be reasonably informed by the delegatee of its actions.⁴¹¹ As history has vividly demonstrated, some of the abuses in derivatives are due in part to upper management's lack of proper supervision.⁴¹²

⁴⁰⁹ See *supra* text accompanying notes 33–35 (discussing delegation of duties under the acts). See generally UPIA § 9 (1994).

⁴¹⁰ See generally UPIA § 9 (1994).

⁴¹¹ *Id.* § 9. Indeed, the delegatee, as an agent of the trust, has the same duties of care imposed on him. See *id.* § 9(b) (“In performing a delegated function, an agent owes a duty to the trust to exercise reasonable care to comply with the terms of the delegation”). It is our contention that the trustee-delegator should provide language in the assignment wherein the delegatee would be required to keep the delegator informed of his or her investment actions due to the risks inherent in derivative investing. The UPIA also recommends that the trustee, as a fiduciary, should not insert an exculpatory clause “that leaves the trust without recourse against reckless mismanagement.” See *id.* § 9(b) cmt. at 19.

⁴¹² See *supra* text accompanying notes 37–39. The prime example of this problem occurred when Nick Leeson, a low level employee, caused the venerable Barings Bank to collapse. See *supra* note 38 (discussing the collapse of the Barings Bank).