STRUCTURED PRODUCTS FOR THE RETAIL MARKET: THE REGULATORY IMPLICATIONS OF INVESTOR INNUMERACY AND CONSUMER INFORMATION PROCESSING†

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Financial innovations have resulted in an explosion in the number of so-called structured products being offered in the retail marketplace. To explain the complex structure of these hybrid debt securities, their prospectuses employ numerical examples to illustrate the investments' return formulas. These examples depict hypothetical reward scenarios, utilizing an atypical set of premises. Consequently, the example sets portray highly unlikely investment results. Behavioral science, particularly consumer information processing and general principles of numeracy, reveal that these "illustrative" example sets can and do create a highly skewed picture of an investment's potential return. The target investor's innumeracy and cognitive biases thus can be strategically leveraged by issuing firms. This latent form of deception has enormous implications for the retail investing population—implications that are only beginning to be felt and understood given the timing of these investment instruments' popularity and their medium-term maturity dates.

Armed with research at the intersection of behavioral law and behavioral finance, the Authors propose a measured regulatory response. A focused regulation restricting the use of numerical examples that give rise to unrealistic investor expectations is consistent with other regulators' responses to implied messages of typicality, is consistent with the law relative to disclosure of issuer projections, and is consistent with the limited interventionist approach favored by most

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scholars who have addressed the question of regulation as a method of de-biasing investors. The proposed regulation would prevent the inevitable mistaken inferences that motivate purchases by innumerate retail investors. It also preserves the important policy objective of investor choice, leaving sophisticated investors with structured notes as a menu option when creating their portfolios.

INTRODUCTION

Prospective investors generally have two concerns: risk and reward. Consequently, risk disclosure has long been a subject of regulatory concern. Indeed, the typical prospectus includes a variety of warnings about both generalized risks and specific risk factors associated with the security being offered.[1] The nature of these disclosures and their effects on consumers have been addressed elsewhere in a variety of contexts.[2] This Article begins to fill a significant gap in the scholarship by examining the less scrutinized flipside of the investment coin: disclosures about the possible rewards a complex investment vehicle might deliver. In particular, this Article asks whether, in light of the reality of investor behavior,[3] representations about possible rewards are deceptive when

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1. *See, e.g.*, Asset Backed Securities, Securities Act Release No. 8518, 70 Fed. Reg. 1506, 1522 (Jan. 7, 2005) (requiring risk disclosures in Item 3, Form S-1 for registered asset backed securities); Plain English Disclosure, Securities Act Release No. 7497, 63 Fed. Reg. 6370, 6373 (Feb. 6, 1998) (warning against use of boilerplate risk discussions and suggesting placing risk factors "in context"); 15 U.S.C. §§ 77z-2, 78u-5 (2006) (immunizing from liability corporate projections that are accompanied by important risk factors that could cause corporate results to differ from those forecast).

2. *See, e.g.*, Stephen J. Choi & A.C. Pritchard, *Behavioral Economics and the SEC*, 56 STAN. L. REV. 1, 2 (2003) (positing that "[n]ot all investors are rational" and describing evidence that "investors' decisions are influenced by systematic biases that impair their abilities to maximize their investment returns"); Ann M. Olazábal, *False Forward-Looking Statements and the PSLRA's Safe Harbor*, 86 IND. L.J. (forthcoming 2011), *available at* http://ssrn.com/abstract=1562651 (discussing the "meaningfulness" of risk factors and other cautionary language attending forward-looking statements in all manner of issuer disclosures); Kenneth B. Firtel, Note, *Plain English: A Reappraisal of the Intended Audience of Disclosure Under the Securities Act of 1933*, 72 S. CAL. L. REV. 851 (1999) (criticizing the SEC's ongoing position that disclosures can and should be aimed at the average investor).

3. Outside of the law, scholars have long studied cognitive and behavioral effects in investment decision making. *See, e.g.*, Paul Slovic, *Psychological Study of Human Judgment: Implications for Investment Decision Making*, 27 J. FIN. 779 (1972). Legal scholars have built on this work to draw conclusions about the law of the capital markets and investing:

> [V]arious legal scholars have taken insights from behavioral law and economics and applied them to the securities markets. Some have written, for example, that investors often act with overconfidence in their investment abilities. Investing encompasses a wide range of choices, including the type of risk an investor is willing to bear, the class of financial product (for example, bonds versus equity) in which the investor will place his money, and within that class, which instruments provide the best return for a given risk level. Commentators have argued

they are cast in the form of "illustrative" numerical examples, which are mathematically accurate but employ unlikely premises and therefore portend unlikely hypothetical investment outcomes.

Prior legal scholarship has raised investor protection concerns relative to the sale of structured products to retail investors. These include opacity of payoff structures generally, high embedded fees, and illiquidity.[4] But this Article addresses a more pernicious and latent concern associated with the use of numbers to market these complex hybrid securities. Indeed, the use of numerical examples to illustrate the returns associated with structured investment products creates ample opportunities for issuer abuse. This raises the larger question of the propriety of using numerical examples as representative reward projections in any offering disclosure—a question that has significant implications for a vast retail investing market.

While various forms of structured investment products have existed for decades, a significantly greater effort to market them to individual investors followed the dot-com bust of 1999 to 2002.[5] Bankers had difficulty selling risky

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> that investors often do not recognize how difficult these choices are and instead rely on a belief that their innate abilities will lead to a good investment result.

Choi & Pritchard, *supra* note 2, at 11–12 (footnotes omitted) (citing major works); *see also* Donald C. Langevoort, *Behavioral Theories of Judgment and Decision Making in Legal Scholarship: A Literature Review*, 51 VAND. L. REV. 1499, 1503–06 (1998) (detailing early cognitive psychology research that establishes mental biases in making decisions, including investment decisions).

4. Jennifer Bethel & Allen Ferrell, *Policy Issues Raised by Structured Products*, *in* NEW FINANCIAL INSTRUMENTS AND INSTITUTIONS: OPPORTUNITIES AND POLICY CHALLENGES 167 (Yasuki Fuchita & Robert E. Litan eds., 2007). Recent studies by behavioral finance scholars also raise significant policy concerns. *See, e.g.*, Wolfgang Breuer & Achim Perst, *Retail Banking and Behavioral Financial Engineering: The Case of Structured Products*, 31 J. BANKING & FIN. 827, 842 (2007) (finding that investors who underestimate the volatility of returns will be attracted to these products); Thorsten Hens & Marc Oliver Rieger, *The Dark Side of the Moon: Structured Products from the Customer's Perspective* 4 (EFA Bergen Meetings Paper, 2009), *available at* http://ssrn.com/abstract=1342360 (finding that, in the main, structured products derive their popularity not from rational motivations, but "from behavioral factors like framing, loss aversion, and probability mis-estimation").

For more indirectly relevant but good foundational discussions of behavioral finance, see generally HERSH SHEFRIN, BEYOND GREED AND FEAR: UNDERSTANDING BEHAVIORAL FINANCE AND THE PSYCHOLOGY OF INVESTING (Oxford Univ. Press 2000); David Hirshleifer, *Investor Psychology & Asset Pricing*, 56 J. FIN. 1533 (2001) (surveying literature).

5. Bethel & Ferrell, *supra* note 4, at 173 (noting the likely popularity of structured finance products among baby boomers); James J. Eccleston, *Financial Services: Sales of Structured Notes*, CHICAGO LAW., Jan. 14, 2009, *available at* http://www.chicagolawyermagazine.com/2009/01/14/financial-services-sales-of-structured-notes/ (discussing suits by customers of UBS alleging that UBS failed to disclose that the notes were unsecured obligations of the issuer, Lehman Brothers, which is now in bankruptcy); Eleanor Laise, *An Arcane Investment Hits Main Street: Wall Street Pushes Complex "Structured Products," Long Aimed at Institutions, to Individuals*, WALL. ST. J., June 21, 2006, at D1. As such, this particular investment segment defies the trend toward

initial public offerings; at the same time, investors' interest in structured products—which offer the potential to achieve equity-like returns and some level of principal protection—soared. This combination resulted in a dramatic increase in sales of structured *notes* in particular, from $28 billion in 2003 to more than $114 billion in 2007.[6] While sporadic articles in the popular business press[7] and academic journals[8] suggested that these investments were not likely to perform well, the allure of relatively high potential returns without the usual corresponding risk of losing principal proved to be sufficient to attract many individual investors. After a significant dip in investment in 2008, structured products—particularly principal protected notes—are back in vogue, billed as a "conservative way to play the market."[9]

A typical principal protected note (PPN) involves a five-year investment term and a structure—or formula—for calculating the investor's return that is tied to a particular stock or market index. Brokers and financial consultants have sold billions of dollars of these notes to individual investors.[10] Particularly in an economic environment in which interest rates are low, as has been the case for the

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predominance of institutions in the marketplace for purchase of securities. *See* Donald C. Langevoort, *The SEC, Retail Investors, and the Institutionalization of the Securities Markets*, 95 VA. L. REV. 1025, 1048 (2009) [hereinafter Langevoort, *SEC & Retail Investors*].

For a discussion of early structured notes, see Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 MD. L. REV. 1, 74–78 (1996), and SCOTT Y. PENG & RAVI E. DATTATREYA, THE STRUCTURED NOTE MARKET 1–14 (1995).

6. Ben Levisohn, *A Note Tailor-Made to Your Goal*, BUS. WK., June 19, 2008, http://www.businessweek.com/magazine/content/08_26/b4090064473440.htm (discussing popularity of principal protected investments to retail investor market).

7. *See, e.g.*, Daniel Fisher, *Guaranteed to Go Up*, FORBES, November 27, 2006, http://www.forbes.com/forbes/2006/1127/079.html (describing complexity of investment structures and advocating that investors package their own and avoid the price premium by purchasing a risk-free zero coupon treasury bond and a call option on a stock index, with better tax treatment in some cases); Brian P. Knestout & Matt Popowsky, *Half-Baked Idea*, 56 KIPLINGER'S PERS. FIN. MAG. 57, 57, 60 (Nov. 2002) (describing drawbacks of principal protected notes, including limitation of participation in stock price appreciation, illiquidity, and phantom income for tax purposes); Larry Light, *Twice Shy on Structured Products?*, WALL ST. J., May 27, 2009, at C1 (reporting high broker commissions and poor performance of principal protected notes and other structured products); Ian McDonald, *'Safer' Mutual Funds Look Sorry*, WALL. ST. J., Jan. 28, 2005, at C1 (noting significant downsides to analogous principal protected mutual fund investments).

8. *See, e.g.*, Howard Marmorstein et al., *Evaluating the Offering Documents for Principal Protected Securities*, J. FIN. PLANNING, Dec. 2006, at 60, 62–66 (describing four common types or categories of principal-protected securities); David Krein, *Rethinking Principal Protection*, 9 J. WEALTH MGMT. 62 (2007) (advocating investors acquire and manage the underlying zero coupon bond and call option rather than the bundle offered as a PPN with significant additional illiquidity, risk, and tax effects); Pavel A. Stoimenov & Sascha Wilkens, *Are Structured Products 'Fairly' Priced?: An Analysis of the German Market for Equity-linked Instruments*, 29 J. BANKING & FIN. 2971, 2973 (2005) (noting, among other downsides, that large implicit premiums were charged by the banks issuing the majority of such products, rendering the products generally overpriced).

9. Light, *supra* note 7.

10. Levisohn, *supra* note 6.

past several years, the apparently high reward-to-risk characteristics of these structured investment products entice investors who are approaching or are in retirement.[11] The older target market for these structured notes is prone to be the least numerate[12] class of investors, that is, those least likely to possess the complex mathematics, statistics, and computer skills necessary to evaluate structured products, even though they may have years of investing experience.[13]

Quantitative disclosures, such as mathematical examples illustrating possible returns, have become commonplace in marketing structured investments to retail investors nearing retirement. Given the size of the offerings and the fact that many of these investments have yet to mature, the potentially deceptive disclosures have not yet given rise to class actions alleging they are fraudulent. But the prevalence of this marketing technique suggests that this legal issue is squarely on the horizon, and it thus invites analysis.

Drawing on the behavioral science of consumer information processing, this Article argues that the use of numerical examples to illustrate possible investment returns encourages issuer abuse of investors' known cognitive biases. These numerical examples have the potential to be highly deceptive and therefore should be regulated. First, in Part I, we review a sample prospectus for a PPN to provide the necessary context for examining this offering practice. In Part II, we examine the fundamental principles of consumer information processing. Here, we set out five plausible investor reactions to the set of numerical examples that illustrate the operation of the investment's structure, varying in degree of

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11. Bethel & Ferrell, *supra* note 4, at 173 (noting the likely popularity of structured finance products among baby boomers).

12. A seminal work treating the subject of numeracy is JOHN ALLEN PAULOS, INNUMERACY: MATHEMATICAL ILLITERACY AND ITS CONSEQUENCES (1988) (citing poor risk assessment, financial mismanagement, and the accumulation of debt as some of the consequences of innumeracy).

13. VICTORIA RIDEOUT, E-HEALTH AND THE ELDERLY: HOW SENIORS USE THE INTERNET FOR HEALTH INFORMATION 4 (Jan. 2005), *available at* http://www.kff.org/entmedia/7223.cfm (follow "Survey Report" hyperlink) (reporting, based on a Kaiser Family Foundation national survey of older Americans, that fewer than half of all seniors have ever used a computer); Melissa L. Finucane et al., *Task Complexity and Older Adults' Decision-Making Competence*, 20 PSYCHOL. & AGING 71 (2005) (finding lower comprehension of numerical information and less consistent decision making in older people across contexts); Mitzi M. S. Johnson, *Age Differences in Decision Making: A Process Methodology for Examining Strategic Information Processing*, J. GERONTOLOGY, Mar. 1990, at 75 (establishing that retirees are more likely to use simple, noncompensatory decision strategies); Neil Selwyn et al., *Older Adults' Use of Information and Communications Technology in Everyday Life*, 23 AGEING & SOC'Y 561, 567 fig.1 (2003) (reporting that approximately 20% of older adults compared to 65% of younger adults had used a computer in the past twelve months).

Note that these are not necessarily inexperienced investors or "widows and orphans" investing small nest eggs. Instead, the target market for these products is individuals who are nearing retirement age, but educated and financially literate. *See* NASD INVESTOR EDUC. FOUND., INVESTOR FRAUD STUDY FINAL REPORT 5, 17–19 (2006), *available at* http://www.sec.gov/news/press/extra/seniors/nasdfraudstudy051206.pdf (finding that victims of investor frauds perpetrated by "con criminals" were more financially literate than victims of other types of frauds).

numeracy required. The simplest and most common investor reaction is to compute the arithmetic mean of the hypothetical returns illustrated. Alternately, with additional understanding and skill, an investor may attempt to weight the examples to obtain a better statistical approximation of the expected return. Or, the investor might adjust the expected long-term return from U.S. equities overall or the biotech index on which this PPN is based. These reactions to the issuer's reward illustrations result in a distorted view of the investment's return potential. Two far more complex approaches would entail performing a mathematical back-test of the historical data provided in the prospectus or conducting a Monte Carlo Simulation based on the characteristics of the PPN. Few investors are likely to be able to conduct the latter types of analysis to evaluate the investment product. As a result, it is highly likely that a significant portion of the target audience for the PPN will arrive at an unwarranted conclusion about its expected return and the desirability of its inclusion in their portfolios.

In Part III, we examine extant law in an effort to ascertain how the regulatory environment and judicial precedent inform the analysis. Several relevant areas of the law are implicated, including those addressing the use of numerical information and calculations in disclosures generally, and those evaluating the use of projections in offering memoranda. Generally applicable case law and related federal securities regulation reflect the need for disclosures that provide the investor with the information she needs to make intelligent investment decisions. More directly relevant case law reflects judicial concern for disclosures that bury important facts, obfuscate them within quantitative disclosures, or place an inappropriate gloss on material information. A review of the law of forward-looking disclosures demonstrates a close analogy to the reward examples used in PPN prospectuses. Use of projections in issuer disclosures has historically been suspect and, therefore, pointedly regulated. This regulation variously requires issuers to use good faith and a reasonable factual basis for their estimates, to identify them as mere projections and disclose important risk factors, or to use meaningful cautionary language. These bodies of law militate toward a finding that the described use of numerical examples is deceptive. Finally, Part III concludes with a discussion of the poor fit of the puffery doctrine, which might be posited as a credible counterargument to our thesis.

In light of the foregoing, Part IV argues for federal regulation of the use of numerical examples and formulas describing a structured investment, so as to more fairly and adequately inform retail purchasers of the nature of the investment and of their expected returns. Such regulation will also encourage fair competition between issuers of structured investment products, putting the burden on issuers to demonstrate good faith and a reasonable basis for the returns their numerical examples suggest. To do this, the premises used for the hypothetical examples chosen should more clearly reflect the expected return based on available historical data, and should not be skewed in such a way that they leverage an innumerate investor's inevitably mistaken inference about possible returns, thereby inducing investments that would not otherwise have been made.

I. SAMPLE PPN AND NOTE TERMS

To assist with the analysis, this Article first reviews the relevant content of a typical PPN prospectus. The description is divided into a discussion of the quantitative or numerical information provided to the prospective investor and then a discussion of the other relevant qualitative information that aids the investor in assessing potential financial outcomes for this type of investment.

A. Relevant Quantitative Information in the Prospectus: Return Formula and Examples of Potential Returns

Embedded in the typical prospectus is a description of the set of rules by which the investor's return will be computed.[14] The prospectus for one such PPN, known by its ticker symbol "BOR.P" and based upon the AMEX Biotechnology Index, is typical and will be used as an exemplar hereafter. This prospectus describes the investment as follows:

> At maturity, you will receive the principal amount plus a supplemental redemption amount which will be at least 5.00% of the principal amount. . . . The supplemental redemption amount will be based primarily upon the performance of the AMEX Biotechnology Index over the term of the notes.[15]

To further assist the investor in understanding the security being offered for sale, the prospectus then provides a formula that translates the aforementioned rules into a computational equation. Corresponding to the preceding verbal description, the investor is told that the return will equal "[The product of (1.00 + the Periodic Return) for each Reference Period] - 1.00" ("Return Formula").[16] To illustrate further, as is typical, the prospectus provides a set of numerical examples meant to demonstrate the calculations necessary to project specific financial outcomes. Using different hypothetical levels of the Biotech Index over the life of the PPN as premises, each of the mathematical examples illustrates how to calculate the investor's possible return utilizing the given market price assumptions.

In the exemplar BOR.P prospectus, seven such examples ("Examples") are provided.[17] The first[18] envisions a scenario in which the level of the Biotech Index increases consistently by 2% each quarter for the entire five-year term of the note. The calculations implicated by the Return Formula are then performed, with

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14. Bethel & Ferrell, *supra* note 4, at 169, box 6-1 (providing another example of the textual description of such a PPN, Morgan Stanley's "Protected Performance Equity Linked Securities" or PROPELS[SM]).

15. BANK OF AM. SEC. LLC, PROSPECTUS SUPPLEMENT: MINIMUM RETURN EQUITY APPRECIATION GROWTH LINKED SECURITIES "INDEX EAGLES®," DUE OCTOBER 28, 2011, LINKED TO THE AMEX BIOTECHNOLOGY INDEX cover sheet (Oct. 23, 2006) [hereinafter BOR.P Prospectus], *available at* http://www.sec.gov/Archives/edgar/data/70858/000119312506213710/d424b5.htm.

16. *Id.* at PS-5.

17. *Id.* at PS-7 to -13. For the reader's ease of reference, Appendix A excerpts the numerical Examples from the BOR.P Prospectus.

18. *See infra* Appendix A (Example 1).

a resulting 8.23% annualized rate of return over the life of the note—which is equivalent to a single payment of $485.90 for every $1000 invested for five years. It is important to note that this initial Example accomplishes three important but non-obvious objectives for the marketing issuer, which foster the allure of this structured product. First, the illustrative return of 8.23% annualized is low enough to be credible. This lends credence to both the overall quality of the prospectus information and the offered investment. Second, the return is sufficiently high that it exceeds that of any low-risk fixed income investment in the marketplace in recent years, thereby increasing its attractiveness. In fact, however, as will be shown later, the investor will rarely if ever receive this level of investment performance. Third, and least obvious to most investors, it subtly implies that the investor sacrifices little or nothing in terms of return in exchange for principal protection (because the return to the holder of the PPN equals the return to the investor in the Biotech Index).

The second Example,[19] which is more optimistic, assumes an increase of 7% quarterly over the five-year period of the investment. This projection, the calculation reveals, results in a compound annual return of 31.04% (or $2869.70 per $1000 invested over five years). Note how this Example conveys more than just the mechanics of the Return Formula and the high potential return to the investor in the PPN. Additionally, it reinforces the point that the investor in the PPN sacrifices little or no return relative to the underlying index (while obtaining principal protection). Together these two Examples frame the PPN as superior to an investment in the underlying index or an alternative fixed-income investment.

The third Example,[20] yet more sanguine, assumes consistent 9% quarterly increases. However, because the PPN enforces a 7% quarterly-return cap, this Example, like the second Example, also projects a return of 31.04% to the investor. Having already communicated that the absolute returns to the PPN holder are likely to be very good, the issuer is now willing to illustrate that some minor sacrifice of absolute return may be entailed. Moreover, by illustrating the impact of the quarterly cap when the return to the PPN investor is over 31% per annum, the issuer minimizes the perceived sacrifice from investing in the PPN.[21]

The fourth Example,[22] unlike the first three, illustrates a consistent negative performance of the Index, assuming consistent 2% decreases per quarter. The projected annualized rate of return here is 0.98%, reflecting the return of the investor's $1000 and the "Minimum Supplemental Redemption Amount" of $50 per $1000 after five years. In terms of the issuer's presumed communication objectives, the fourth Example lends further credibility while highlighting the

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19. *See infra* Appendix A (Example 2).

20. *See infra* Appendix A (Example 3).

21. For example, research in consumer information processing (CIP) has demonstrated repeatedly that the difference in utility to the investor between a 40% compound annual return and a 31% return is viewed as a far lesser sacrifice than 10% return versus 1%. *See* Richard Thaler, *Mental Accounting and Consumer Choice*, 4 MARKETING SCI. 199, 201 (1985) (describing individuals' value function, illustrating diminishing marginal utility as a prospective gain moves further from the zero reference point).

22. *See infra* Appendix A (Example 4).

superiority of the PPN to a corresponding investment in a pure equity instrument. Instead of losing, the investor obtains a small, positive return over the five-year period.

The last three Examples show projected returns based on variable increases in the Index's level and are less upbeat.[23] The fifth Example,[24] the simplest of the three, assumes a steady 10% per quarter increase in the level of the Index over ten quarters, followed by ten consistent quarterly decreases of 10% in the level of the Index. In light of the cap on positive returns, and the concomitantly large uncapped negative quarterly results, the investor's return is again only 0.98%, reflecting return of the $1000 in protected principal and payment of the $50 Minimum Supplemental Redemption Amount.

The last two Examples[25] depict more fluctuating index levels. The sixth Example assumes the first six quarters will be marked by alternating increases of 7% and decreases of 5% per quarter each for two quarters at a time, followed by an eight-quarter period during which the Index decreases by 5% per quarter for four quarters and increases by 7% per quarter for four quarters, followed again by alternating two-quarter periods of first 5% decreases, then 7% increases, and again 5% per quarter decreases in the Index level. This set of assumptions results in an annualized rate of return of 3.32%, or a single payment of $177.80 per $1000 for the five-year period of investment. Note that as in Examples 1 and 2, in the scenario envisioned by the sixth Example, the return from the PPN is exactly the same as the return from the unprotected, riskier investment in the Biotech Index.

The seventh and final Example[26] assumes the Index will perform the same for each of the five years of the investment term: the first two quarters exhibit 3% increases, the third quarter suffers a 20% decrease, and the fourth quarter shows a 20% increase in the Index level. This last projection results in a return on investment of 0.98%, reflecting the transfer back to the investor of her $1000 "protected" principal and the contractually guaranteed $50 Minimum Supplemental Redemption Amount.

The last three Examples are not as positive as the initial ones. But notably absent in this less rosy set is an Example that would illustrate the most realistic and disturbing possibility; that is, a significant appreciation in the underlying Biotech Index without a concomitantly high return to the PPN investor. Appendix B shows the frequency of this unfortunate outcome to the unsuspecting investor.

B. Additional Qualitative Disclosures Bearing on Financial Outcomes

In addition to the formulas and associated Examples, the exemplar prospectus also includes historical data on the prices and return of the Index to which the PPN is linked.[27] In fact, investors are provided with quarterly data for

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23. They are also less impactful and problematic from a consumer information processing standpoint, as will be demonstrated.

24. *See infra* Appendix A (Example 5).

25. *See infra* Appendix A (Examples 5 and 6).

26. *See infra* Appendix A (Example 7).

27. BOR.P Prospectus, *supra* note 15, at A-1 to -3 ("Annex A").

the AMEX Biotech Index for a period of about fifteen years. This PPN also takes the affirmative step of highlighting the specific historical periods in which the quarterly cap would have impacted (i.e., reduced) the investor's return.[28]

Finally, the investor is told that "[b]ecause of the Return Cap, . . . [your return] cannot be more than approximately 286.97% . . . . You should consider the possibility that an investment in the notes will not result in a gain above the Minimum Supplemental Redemption Amount even if the level of the AMEX Biotechnology Index increases. . . ."[29] In fact, as depicted *infra* in Appendix B, this purportedly remote possibility is the outcome that investors are most likely to experience. Because no Example in which the Biotechnology Index increases substantially over the five-year period while the PPN fails to appreciate is provided, incorporating this type of outcome into the expected return requires the investor to envision and generate this scenario for herself.

Clearly this is a more complicated investment product than a simple share of common stock, or even a more sophisticated bond or debenture that would be characterized by a lengthy indenture agreement outlining the constituent legal rights and obligations associated with the debt instrument. In fact, the derivative nature of the PPN may demand a visual or mathematical illustration of precisely how the formula works to define investor returns. Yet, the premises of the hypothetical Examples were intentionally selected, and they have some reprehensible implications when assessed in light of behavioral science and the reality of investor innumeracy. The next Part discusses the fundamentals of consumer information processing as they relate to this purportedly unbiased depiction of potential investor returns.

II. DOING THE MATH: INTUITIVE PREDICTIONS OF THE EXPECTED RETURN

> *Human rational behavior is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor.*
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> *– Herbert A. Simon*

How would an ordinary, diligent consumer estimate the expected return from a typical PPN? What level of numeracy would be required to make an informed judgment? In the absence of the requisite level of numeracy, how are investors' judgments likely to be affected by their decision heuristics and

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28. *Id.* For this PPN, the periodic (i.e., quarterly) return cannot exceed the cap of 7%. *Id.* at PS-4. So, for example, if the Biotech Index appreciates by 10% in one reference period (i.e., calendar quarter of the year) the effective return to the investor for that period would be 7% and the aforementioned multiplier in the formula for the supplementary return would be 1.07. Importantly, if the Biotech Index declines by 10% in one reference period, the effective return to the investor for that period would be -10% and the aforementioned multiplier in the formula for the supplementary return would be 0.90. While the supplementary return for the 5-year period cannot be negative, interim periods can be; as a result, it is likely that the effective return for the entire period will be near zero for this prin'al protected investment.

29. *Id.* at PS-5.

predictable biases? To address these questions, the following Part is based upon the science of "consumer information processing" (CIP). This domain examines the process through which consumers are exposed to information, attend to it, comprehend it, place it in memory, and retrieve it for later use.[30] While the field of CIP draws useful parallels to computer information processing and helps to identify the steps in which data are processed, it is particularly valuable here in identifying those ways in which human limitations compromise our thinking, resulting in biases and errors in our interpretation of data.

It is not especially surprising that the foremost authorities on intuitive prediction have concluded that people "rely on a limited number of heuristics which sometimes yield reasonable judgments and sometimes lead to severe and systematic errors."[31] For example, people prefer to believe that the world is relatively stable and well understood in order to make everyday decisions quickly while minimizing their ongoing uncertainty. Among the natural consequences of these proclivities is that we tend to underestimate the variability of a wide array of phenomena and overestimate the precision of our beliefs.

Another significant stream of CIP research highlights the way the format in which information is presented—"framing"—can subtly but dramatically shift consumers' perspectives, thereby changing their preferences for certain objects over others that may be objectively equivalent.[32] In the context of investors' decision making, for instance, research has shown that marketing materials that make certain goals more salient can alter consumers' willingness to make riskier investments.[33] Moreover, as a preliminary matter, it is worth mentioning that neither humans nor computers can process sample information that has not been provided. Research reveals that people are woefully deficient in their ability to

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30. *See generally* ROY LACHMAN ET AL., COGNITIVE PSYCHOLOGY AND INFORMATION PROCESSING: AN INTRODUCTION (1979) (discussing the method by which people process information).

31. Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCI. 1124 (1974) ("[P]eople rely on a limited number of heuristic principles which reduce complex tasks of assessing probabilities and predicting values to simpler judgmental operations. In general, these heuristics are quite useful, but sometimes they lead to severe and systematic errors."); Daniel Kahneman & Amos Tversky, *On the Psychology of Prediction*, 80 PSYCHOL. REV. 237 (1973).

32. *See, e.g.*, Daniel A. Gottlieb et al., *The Format in Which Uncertainty Information is Presented Affects Decision Biases*, 18 PSYCHOL. SCI. 240, 245 (2007) (demonstrating that the likelihood of manifesting specific biases in decisions is influenced by whether information is presented in percentage format). For their part, legal scholars have questioned regulatory-disclosure prescriptions with the vague goal of achieving "informed decision-making," leading them to conclude that such prescriptions should not merely require simple disclosure of information but should also dictate "*how* the information should be provided," so as to control for framing and other behavioral effects. Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1535 (1998).

33. Rongrong Zhou & Michel T. Pham, *Promotion and Prevention Across Mental Accounts: When Financial Products Dictate Consumers' Investment Goals*, 31 J. CONSUMER RES. 125, 133 (2004) (finding that investors' decisions to choose riskier alternatives were influenced by mere labeling of products under consideration).

identify information that is omitted, even if it is essential to diagnosing a situation effectively or to rendering an accurate assessment of the rules that are operative in a given problem domain.[34]

Additionally, in view of our focus on the need for regulation of the presentation of numerical Examples in PPN prospectuses and other offers related to investment decisions, this Article focuses on the growing body of evidence on consumers' numeracy—the quantitative analogue of literacy. Briefly, this emerging literature shows that many consumers have a preference for qualitative, descriptive information over numbers despite the greater potential diagnosticity of numerical data.[35] Moreover, in the event that consumers choose to base judgments on numerical information—or are compelled to do so—the research indicates that few consumers have any working knowledge of the most rudimentary statistics or can perform the cognitive arithmetic needed to make accurate evaluations of everyday marketplace offerings.[36]

In the following Section, we discuss more specifically the relevant heuristics, framing, and numeracy implications of the quantitative Examples. In addition, we address how these interrelated tendencies toward overconfidence[37] impact investors' expected returns and, importantly, the way the PPN structure and Examples capitalize on these well-established cognitive biases.

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34. *See* P.C. Wason & Phillip N. Johnson-Laird, *A Conflict Between Selecting and Evaluating Information in an Inferential Task*, 61 BRIT. J. PSYCHOL. 509 (1970) (showing that the vast majority of people will fail a task that requires identifying the information needed to test a rule).

35. *See* Madhubalan Viswanathan, *Measurement of Individual Differences in Preference for Numerical Information*, 78 J. APPLIED PSYCHOL. 741, 751 (1993) (showing significant, predictable differences in people's proclivity toward using numerical information, i.e., PNI, and finding that those with higher PNI scores also had greater desire to obtain precise information for decision making).

36. Isaac M. Lipkus et al., *General Performance on a Numeracy Scale Among Highly Educated Samples*, 21 MED. DECISION MAKING 37, 41–43 (2001) (establishing that highly educated people have difficulty with relatively simple numeracy tasks).

37. Sarah Lichtenstein et al., *Calibration of Probabilities: State of the Art to 1980, in* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 306, 330 (Daniel Kahneman et al. eds., 1982) (surveying numerous studies and observing that "the overwhelming evidence . . . is that people's probability distributions tend to be too tight"); *see* Ward Edwards & Detlof von Winterfeldt, *Cognitive Illusions and Their Implications for the Law*, 59 S. CAL. L. REV. 225, 239 (1986) (asserting that people are much less likely to be overconfident about simple probabilistic judgments and that it is the difficult judgments that produce the most overconfidence); Dale Griffin & Amos Tversky, *The Weighing of Evidence and the Determinants of Confidence*, 24 COGNITIVE PSYCHOL. 411, 432 (1992) ("The significance of overconfidence to the conduct of human affairs can hardly be overstated.").

This is also a well-accepted theorem among legal scholars. *See, e.g.*, Jolls et al., *supra* note 32, at 1524 ("A common feature of human behavior is overoptimism: People tend to think that bad events are far less likely to happen to them than to others."); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CALIF. L. REV. 1051, 1091 (2000) (noting presence of the overconfidence bias even when statistical distribution of outcomes is available).

A. Relevant Behavioral Research, Possible Investor Approaches, and Required Numeracy

Let us return to the question of how the ordinary investor might realistically utilize the prospectus information, including the numerical Examples, to estimate her expected return. Drawing upon the aforementioned areas of behavioral research, this Section explains why the complexity of this task relative to consumers' numeracy results in most individual investors using heuristics or simplifying rules rather than engaging in more precise calculation to estimate the expected returns from a PPN. In contrast to the rational, highly skilled, "homo economicus" presumed by financial theory and much of the related law, the research in CIP finds that a consumer's response to marketing communications is much more contingent in nature.[38] More specifically, a dispassionate analysis of the marginal benefits and anticipated costs of time and effort in view of the decision at hand does not solely govern the approach by which incoming data will be processed. Rather, depending upon the individual's ability and motivation in a given situation, information may be processed by way of either the central or peripheral route.[39] Processing by way of the central route, similar to the behavior assumed by the rational economic perspective, entails a thorough appraisal of the message arguments en route to making a judgment or choice. Note, however, that a high level of both motivation and ability are required for this type of processing to occur. Because, as noted above, the vast majority of individuals lack competence to process basic statistical information and may have little inclination to utilize such information even when it is readily available, most of the target market for a typical PPN is likely to engage in peripheral processing of the Prospectus and the numerical Examples contained therein. When processing marketing communications according to the peripheral route, the investor will use simplifying rules or peripheral cues to evaluate the message object—in this case, the expected return from the PPN. The following Sections establish more definitively that heuristic decision making will be utilized, describe the specific heuristics that consumers are likely to employ, and explain the implications for consumers' expectations about returns from the PPN.

We begin by examining the simplest approaches, those that an investor is most likely to use when evaluating the investment product. We then discuss the more quantitatively complex methods that investors *should* use, both to demonstrate the deceptive nature of the Examples and to establish the need for a different type of disclosure—one that the vast majority of investors would require to arrive at a more informed financial judgment and investment decision.

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38. *See* Robert A. Prentice & Jonathan J. Koehler, *A Normality Bias in Legal Decision Making*, 88 CORNELL L. REV. 583, 584–85 (2003) (observing that "a veritable mountain of scientific evidence now exists showing that decision makers" do not always act in "rational pursuit of self-interest").

39. Richard E. Petty et al., *Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement*, 10 J. CONSUMER RES. 135, 143 (1983) (finding that people process messages using heuristics when they lack sufficient motivation or ability to otherwise evaluate them).

1. Average

Behavioral research shows that one of the simplest and seemingly most reasonable approaches that investors might take when faced with the numerical Examples described above, and which are typical to PPN prospectuses, is to compute an annual return by simply *averaging* the numerical Examples provided. Indeed, research suggests that consumers are prone to rely on even a single example rather than attempt to deduce and utilize a rule to arrive at a judgment.[40] Moreover, as the rule becomes more complex, people become increasingly likely to rely on a single instance to render a judgment.[41]

Multiple examples, then, like the usual range of three to seven that are found in this type of prospectus, tend to provide the basis for an even more confident judgment.[42] Since most investors can perform the addition and division tasks required to compute the average of the examples that the issuer carefully chose for presentation, many investors who have adopted the peripheral approach to processing the prospectus would gravitate to this simplistic, low-effort approach. Interestingly, these reasonable investors would estimate that the PPN is expected to produce an annual return of about 10.9% per year. While this estimate is probably somewhat higher than a sophisticated investor might anticipate, a significant proportion of consumers would likely find it plausible because it is derived from a market sector that has achieved above-average growth and is not much higher than the long-term return on U.S. equities.[43] Other investors discount this estimate slightly in view of the source of the information.[44] While an outcome this favorable to the investor is possible, as we have noted, it is not very likely.

In reviewing a prospectus, the investor would actually like to know, estimate, or compute the long-term return from the biotechnology index when quarterly returns are capped at 7%—that is, the expected return from the PPN. Instead, the heuristic approach adopted by simply utilizing the average of the issuer's selected examples (i.e., a peripheral cue) assumes that they provide a reasonable, if not unbiased, estimate of the expected return.

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40. Stephen J. Read, *Once is Enough: Causal Reasoning from a Single Instance*, J. OF PERSONALITY & SOC. PSYCHOL., Aug. 1983, at 323 (establishing that even when a rule is relatively simple, people tend to use a single, similar example to predict an outcome of interest).

41. *Id.*

42. *See* Stephen G. Harkins & Richard E. Petty, *The Multiple Source Effect in Persuasion: The Effects of Distraction*, 7 PERSONALITY & SOC. PSYCHOL. BULL. 627, 633–34 (1981) (explaining the incremental effectiveness of multiple sources in terms of people's additional message elaboration).

43. IBBOTSON & ASSOCS., 2009 STOCKS, BONDS, BILLS AND INFLATION YEARBOOK 25–27 (2009) (utilizing data since 1926 to establish that the long-run rate of return for investors approximates 10%).

44. Donald R. Lichtenstein et al., *Marketplace Attributions and Consumer Evaluations of Discount Claims*, PSYCHOL. & MARKETING, Fall 1989, at 163, 203–04 (demonstrating that when the marketer supplies a numerical reference value, even skeptical consumers use the marketer's reference price to assess the value of the offer).

2. Weighted Average

The preceding discussion regarding the investor who simply computes the arithmetic mean of the Examples to estimate the expected return begets the question of whether a more diligent prospective purchaser might go a step further and weight the outcomes or categories of outcomes by subjective likelihood of occurrence. This is not feasible for three reasons. First and foremost, it simply is not evident how the weighting should be undertaken. Second, the investor who seeks to categorize the Examples into types of outcomes must determine if other important outcomes have been omitted entirely from the set of Examples. Specifically, as noted above, the Examples do not include one in which the underlying Index appreciates substantially (e.g., 50–100%) while the PPN return is negative.[45] Behavioral research shows that this subtask is generally complex[46] and, in this case, is likely to be prohibitively difficult. Third, and perhaps more importantly, the collective body of research on numeracy and decision making in contexts including financial planning, human health, and other life and death decisions indicates that this approach to problem solving would necessitate a level of both statistical competence and motivation that the target market lacks.[47] Consequently, it is unlikely that many investors, if any, would use this approach.

3. Adjusted Expected Long-Term Return

Another alternative approach an investor might employ to assess the investment's potential outcome would be to use the expected long-term return from equities in general or the Biotech Index in particular and adjust for the periodic cap (e.g., 7% per quarter in this case). Research on decision maker miscalibration indicates that investors are highly likely to underestimate the range of quarterly outcomes and thereby fail to recognize the impact of the quarterly cap on the product of the adjusted quarterly returns.[48] As noted above, the Examples reinforce this cognitive bias by showing that the return to the PPN investor equals the return to the pure equity investor in six out of seven cases. Additional CIP research, germane to how prospective investors might arrive at an estimate of the expected long-term reward from the PPN, shows a strong tendency for the decision maker to anchor and (under-) adjust.[49] In this case, if the investor anchors on either the average of the PPN examples or the long-term return from equities and then

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45. *See* BOR.P Prospectus, *supra* note 15, at PS-7 to -13. For this PPN, when the index-based supplemental return is negative, the investor receives back the principal plus 5% at maturity for a compound annual return of under 1% per annum. For other similar PPNs, the minimum supplemental return is zero. *Id.*

46. Wason & Johnson-Laird, *supra* note 34, at 509.

47. *See, e.g.*, Ellen Peters et al., *Numeracy and Decision Making*, 17 PSYCHOL. SCI. 407 (2006) (linking lower numeracy to more suboptimal choices, and finding that highly numerate adults are more likely to retrieve and use appropriate numerical principles and transform numbers presented in one frame to a different frame).

48. *See* Lichtenstein et al., *supra* note 37, at 330.

49. *See* Tversky & Kahneman, *supra* note 31, at 1128–29 (revealing that decision makers will use a virtually irrelevant anchor to arrive at an initial estimate, from which they often under-adjust).

attempts to adjust for the quarterly cap, the result is likely to be an under-adjustment and an inflated view of the likely rewards.

Furthermore, even though the prospectus points out the proportion of periods in which the cap was operative (e.g., 21% in the case of BOR.P), this is completely uninformative with respect to the impact of the periodic cap on the return from the PPN. The subtle but important distinction between the proportion of return lost, given that the cap was operative, and the marginal probability that the cap was exceeded, is the type of understanding that the body of research on numeracy makes abundantly clear is beyond the comprehension of most individuals.[50]

4. Back-Test of Historical Data Provided

A fourth possible approach that investors who are skeptical of the average of the Examples might take would be to back-test the performance of the PPN based on the historical data provided. For some PPNs, this method is not feasible due to the short life of the underlying security or unavailability of the data even if it was extant for a sufficient period of time to be meaningful. In the case of BOR.P, the Index had existed in its then current form for almost fifteen years, and complete data were included in the prospectus. On the surface, this appears to be exemplary disclosure by the issuer. However, to actually employ this analytical approach the investor must first peruse the 100-page prospectus thoroughly enough to uncover these data; second, the investor must be sufficiently motivated to exert the effort to input the data into an appropriate statistical program; third, he must be capable of designing the statistical formulas and spreadsheet needed to perform the computations; and fourth, the investor must be able to interpret the resulting output.

While no published studies examine this exact skill set in the relevant investor population, behavioral research does shed light on these issues. This research includes studies that find what may be referred to "limited-information seeking behavior," and those that show low levels of ability to use the information that is obtained.[51] In terms of consumers' willingness to exert the effort to thoroughly examine a lengthy prospectus, research consistently finds an "inverted-U" relationship between prior perceived knowledge and information search. First, when consumers are confident in their prior knowledge about market prices or product quality, they see little incremental benefit from acquiring further data and so engage in limited information seeking. Given the robustness of overconfidence across a wide array of respondent populations and content domains, this will certainly apply to some investors. Equally if not more applicable to the current

50. *See* John Cohen et al., *Evaluation of Compound Probabilities in Sequential Choice,* 232 NATURE 414 (1971) (finding that tasks requiring complex calculations result in predictable systematic biases).

51. Julie L. Ozanne et al., *Study of Information Search Behavior During the Categorization of New Products*, 18 J. CONSUMER RES. 452, 453 (1992) (predicting and confirming that high and low knowledge results in limited search); Joel E. Urbany et al., *Buyer Uncertainty and Information Search*, 16 J. CONSUMER RES. 208, 212 (1989) (showing, in a field study, that people search less than expected for a durable good and that their level of knowledge uncertainty has a weak, negative effect on their search).

context are studies of consumers' shopping behavior that find limited searches by consumers who realize they have low prior knowledge pertinent to the decision at hand. For these consumers, the effort to determine where and how to search for relevant information is an impediment to further search.[52] Relatedly, with low knowledge (or numeracy in our case), it is often prohibitively difficult for the consumer to formulate a diagnostic question for further inquiry,[53] much like the student who has not done enough homework to ask an intelligent or even relevant question in class. Consequently, consumers with both high and low subjective knowledge typically engage in limited information-seeking behavior. Only the mid-level knowledge group possesses enough motivation and ability to behave like homo economicus.

In terms of ability to utilize the available numerical information, research in both cognitive psychology and marketing indicates that most adults are unable to compute compound price discounts on product offerings.[54] Thus it is unlikely they would be able to recognize the types of asymmetries needed to design and interpret the formulas for conducting the back-test that would be entailed here. Indeed, field studies in which consumers' real money is at stake corroborate these findings and lend credibility to the argument that individuals will not undertake this kind of analysis before investing.[55]

Other studies likewise indicate that very few individuals would be *able* to conduct the back-test correctly. For example, a surprisingly high number of highly educated adults are unable to convert percentages to proportions.[56] Also, the format in which basic statistical information is presented affects people's interpretations.[57] Since only a subset of the potential investor group would have located the data, and an even smaller subset of investors would have been motivated to go further, one can conclude that only a tiny fraction of the target

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52. *See, e.g.*, Hal R. Arkes, *The Costs and Benefits of Judgment Errors: Implications for Debiasing*, 110 PSYCHOL. BULL. 486, 486–87 (1991) (noting that the extra effort required to use a more sophisticated strategy is a cost that often outweighs the potential benefit of enhanced accuracy).

53. Haipeng Chen & Akshay R. Rao, *When Two Plus Two is Not Equal to Four: Errors in Processing Multiple Percentage Changes*, 34 J. CONSUMER RES. 327, 327 (2007) (finding that even when task is familiar to respondents, their low level of numeracy results in predictable, biased decisions); Justin Kruger & Patrick Vargas, *Consumer Confusion of Percent Differences*, 18 J. CONSUMER PSYCHOL. 49, 49 (2008) (showing that respondents misinterpret percentage differences in prices as well as attribute information in evaluating brands).

54. Chen & Rao, *supra* note 53, at 327; Kruger & Vargas, *supra* note 53, at 49.

55. Haipeng Chen et al., Interpreting Percentage Changes: The Role of Base Value Neglect (Jan. 2010) (unpublished manuscript) (on file with authors).

56. Lipkus et al., *supra* note 36, at 39 (finding that between 20 and 30% of a highly educated sample of respondents could not accomplish this simple mathematical task).

57. *See* Peters et al., *supra* note 47, at 407; Stacey L. Sheridan et al., *A Randomized Comparison of Patients' Understanding of Number Needed to Treat and Other Common Risk Reduction Formats*, 18 J. GEN. INTERNAL MED. 884, 884 (2003) (finding that adults' evaluation of alternative medical treatments varied significantly as a function of presentation format).

market would be able to base the investment decision on this more sophisticated approach. In fact, given that the back-test reveals that the expected return from the PPN is unlikely to exceed zero,[58] it is likely that any investors able to conduct such verification would decline to invest.

5. Monte Carlo Simulation

A fifth, and even less likely, approach that investors could use to estimate the expected return from this PPN is a Monte Carlo Simulation. While this model is now making inroads among leading financial planners, it is almost unheard of by individual investors.[59] To implement this approach, historical data on the mean and standard deviation of returns of the underlying index are first obtained. Tens of thousands of years of prices can then be simulated to achieve a far better estimate of future returns from the PPN than can be achieved by simply looking at the past decade or so. This is true because the pattern as well as the absolute magnitude of quarterly returns will affect the investor's outcome with the PPN. By generating a very large number of realistic patterns of prices by way of simulation, the likelihood of various outcomes can then be estimated with a far greater degree of precision than through the aforementioned back-test.[60] This approach is widely used by academics to model stocks' prices over time.[61] Unfortunately, developing a customized model to mirror a specific application for which canned software is unavailable would require a master's level or higher degree of expertise in statistics, finance, and computer science.

B. Reality: Innumerate Investor Expectations

Thus, the vast majority of investors in the typically innumerate target market for PPNs would be incapable of or otherwise unlikely to engage in the type of analysis that would enable an assessment of the Examples' actual predictive value or their representativeness of financial outcomes. Instead, investors seeking to evaluate the investment via validity of the Examples are likely to default to *predictable* manipulations of the numbers presented, resulting in *inevitably* mistaken inferences about their likely investment outcomes. And those mistaken inferences are unlikely to be mistakenly pessimistic.[62] Instead, they tend to paint a skewed and highly inflated picture of the investment's potential upside. When considered in the light of the actual investment outcomes of the lion's share of these PPNs, it appears that consumers' expectations of equity-like returns with little risk to principal have been manipulated.

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58. *See infra* Appendix B.

59. *See* Marmorstein et al., *supra* note 8, at 64.

60. JOHN HULL, OPTIONS, FUTURES AND OTHER DERIVATIVES 214–20 (1989).

61. *Id.*; *see also* Phelim P. Boyle, *Options: A Monte Carlo Approach*, 4 J. FIN. ECON. 323 (1977).

62. Other prospectuses for principal protected notes can be viewed at online repositories. *See, e.g.*, *Information for Income Investors*, QUANTUMONLINE.COM, http://www.quantumonline.com (last visited July 11, 2010); *Structured Retail Products*, STRUCTUREDRETAILPRODUCTS.COM, http://www.structuredretailproducts.com (last visited July 11, 2010).

In fact, this marketing practice, utilizing numerical examples to illustrate hypothetical investment outcomes, may be deceptive by design. But even if it is not—and it *is* intended to portray a fairly balanced set of potential results—current and well-established research in the field of consumer information processing tells us that most investors cannot help but be deceived by this type of disclosure. Surely this is a social and market ill to be avoided. Does current law enable or discourage this latent and powerful form of deception? The next Part assesses the state of relevant law in an effort to place some legal parameters on this practice.

III. THE LEGAL ENVIRONMENT IN WHICH THIS OFFERING PRACTICE FLOURISHES

The basic principles of law governing the research question are fairly straightforward. The Securities Act of 1933 requires disclosure of material facts through a registration statement, and it proscribes fraud in connection with statements made in the prospectus used to market the issue.[63] The Securities & Exchange Act of 1934 prohibits making any false or *misleading* statement in connection with a purchase or sale of securities, governing all material communications that influence the reasonable investor's purchase or sale.[64] Intended to establish a broad disclosure paradigm with a remedial anti-fraud purpose,[65] these two statutes are augmented by a host of regulations and interpretive case law.

More specifically, two sections of the '33 Act are relevant to the instant inquiry. These are sections 11 and 12(a)(2).[66] Each prohibits securities fraud arising out of an offering, and each is enforced by a private right of action. Section 11 imposes strict liability on the issuer for misstatements or omissions in the '33 Act registration statement.[67] In a broader fashion, section 12(a)(2) provides

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63. Securities Act of 1933, 15 U.S.C. §§ 77a–77bbbb (2006).

64. Securities Act of 1934, 15 U.S.C. §§ 78a–78oo. FINRA Rule 2210 regarding "fair and balanced" advertising and FINRA Rule 2310 regarding "suitability" of investments also apply more indirectly, i.e., regarding liability for sales by brokers of the structured products under consideration here. FIN. INDUS. REG. AUTH., FINRA MANUAL, *available at* http://finra.complinet.com (last visited Aug. 2, 2010).

65. The "fundamental purpose . . . [of the federal securities laws is] to substitute a philosophy of full disclosure for the philosophy of *caveat emptor* and thus to achieve a high standard of business ethics in the securities industry." SEC v. Capital Gains Research Bureau, 375 U.S. 180, 186 (1963).

66. Securities Act of 1933 §§ 11, 12(a)(2), 15 U.S.C. §§ 77k, 77*l* (2006). Section 17(a), 15 U.S.C. § 77q(a)(2), does not give rise to a private right of action. Touche Ross & Co. v. Redington, 442 U.S. 560, 578 (1979).

67. Securities Act of 1933 § 11, 15 U.S.C. § 77k. Section 11(b) leads to liability for every other signer of the prospectus who cannot make out a due diligence or expertise defense. *See* Herman & MacLean v. Huddleston, 459 U.S. 375, 381–82 (1983).

Section 11 expressly provides for a private right of action brought by "any person acquiring" a security "[i]n case any part of the registration statement, when such part became effective, contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading." 15 U.S.C. § 77k(a).

liability for misrepresentations in connection with an offer or sale of a security that is part of a general distribution of securities by an issuer.[68]

The '34 Act's general anti-fraud provision is found in section 10(b), which forbids the use of manipulative or deceptive devices in connection with the purchase or sale of a security.[69] Finally, in section 10(b)'s penumbra sits Rule 10b-5,[70] the now familiar SEC rule under which the courts have implied a private right of action for nearly 60 years.[71]

Severally and as a group, these statutes and SEC rules seek to prohibit not only outright misstatements in connection with the issuance and subsequent sale of securities, but also lies of omission.[72] Indeed, it is beyond cavil that the federal securities regulatory scheme is designed to provide investors with the disclosures

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68. 15 U.S.C. § 77*l*(a)(2) (2006). Section 12 of the '33 Act gives purchasers a private right of action against:

> any person who . . . offers or sells a security . . . by means of a prospectus or oral communication, which includes an untrue statement of a material fact or omits to state a material fact necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading (the purchaser not knowing of such untruth or omission).

The Supreme Court has held that section 12 of the Act applies only to public offerings by issuers and an issuer's controlling shareholders. Gustafson v. Alloyd Co., 513 U.S. 561, 569 (1995). Courts have interpreted *Gustafson* to limit the protections of section 12(a)(2) to original purchasers in a public offering. *See, e.g.*, *In re* Sterling Foster & Co., 222 F. Supp. 2d 216, 244 (E.D.N.Y. 2002).

69. Securities Act of 1934 § 10, 15 U.S.C. § 78j. Section 10(b) of the '34 Act provides:

> It shall be unlawful for any person, directly or indirectly, [t]o use or employ, in connection with the purchase or sale of any security . . . any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.

70. 17 C.F.R. 240.10b-5 (2006). The language of Rule 10b-5 echoes that of Section 17 of the '33 Act:

> It shall be unlawful for any person, directly or indirectly, to make any untrue statement of material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstance in which they were made, not misleading . . . in connection with the purchase or sale of any security.

71. Despite the age and ubiquity of the private suit for "10b-5" securities fraud, the Supreme Court only recently articulated the elements necessary to prove a 10(b) claim. Dura Pharms., Inc. v. Broudo, 544 U.S. 336 (2005). These are: (1) a material misrepresentation or omission, (2) scienter, (3) a connection between the misrepresentation or omission and the purchase or sale of a security, (4) reliance upon the misrepresentation or omission, (5) economic loss, and (6) loss causation. *Id.* at 341–42.

72. An interesting question is whether half-truths can or should be make actionable. *See generally* Donald C. Langevoort, *Half-Truths: Protecting Mistaken Inferences by Investors and Others*, 52 STAN. L. REV. 87 (1999) [hereinafter Langevoort, *Half-Truths*] (observing that half-truths are subject to a more relaxed liability doctrine than exists under the common law of fraud, in light of the need for corporate secrecy and the multiplicity of functions corporate disclosures may play depending on specific audience).

they need to make informed investment decisions and to penalize those who intentionally or recklessly deceive investors.[73] Thus, not only are outright falsehoods prohibited, but so are misleading statements and omissions, as well as the broader category of "manipulative and deceptive devices."[74] Case law fleshes out this strong regulatory skeleton.

The following three Sections address the most relevant areas of this regulatory milieu. First, the case law bearing generally on disclosures that employ or require mathematical operations is addressed. Second, the concept of the Examples as the functional equivalent of projections is introduced, and the attendant SEC regulation and case law is discussed. Finally, the puffery doctrine and its application to this scenario is addressed, so as to dispose of a plausible counterargument.

A. Judicial Prescriptions Regarding Form of Disclosure, Specifically Mathematical Calculations

> *People often defend themselves against charges of deception by pointing out the technical accuracy of what they said, expecting significantly less blame if not total absolution.*
>
> *– Donald C. Langevoort, Half-Truths: Protecting Mistaken Inferences by Investors and Others*

The Examples are mathematically correct. But technical accuracy is not the goal of the federal regulation of prospectuses and other investor communications. Technically true statements can be misleading; that is the arena into which we now tread. We find no reported opinion addressing the question of whether the use of a set of mathematical examples of the sort here described is fraudulent or otherwise impermissible under the federal securities laws. There is, however, both general and specific case law revealing an intention to prohibit such disclosures.

1. The Way in Which Information Is Disclosed Matters

Let us start with the fundamental legal proposition, once articulated by a New York federal district court in 1967, that "[t]here is no requirement that a material fact be expressed in certain words or in a certain form of language."[75] This is indisputable. What form disclosures take vis-à-vis investors' ability to decipher them, however, is another question. In fact, there are substantive limits on a disclosure's format. At one end of the spectrum, "corporations are not required to address their stockholders as if they were children in kindergarten."[76] On the other

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73. *See, e.g.*, Paula J. Dalley, *The Use and Misuse of Disclosure as a Regulatory System*, 34 FLA. ST. U. L. REV. 1089 (2007) (using the securities laws as a paradigm for discussion and setting forth the various underlying purposes of the system); *see also* THOMAS LEE HAZEN & DAVID L. RATNER, SECURITIES REGULATION 158 (6th ed. 2003) ("The supposed objective of the 1933 Act is to produce a document which tells a prospective purchaser the things he really ought to know before buying a security.").

74. 15 U.S.C. § 78j(b) (2006).

75. Richland v. Crandall, 262 F. Supp. 538, 553–54 (C.D.N.Y. 1967).

76. *Id.* at 554.

end, Judge Friendly admonished in reply that "it is not sufficient that overtones might have been picked up by the sensitive antennae of investment analysts."[77] Somewhere in between are the ad hoc facts of a multitude of cases parsing particular words or forms of language. In this milieu, courts have held that literal truth is not the object of the federal securities laws. Instead, even where the statements made are technically accurate, the prominence of—or obscurity of—subject disclosures can result in liability.

Several circuit courts have undertaken to answer the question of whether the way in which information is disclosed matters. Those courts have answered in the affirmative. For example, in *Greenapple v. Detroit Edison Co.*,[78] the Second Circuit reviewed the misleading nature of the defendants' disclosures in a prospectus, operating from the stated premise that the factual matters the prospectus recited were true. In that setting, the court noted that "notwithstanding the broad discretion which issuers have in assembling and organizing their data, where the method of presentation obscures or distorts the significance of material facts, a violation of Section 11 will be found."[79] Similarly, the Fifth Circuit has ruled that "emphasis and gloss" placed on disclosures can give rise to liability under Rule 10b-5.[80]

Indeed, *Greenapple* may have given birth to the "buried facts" doctrine, which deems a disclosure inadequate where important information is hidden in a voluminous document or is disclosed in a piecemeal fashion that prevents a reasonable shareholder from realizing the "correlation and overall import of the various facts interspersed throughout."[81] This conception is sometimes labeled the

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77. Gerstle v. Gamble–Skogmo, Inc., 478 F.2d 1281, 1297 (2d Cir. 1973) (deciding a case under Rule 14a-9 proxy regulations).

78. 618 F.2d 198 (2d Cir. 1980).

79. *Id.* at 205. The focus of the case was not on mathematical formulas or numerical examples, but instead on the "propriety of the explanatory and collateral references" to certain accounting treatment relevant to "allowance for funds used during construction." *Id.* at 205–06.

80. Isquith v. Middle S. Util., 847 F.2d 186, 203 (5th Cir. 1988); *see also* Werner v. Werner, 267 F.3d 288, 297 (3d Cir. 2001) (deeming disclosure inadequate where it is presented in form that "conceals or obscures" the necessary information); Feit v. Leasco Data Processing Equip. Corp., 332 F. Supp. 544, 565 (E.D.N.Y. 1971) (disapproving disclosures which, while technically accurate, were "calculated to communicate as little of the essential information as possible while exuding an air of total candor"); Gould v. Am. Hawaiian S.S. Co., 331 F. Supp. 981 (D. Del. 1971) (noting the importance of emphasis and placement or location of information within disclosures); Kohn v. Am. Metal Climax, Inc., 322 F. Supp. 1331, 1362 (E.D. Penn. 1970) (holding that material facts may not be "buried" in explanatory materials).

81. *See, e.g.*, Kas v. Fin. Gen. Bankshares, Inc., 796 F.2d 508, 516 (D.C. Cir. 1986) (finding that for the buried facts doctrine to apply, "there must be some conceivable danger that the reasonable shareholder would fail to realize the correlation and overall import of the various facts interspersed throughout the proxy"); Kennedy v. Tallant, 710 F.2d 711, 720 (11th Cir. 1983) ("Full and fair disclosure cannot be achieved through piecemeal release of subsidiary facts which if stated together might provide a sufficient statement of the ultimate fact.").

"equal prominence" rule.[82] An extension of this doctrine is what Professor Hoffman calls the "understand consequences technique" used by courts to dismiss claims of securities fraud under the theory that investors should understand—and therefore issuers need not explain—the likely financial or other consequences of the disclosures an issuer does make.[83]

None of these general principles of law disposes of the specific question presented here, but the cited opinions do provide the jurisprudential backdrop necessary to assess the specific legal problem posed by the use of Examples in offering memoranda.

2. Issuers Need Not Perform Simple Mathematical Calculations for Investors

Moving from the general to the more specific, and to what is perhaps more closely analogous case law, several reported opinions have addressed an investor's ability or need to perform mathematical calculations to assess the import of facts and figures provided in disclosures.[84] The Third Circuit's *Ash v. LFE Corp.*[85] involved disclosures in proxy materials of proposed pension plan changes. The plaintiff alleged, *inter alia*, that lack of clarity with respect to the financial interests of the directors in connection with the proposed new retirement plan was the equivalent of "actual concealment."[86] The directors' and officers' remuneration was set forth in tabular form, with one column tabulating estimated annual retirement benefits under the existing plan. A note to that column cross-referenced the new plan and set out the dollar amounts of the three eligible officers' and directors' annual pension entitlements under the new plan. Nowhere did the proxy solicitation express the dollar difference between their annual pensions under the

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82. Kohn v. Am. Metal Climax, Inc., 458 F.2d 255, 267 (3d Cir. 1972) (cautioning that "[r]easonable latitude in this area is important if nit-picking is not to become the name of the game"); *see also* Mills v. Elec. Autolite Co., 403 F.2d 429, 434 (7th Cir. 1968), *vacated*, 396 U.S. 375 (1970); Beatty v. Bright, 318 F. Supp. 169, 174 (S.D. Iowa 1970).

83. David A. Hoffman, *The "Duty" to Be a Rational Shareholder*, 90 MINN. L. REV. 537 (2006) (reviewing, empirically, 471 materiality cases from the Second Circuit and its district courts and the reasons for their dismissal). Professor Hoffman deems this an inversion of the buried facts doctrine. *Id.* at 582 n.209. One court put the following spin on that concept: "defendants need not label or editorialize on the disclosed facts." *Kas*, 796 F.2d at 517.

84. *See generally* Stefan J. Padfield, *Who Should Do the Math? Materiality Issues in Disclosures that Require Investors to Calculate the Bottom Line*, 34 PEPP. L. REV. 927 (2007) (articulating a "Simple Math" rule whereby courts decline to hold disclosures deficient where investor could do simple calculations to discern the import of facts disclosed). *Cf.* Hume v. United States, 132 U.S. 406, 413 (1889) (characterizing a number of English fraud cases as "cases in which one party took advantage of the other's ignorance of arithmetic to impose upon him, and the fraud was apparent from the face of the contracts").

85. 525 F.2d 215 (3d Cir. 1975).

86. *Id.* at 218.

old plan and under the new plan, which represented the amount of money at stake for the purportedly biased directors.[87]

The *Ash* court concluded that the issuer had disclosed the relevant facts "prominently and candidly" and accordingly found the failure to perform the necessary subtraction immaterial: "[w]e decline to hold that those responsible for the preparation of proxy solicitations must assume that stockholders cannot perform simple subtraction."[88] This is a rational and justified result given the facts of the case. No argument was made that anything more than "simple arithmetical computation" was necessary to understand the disclosures at hand. Thus the "Simple Math" rule was born.[89]

Thirty years later in 2005, the Third Circuit had occasion to revisit the intersection of disclosures, investors, and mathematical operations. The arithmetic involved in that case, *In re Merck & Co. Securities Litigation*,[90] was more compound—and involved many more zeros—but it was still within the realm of what a grade school student could be expected to accomplish without much difficulty. Merck disclosed that it had recognized as revenue patient co-payments it had not received and to which it was not entitled, but the company did not disclose the total accounting adjustment necessary until three months later. In the interim, a *Wall Street Journal* reporter estimated the staggering amount of the purported co-payment revenue involved "by using one assumption and performing one subtraction and one multiplication" on information contained in the company's form S-1.[91] According to the court, the reporter "determined the number of retail prescriptions filled (462 million) by subtracting home-delivery prescriptions filled (75 million) from total prescriptions filled (537 million). She then assumed an average $10 co-payment and multiplied that average co-payment by the number of retail prescriptions filled, to get $4.6 billion."[92] Her article in the *Journal* precipitated a decline in Merck's stock price, resulting in cancellation of a planned IPO of its wholly owned subsidiary, Medco. A class of Merck shareholders sued.[93]

On appeal, the Third Circuit identified the issue as "whether needing this amount of mathematical proficiency to make sense of the disclosure negates the disclosure itself."[94] Answering in the negative, with reference to its pronouncement in *Ash*, the court reasoned that the market was not deceived since "Merck was followed by many analysts," and therefore "the market made these basic calculations months [before the reporter published her estimate]."[95] Troubled, however, by the implications of its holding, the court noted:

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87. *Id.*
88. *Id.* at 219.
89. Padfield, *supra* note 84, at 928.
90. 432 F.3d 261 (3d Cir. 2005).
91. *Id.* at 270 (citing Barbara Martinez, *Merck Included Co-Payments Among Revenue*, WALL ST. J., June 21, 2002, at C1).
92. *Id.*
93. *Id.* at 263.
94. *Id.* at 270.
95. *Id.* at 270–71.

> But we do not wish to reward opaqueness. *We decline to decide how many mathematical calculations are too many* or how strained assumptions must be, but Merck was clearly treading a fine line with this delayed, piecemeal disclosure. It should have disclosed the amount of co-payments recognized as revenue in the April S-1; it should have disclosed this revenue-recognition policy as soon as it was adopted. Sunshine is a fine disinfectant, and Merck tried for too long to stay in the shade. The facts were disclosed, though, and it is simply too much for us to say that every analyst following Merck, one of the largest companies in the world, was in the dark.[96]

The *Merck* court's decision took the Simple Math rule one step farther than it had in *Ash*, in that Merck had failed to disclose the *assumption* needed to calculate the total amount of the improperly recognized revenue: the amount of the average co-payment. But given the basic availability of data necessary to make such an assumption, and the fact the case was a Rule 10b-5 class action suit based on the fraud-on-the-market theory,[97] it is unsurprising that the court decided as it did.

Notably, neither of these considerations is present in the case of PPNs offered to retail investors approaching retirement. Instead, these numerical disclosures are not widely available, as they are found in an offering prospectus distributed typically by a broker directly to individual investors, who use or may use the hypothetical return information to make investment decisions. Moreover, to the extent some of these PPNs are listed on and sold by way of a secondary exchange, they are somewhat illiquid and are not followed by securities analysts.[98] Therefore, they do not carry with them the same efficient market presumptions as equity securities in a large cap, publicly traded company like Merck & Co.,[99] presumptions which are instrumental to forming the basis for an open market fraud class action.[100] Given these critical distinctions between the facts in *Merck* and

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96. *Id.* at 271 (emphasis added). The court was undoubtedly referring, without citation, to Justice Brandeis's famous and modernly apt maxim: "publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman." LOUIS D. BRANDEIS, OTHER PEOPLE'S MONEY, AND HOW THE BANKERS USE IT 92 (1914).

97. The fraud-on-the-market theory furnishes plaintiffs a presumption of reliance as to public misrepresentations, and is available only in securities fraud cases involving efficiently traded securities. Basic Inc. v. Levinson, 485 U.S. 224, 241–42 (1988) (adopting efficient capital markets hypothesis in that context).

98. *See, e.g.*, Ann Tergeson, *Quirkiest Vehicle on the Street*, BUS. WK. (Nov. 20, 2006), http://www.businessweek.com/magazine/content/06_47/b4010107.htm (discussing the fact that most structured notes are thinly traded).

99. The efficient capital markets hypothesis states, *inter alia*, that prices of stocks that are widely and voluminously traded on public exchanges incorporate all available information, including that of the most sophisticated market participants—notably investment professionals and institutional purchasers with fiduciary duties to conduct formal due diligence regarding their investment choices. *See generally* Roger J. Dennis, *Materiality and the Efficient Capital Market Model: A Recipe for the Total Mix*, 25 WM. & MARY L. REV. 373, 374–381 (1984).

100. It is the *Basic* presumption of reliance that typically enables large numbers of diverse shareholders to participate in class actions fraud suits against issuers, because their

those in a hypothetical suit against the issuer of a PPN like the one described here, it is not unreasonable to conclude that this type of numeric sleight of hand might be deemed materially deceptive.

B. The Examples as Projections

Another area of extant securities law provides fertile ground for assessment of the lawfulness of the offering practice considered here: the law of forward-looking statements by issuers. At bottom, the Examples are forward-looking statements, *projections* of potential return for an investor in this PPN, masquerading as merely helpful, hypothetical illustrations of the operation of the PPN's complex Return Formula.

The use of projections and other forward-looking statements in issuer disclosures has a somewhat lengthy and checkered background. Historically, the SEC discouraged the disclosure of financial projections by issuers on the ground that they were likely to mislead investors.[101] For example, in 1956 the SEC added to Rule 14a-9[102] a note that listed "predictions as to specific future market values, earnings or dividends" as "examples of what, depending upon particular facts and circumstances, may be misleading" in proxy statements.[103]

But the traditional SEC position encountered substantial criticism in the early 1970s.[104] The foundation for this disparagement was that the potential for litigation arising from projections that did not materialize (whether or not liability in fact ensued) had chilled the dissemination of valuable, forward-looking information.[105] The wall excluding forward-looking statements from issuer

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"reliance stories" would otherwise vary significantly, preventing class certification. Donald C. Langevoort, *Theories, Assumptions, and Securities Regulation: Market Efficiency Revisited*, 140 U. PA. L. REV. 851, 890–92 (1992). Thus, where an investment does not trade in a "well-developed market," *Basic*, 485 U.S. at 246, misrepresentations about it do not lend themselves to forming the basis for a class action Rule 10b-5 suit based on the fraud-on-the-market theory. Without the availability of the class action to permit pooling of enforcement resources, the average investor's monetary loss typically is not sufficiently large to justify litigation. Paul G. Mohoney, *Precaution Costs and the Law of Fraud in Impersonal Markets*, 78 VA. L. REV. 623, 663 (1992) (advocating replacement of *Basic*'s fraud-on-the-market presumption with individual suits brought by those who can prove actual reliance).

101. *See, e.g.*, S. Coast Serv. Corp. v. Santa Ana Valley Irrigation Co., 669 F.2d 1265, 1271 (9th Cir. 1982); Gerstle v. Gamble-Skogmo, Inc., 478 F.2d 1281, 1292–94 (2d Cir. 1973); *see also* Starkman v. Marathon Oil Co., 772 F.2d 231, 239–40 (6th Cir. 1985); Flynn v. Bass Bros. Enters., 744 F.2d 978, 985 (3d Cir. 1984).

102. Rule 14a-9, 17 C.F.R. § 240.14a-9 (2009), promulgated by the SEC pursuant to § 14(a) of the Securities Exchange Act of 1934, 15 U.S.C. § 78n(a) (2006), regulates disclosures in proxy statements.

103. Adoption of Amendments to Proxy Rules, Exchange Act Release No. 5276, 21 Fed. Reg. 578 (Jan. 30, 1956).

104. *See* THOMAS HAZEN, THE LAW OF SECURITIES REGULATION 78 (1985) (citing commentators); ALLAN BROMBERG & LOUIS LOWENFELS, SECURITIES FRAUD AND COMMODITIES FRAUD § 6.5 (431)(3), at 136.123 (1985) (same).

105. *See* Carl W. Schneider, *Nits, Grits, and Soft Information in SEC Filings*, 121 U. PA. L. REV. 254, 255, 260 (1972). For a more in-depth discussion of the SEC's

disclosures eventually crumbled.[106] Today, three safe harbors inoculate forward-looking statements. These are SEC Rules 175 and 3b-6, enacted in 1978;[107] the judicially created "bespeaks caution doctrine" that has its roots in a opinion published in 1977 but which did not come fully into its own in the case law until about 1985;[108] and the Private Securities Litigation Reform Act's (PSLRA) safe harbor for forward-looking statements, enacted in 1995.[109]

All of these safe harbors operate in overlapping spheres.[110] Generally speaking, the regulatory safe harbor found in Rules 175 and 3b-6 applies to forward-looking statements in documents filed with the SEC and in annual reports to shareholders. The statutory safe harbor applies to forward-looking statements in all shareholder communications except those made in connection with the most inherently risky of securities transactions.[111] Finally, the judge-made bespeaks

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ambivalence with respect to this policy, see Bruce A. Hiler, *The SEC and the Courts' Approach to Disclosure of Earnings Projections, Asset Appraisals, and Other Soft Information: Old Problems, Changing Views*, 46 MD. L. REV. 1114 (1987), and John M. Olivieri, Note, *Liability for Forward-Looking Statements: The Securities and Exchange Commission's Ambiguous Stance*, 1993 COLUM. BUS. L. REV. 221, 223 (discussing history of change in SEC's practice).

106. So, to return to our example, in 1976 the SEC deleted earnings projections from the list of potentially misleading disclosures in the 14a-9 note. *See* Securities Act Release No. 5699 (April 23, 1976).

107. Safe Harbor Rule for Projections, Securities Act Release No. 6084, 44 Fed. Reg. 38,810, 38,814–15 (July 2, 1979) (codified at 17 C.F.R. § 240.3b-6).

108. The doctrine is recognized by most circuit courts of appeal. *See, e.g.*, Lilley v. Charren, 17 Fed. App'x 603, 607 (9th Cir. 2001); EP MedSystems, Inc. v. EchoCath, Inc., 235 F.3d 865, 873–80 (3d Cir. 2000); Parnes v. Gateway 2000, Inc., 122 F.3d 539, 545, 548 (8th Cir. 1997). The bespeaks caution doctrine recognizes that forecasts, projections, and expectations must be read in context and that accompanying cautionary language can render a misstatement or omission immaterial or render a plaintiff's reliance on it unreasonable. For a forward-looking statement to be covered by the bespeaks caution doctrine, there must be adequate cautionary language that warns investors of the potential risks related to the forward-looking statement. *See* Ann M. Olazábal, *Safe Harbor for Forward-Looking Statements Under the Private Securities Litigation Reform Act of 1995: What's Safe and What's Not?*, 105 DICK. L. REV. 1, 9–11 (2001). A full treatment of the bespeaks caution doctrine is beyond the scope of this Article. However, for a good introduction to it, see Donald C. Langevoort, *Disclosures that "Bespeak Caution,"* 49 BUS. LAW. 481 (1994) [hereinafter Langevoort, *Bespeak Caution*].

109. Private Securities Litigation Reform Act of 1995 §§ 27A(g), 21E(g), 15 U.S.C. §§ 77z-2, 78u-5 (2006). Notably, the legislative history of the PSLRA unequivocally indicates that the statutory safe harbor is not intended to replace the "bespeaks caution" doctrine or to preclude its further development in the courts. STATEMENT OF MANAGERS—THE "PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995," H.R. REP. NO. 104-369, at 46 (1995), *reprinted in* 1995 U.S.C.C.A.N. 679, 745.

110. Olazábal, *supra* note 108, at 10–12; *see also* Hugh C. Beck, *The Substantive Limits of Liability for Inaccurate Predictions*, 44 AM. BUS. L.J. 161 (2007).

111. 15 U.S.C. § 78u-5(b)(1)–(2) (2006) (excepting the following from statutory safe harbor coverage: initial public offerings; tender offers; "going private" transactions; the issuance of penny stocks; offerings by blank check companies; offerings by or statements made in relation to the operations of partnerships, limited liability companies, and direct participation investment programs; statements made in connection with rollup transactions;

caution doctrine acts as a safety net, applicable in any other situation in which the court determines that an optimistic projection or prediction has been neutralized by accompanying disclosures that "bespeak" caution.[112]

The contours of each of the three safe harbors are slightly different, but they are calculated to achieve the same purpose: honest disclosure of good faith projections and predictions and any underlying assumptions.[113] More specifically, the SEC's rules protect only those forward-looking statements made with a reasonable basis and in good faith.[114] The judicial bespeaks caution doctrine is more flexible, providing "a mechanism by which a court can rule as a matter of law . . . that defendants' forward-looking representations contained enough cautionary language or risk disclosure to protect the defendant against claims of securities fraud."[115] And the PSLRA's safe harbor contemplates, among other more limited possibilities,[116] the protection of forward-looking statements[117] that are "identified as such" and "accompanied by meaningful cautionary language."[118]

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those contained in the registration statements of investment companies; and Exchange Act Section 13(d) filings disclosing beneficial ownership).

112. Alan R. Palmiter, *Toward Disclosure Choice in Securities Offerings*, 1999 COLUM. BUS. L. REV. 1, 73 ("The judicial doctrine is thus significantly broader than the legislative safe harbor for forward-looking statements."); 15 U.S.C. §§ 77z-2, 78u-5.

113. By 1995, SEC rules 175 and 3b-6 were largely deemed failures in respect of encouraging the release of forward-looking information. *See* David M. Levine & Adam C. Pritchard, *The Securities Litigation Uniform Standards Act of 1998: The Sun Sets on California's Blue Sky Laws*, 54 BUS. LAW. 1, 43 (1998) ("Surveys showed that Rule 175 did little to encourage issuers to disclose forward-looking information to the marketplace."). Because the safe harbor rules were limited largely to documents filed with the SEC, there were many disclosure settings that remained unprotected from the cost of litigation when predictions did not come to pass. As a result, the SEC contemplated expanding the safe harbor's application. Safe Harbor for Forward-Looking Statements, Securities Act Release No. 33-7101, 59 Fed. Reg. 52,723, 52,728 (Oct. 19, 1994) (acknowledging that some felt the safe harbor's limitation to filed documents made it "too narrow" to effectively accomplish the stated purpose of encouraging forward-looking statements, and seeking public comment). But before it did so, Congress enacted the statutory safe harbor for forward-looking statements in the PSLRA of 1995, quelling what had been vigorous debate over the efficacy of the two regulatory safe harbor rules. *See* Susanna Kim Ripken, *Predictions, Projections, and Precautions: Conveying Cautionary Warnings in Corporate Forward-Looking Statements*, 2005 U. ILL. L. REV. 929, 945–46 (detailing objections to Congress's preemption of the SEC's regulation in this area).

114. *See* 17 C.F.R. § 230.175(a) (2009).

115. Langevoort, *Bespeak Caution*, *supra* note 108, at 482–83.

116. 15 U.S.C. §§ 77z-2(c), 78u-5 (other prongs of the safe harbor immunize immaterial forecasts and heighten the scienter level for forward-looking statements that are not identified as such and accompanied by meaningful cautionary statements).

117. The Examples' return projections do fit within the definition of "forward-looking statement" set forth in the statute: "a statement containing a projection of revenues, income (including income loss), earnings (including earnings loss) per share, capital expenditures, dividends, capital structure, or other financial items," or "a statement of future economic performance." 15 U.S.C. § 77z-2(i)(A), (C).

118. §§ 77z-2(c), 78u-5. The necessary meaningful cautionary language accompanying a forward-looking statement must "identify[] important factors that could cause actual results to differ materially from those in the forward-looking statement."

In adopting these rules, the SEC, courts, and Congress have all recognized that projections are valuable to the marketplace and have sought to encourage them. But they have also recognized that projections and predictions, more than other types of disclosures, are likely to engender undue reliance by investors.[119] The SEC thus sought to temper them with legal requirements that they be disclosed only with a reasonable basis and in good faith.[120] The courts and Congress have instead articulated a preference for additional risk disclosure—the so-called "grain of salt"—but this is to be provided *by the issuer* along with the forward-looking statement.[121]

At least in the BOR.P prospectus, when the Examples are discussed in narrative terms, they are denominated as merely "hypothetical."[122] The prospectus also adds that these "*may* not reflect actual returns."[123] As a matter of syntax and interpretation, though, this stock disclaimer language is ambiguous; it also can be

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§ 77z-2(c)(1)(A)(i). For more on what constitutes "meaningful cautionary statements," see Olazábal, *supra* note 2; *see also* Allan Horwich, *Cleaning the Murky Safe Harbor for Forward-Looking Statements: An Inquiry into Whether Actual Knowledge of Falsity Precludes the Meaningful Cautionary Statement Defense*, 35 J. CORP. L. 519 (2010).

119. *See, e.g.*, Wielgos v. Commonwealth Edison Co., 892 F.2d 509, 514 (7th Cir. 1989) (noting that statements concerning the future are less reliable than those about the past, and that investors might easily be misled by the former).

120. Comment letters submitted to the SEC in connection with the proposed rules quibbled that any forward-looking statements made with a reasonable basis could not have been made except in good faith, therefore the two requirements were redundant. Safe Harbor Rule for Projections, Securities Act Release No. 33-6084, 44 Fed. Reg. 38,810, 38,811 (July 2, 1975). The Commission disagreed, choosing to maintain the requirement that forward-looking disclosures, to be protected by the regulatory safe harbor, be also made in good faith. *Id.* It is this component of the rules that is perhaps most applicable here.

121. To seek refuge in the statutory safe harbor, an issuer's forward-looking statement must be "identified as [such]" and "accompanied by meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statement." *See supra* note 118 and accompanying text. The case law decided under the bespeaks caution doctrine makes it abundantly clear that to avail itself of the doctrine, the issuer must have provided a sufficiently cautionary context for the projection or prediction. *See, e.g.*, *In re* Worlds of Wonder Sec. Litig., 35 F.3d 1407, 1413 (9th Cir. 1994) ("The bespeaks caution doctrine provides a mechanism by which a court can rule as a matter of law . . . that defendants' forward-looking representations contained enough cautionary language or risk disclosure to protect the defendant against claims of securities fraud.").

122. Appended to the Examples is the following statement:

> The examples of **hypothetical** payment calculations that follow are intended to illustrate the effect of general trends in the level of the AMEX Biotechnology Index on the Supplemental Redemption Amount payable at maturity for each $1,000 principal amount of the notes. Because these examples are based on **hypothetical** assumptions, such as the **hypothetical** specific closing levels of the AMEX Biotechnology Index as of the indicated Reset Dates, which may not reflect the actual performance of the AMEX Biotechnology Index during the term of the notes, the returns set forth in the tables may not reflect the actual returns.

BOR.P Prospectus, *supra* note 15, at PS-6.

123. *Id.* (emphasis added).

read to imply, and therefore contribute to any reader's misapprehension that, the Examples *may indeed* reflect actual returns. More importantly, from a legal perspective, this standard caveat is exactly the type of non-substantive boilerplate the SEC warned issuers against using to convey caution regarding projections, which Congress rejected in drafting its safe harbor for forward-looking statements, and which courts have long rejected in the context of the bespeaks caution doctrine.[124]

Analyzed from the perspective of current and historical regulation of projections, the Examples fall short. Taking into account their expected yet subtle effect, they appear to overtly flout regulatory objectives with respect to forward-looking statements. Back-testing of the historical data for the Biotech Index using BOR.P's Return Formula demonstrates that there is little likelihood of the average projected outcome ever materializing (i.e., the projections were made without a reasonable basis). Moreover, given the issuers' clear profit motive and the fact the Examples' average closely approximates the long term rate of return—which could otherwise only be explained as serendipity—not much of an inferential leap is needed to conclude that the Examples were selected intentionally to present a skewed "average" possible outcome, and so, were not made in good faith.[125]

Viewed in their most charitable light, the Examples purport to illustrate predicted or projected investment outcomes. Thus they should be treated as forward-looking statements, and if offered without a reasonable basis and good faith in their selection, they should be subject to civil liability for materially misleading investors. Further, as discussed in Part IV below, this particular offering practice is a proper subject of ameliorative regulation by the SEC. However, before addressing the advisability of such regulation, the following Section contemplates the argument that the illustrations are merely optimistic forecasts of potential financial outcomes an investor might possibly experience.

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124. The PSLRA's legislative history explains that "boilerplate warnings will not suffice . . . . The cautionary statements must convey substantive information about factors that realistically could cause results to differ materially from those projected in the forward-looking statement . . . ." STATEMENT OF MANAGERS—THE "PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995," H.R. REP. NO. 104-369, at 46 (1995), *reprinted in* 1995 U.S.C.C.A.N. 679, 742. Courts deciding cases under the bespeaks caution doctrine routinely reject boilerplate caveats or warnings as insufficient to render the prediction or projection nonactionable. *See, e.g.*, *In re* Donald J. Trump Casino Sec. Litig., 7 F.3d 357, 371–72 (3d Cir. 1993) ("[A] vague or blanket (boilerplate) disclaimer which merely warns the reader that the investment has risks will ordinarily be inadequate to prevent misinformation. To suffice, the cautionary statements must be substantive and tailored to the specific future projections, estimates or opinions in the prospectus which the plaintiff's challenge.").

125. Indeed, we may here have circumstantially established fraudulent intent. As Lord Hardwicke famously noted, "[fraud] may be apparent from the intrinsic nature and subject of the bargain itself; such as no man in his senses and not under delusion would make . . . ." Earl of Chesterfield v. Janssen, 28 Eng. Rep. 82, 101 (1751).

C. Possible Support for the Lawful Use of These Disclosures

Some might argue that the Examples amount to mere puffery.[126] Such an argument would posit that investors should expect that any disclosure depicting a hypothetical outcome is an exaggeration. In short, investors should know to take any such numbers provided by the issuer with a heavy dose of proverbial salt. Although this argument has some initial appeal, a deeper look at the puffery defense reveals its poor fit in this scenario.

When the puffery defense is successfully employed, the court finds the allegedly false or misleading statements to be immaterial, referring to them as merely optimistic or the product of expected salesmanship.[127] Despite scholarly arguments to the contrary,[128] some courts appear willing to take the puffery concept as far as to support the proposition that overstatement or embellishment by securities issuers is the norm.[129]

There are two reasons the puffery argument should not prevail in the case of hypothetical return projections in a prospectus. One is legal, and the other is practical. First, courts have been historically unwilling to apply a puffery defense outside the context of rosy but vague *generalizations*.[130] Relevant to our research question, courts that have been faced with specific numerical financial predictions have been disinclined to accept the puffery defense.[131] The Examples at issue here are specific numeric illustrations of potential financial results. While they are

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126. *See* R. Gregory Roussel, Note, *Securities Fraud or Mere Puffery: Refinement of the Corporate Puffery Defense*, 51 VAND. L. REV. 1049, 1056 (1998) (calling the puffery defense a "valid and justifiable attempt to defeat securities fraud claims").

127. *E.g.*, Nathenson v. Zonagen, Inc., 267 F.3d 400, 419 (5th Cir. 2001) (describing puffery as "generalized positive statements about a company's progress"); *In re* Advanta Corp. Sec. Litig., 180 F.3d 525, 538 (3d Cir. 1999) (describing puffery as "vague and general statements of optimism").

128. *See* Jennifer O'Hare, *The Resurrection of the Dodo: The Unfortunate Re-Emergence of the Puffery Defense in Private Securities Fraud Actions*, 59 OHIO ST. L.J. 1697 (1998) (arguing the puffery defense has no place in private securities litigation).

129. *See, e.g.*, Eisenstadt v. Centel Corp., 113 F.3d 738, 745–46 (7th Cir. 1997) (Posner, J.) (observing that corporate rhetoric has evolved to a point where language that overstates corporate prospects is the norm, and listeners gradually learn the "code"). Indeed, as Professor Langevoort has pointed out, puffery is endemic to corporate disclosure:

> [C]ompany executives have a strong incentive to style general corporate publicity to conform to a desirable image, the most common of which is one of confidence and control over its environment. While there is no doubt a self-serving element to this, that image-making is said to be necessary to capture desired resources for the firm from among a broad array of constituents, both internal and external. Displays of weakness, in other words, are to be avoided unless compelled.

Langevoort, *Half-Truths*, *supra* note 72, at 107.

130. *See* O'Hare, *supra* note 128, at 1711 & n.71.

131. So, for example, when an issuer stated that it "was 'confident of achieving 7% real earnings growth' in fiscal 1995," the court refused to deem the statement puffery, concluding that the issuer's representation was not a "vague expression of optimism" but instead an actionable "specific figure regarding a particular, defined time period." Weiner v. Quaker Oats Co., 129 F.3d 310, 320 (3d Cir. 1997).

hypothetical, they are far from vague.[132] In fact, they are intentionally selected by the issuer to illustrate the Return Formula. They can, deliberately or unintentionally, be chosen in a way that—in light of CIP principles and the investor's inevitable reaction to them discussed here—seriously and detrimentally influences the target market's investment choices. As such, the puffery doctrine should not immunize the Examples from liability.

Second, there are practical reasons the puffery defense would be stretched beyond its capacity as applied to the Examples. Even assuming investors are expected to routinely discount any positive assertions made by issuers,[133] the question becomes: how deep a discount? The relevant principles of consumer information processing tell us that discounting is probably already subsumed in the inferences investors draw from the numerical Examples. The typical innumerate investor—one who averages the Examples in the given set—intuits a potential annual return of 10.9%. This creates her base number. Taking into account assumed puffery, she might discount this to 7–8%.[134] But as we know, this return is highly unlikely in this investment scenario—and certainly is not supported by what the rare highly numerate investor would deduce from the history of the Index's performance.[135]

Bolstering the mistaken assumption that a 7–8% annual rate of return is a reasonable inference to be drawn from the prospectus, the informed (yet innumerate) investor may in fact be doing more than just taking the average of the Examples with a grain of salt. That typical investor may in fact be placing this prospectus in context, weighing BOR.P's 10.9% "average of Examples" annual return against the widely accepted and publicized "long-run rate of return," which is about 10%,[136] and then discounting for the principal protection provided by this investment vehicle. Or, she could be comparing it to other PPNs available in the marketplace, the simplest of which, for example, offer principal protection and a

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132. As one court recently put it, "federal courts 'everywhere have demonstrated a willingness to find immaterial . . . loosely optimistic statements that are so vague, [and] so lacking in specificity . . . that no reasonable investor could find them important to the total mix of information.'" City of Monroe Emps. Ret. Sys. v. Bridgestone Corp., 399 F.3d 651, 669 (6th Cir. 2005) (quoting Shaw v. Digital Equip. Corp., 82 F.3d 1194, 1217 (1st Cir. 1996)). The Examples are far from loose optimistic statements; instead they portend specific financial outcomes, and given what we know about CIP, they are likely to improperly affect an investor's evaluation of the investment and thereby induce investment.

133. Among other scholarly commentators, Professor Alan Palmiter questions whether investors can be trusted to discount puffery, especially when it takes the form of forward-looking statements. Palmiter, *supra* note 112, at 73 ("[The statutory safe harbor] supposes a new breed of reasonable investor, not the prototypical guileless speculator for whom fraud liability imposed by a sympathetic judge is the last line of protection, but rather a wary analyst alert to the temptation of issuers to overestimate the future.").

134. *See* Tversky & Kahneman, *supra* note 31, at 1128.

135. *See supra* Part II.A.4 and associated references.

136. IBBOTSON ASSOCS., *supra* note 43 (utilizing data since 1926 to establish that the long-run rate of return for investors approximates 10%).

guaranteed return of 70–80% of that of the S&P 500.[137] It is not inconceivable that an informed yet innumerate investor who attempts to assess the likely potential return on BOR.P with the data provided by the issuer would conclude that her 7–8% return assumption is well-founded and reasonable.

The notion that the Examples should be deemed "mere puffery" highlights the very problem. Given what we know about the innumeracy of the retail investor base to which this type of product is most appealing, and the way these consumers will very predictably and incorrectly process the numerical information provided, the Examples have an inordinate capacity to leverage mistaken inferences and thereby induce an unwise investment. Indeed, the salesmanship involved here is much more than puffery. The Examples are specific, quantitative disclosures about perhaps the most material component of the investment decision (i.e., what is the potential return?), which, due to their nature, are highly likely to deceive the purchaser.[138]

IV. REGULATION AS THE SOLUTION

> *We must question whether the documents we are used to writing highlight the important information investors need to make informed decisions.*
>
> *– Former SEC Chair Arthur Levitt*

Behavioral scientists studying consumer information processing are not the only ones to have identified and decried a wide variety of old and new marketing methods that tend to deceive.[139] Commentators here and regulators abroad have already expressed concern about the marketing of this type of investment product to retail investors. And marketing messages like these, which imply typicality of results to those illustrated, also are the subject of scrutiny in other venues. This Part draws an analogy to the Federal Trade Commission's (FTC) recent reform of its regulations regarding endorsements. More specifically,

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137. *See, e.g.*, *Global Equities and Commodity Derivatives: Structured Products Handbook*, BNP PARIBAS (2009), https://eqd-globalmarkets.bnpparibas.com/our_products.aspx?Download=doc/sp_handbook.pdf.

138. Another practical counterargument might be that investors should seek investment advice from brokers or other knowledgeable advisors. If we accept this as another duty incumbent on investors, this still falls short of ameliorating the problem because an alarming number of investment advisors apparently do not understand these products. *See infra* notes 157–58 and accompanying text.

139. Indeed, this is the basis for most of the consumer protection provisions of the recently enacted Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010, which, *inter alia*, establishes the Consumer Financial Protection Bureau ("CFPB") to regulate "unfair, deceptive[] and abusive acts" that "trap [consumers] in unaffordable financial products" such as credit cards, payday loans, auto loans, and residential mortgages. COMM. ON HOUS., BANKING & URBAN AFF., RESTORING AMERICAN FINANCIAL STABILITY ACT OF 2010, S. REP. NO. 111-176, at 9–11, 17–23 (2010). In particular, the CFPB is tasked with "ensuring that consumers get clear and effective disclosures." *Id.* at 9. Retail investor protections are outside the purview of the CFPB, but are within the domain of the Dodd–Frank Act's new Office of the Investor Advocate and several new mandates to the SEC to study and improve disclosures made to retail investors. *See infra* note 147.

we show that, in light of CIP principles and inevitable investor innumeracy, the use of numerical examples presents a high likelihood of deception and a low level of verifiability. As such, the use of numerical examples to illustrate either possible investment outcomes or the operation of the investment's return formula ought to be regulated. This Part then sets out a number of policy arguments—both practical and academic—that militate in favor of focused regulation of this offering practice.

A. Regulation of Marketing Messages Implying Typicality

Despite the fact the SEC may have wrested control over the regulation of the marketing of securities away from the FTC, that body's research and regulation of consumer deception more generally is certainly pertinent to our research question. As part of its consumer-protection mission, the FTC has studied consumer responses to marketing messages for decades. Of particular interest here is the FTC's work on *typicality* of claims made in advertising by way of testimonials and endorsements, research which has been ongoing since before 1975.[140]

Even in a culture that tolerates significant advertising leeway, the FTC's most recent studies in this area led it, in October 2009, to revise its Guides Concerning the Use of Endorsements and Testimonials in Advertising to flatly state that endorsements about product performance are *likely* to convey an implied claim that the stated results are typical.[141] In other words, advertisements that include testimonials generally lead the consumer to infer that he or she will enjoy similar results as those touted by the testimonialist or endorser. And according to the FTC, such implied representations of typicality are deceptive if the testimonialist's results are not what consumers can generally expect from the use of the product or service. Because the FTC's research substantiates that disclaimers even stronger than "results not typical" are ineffective to overcome that deception, the FTC has now revised its safe harbor for testimonial ads to

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140. In 1975, when the FTC promulgated several sections of its Guides Concerning the Use of Endorsement and Testimonials in Advertising, it noted that consumers view endorsements as conveying typicality claims. Guides Concerning the Use of Endorsements and Testimonials in Advertising, 73 Fed. Reg. 72,374, 72,276, 72,379 (proposed Nov. 28, 2008) (to be codified at 16 C.F.R. § 255). Consequently, at that time the Commission required ads that represented performance that was not typical to "clearly and conspicuously disclose what the typical or ordinary performance would be." *Id.* (recounting history of the Guides, typicality claims, and the use of disclaimers). Five years later, notwithstanding a continued preference for such disclosure and a belief that "[g]enerally, a disclaimer alone probably will not be considered sufficient to dispel the representation that the experience is typical," the Commission acknowledged that disclaimers might not be inadequate in all circumstances. Endorsements and Testimonials in Advertising, 45 Fed. Reg. 3870, 3871 (Jan. 18, 1980). Thus, a safe harbor was established in 1980, sheltering such claims from legal assault if disclaimer language was present. *Id.*

141. Guides Concerning the Use of Endorsements and Testimonials in Advertising, 73 Fed. Reg. at 72,386–87; Guides Concerning the Use of Endorsements and Testimonials in Advertising, 74 Fed. Reg. 53,124, 53,138–43 (Oct. 15, 2009).

require *not* that they be accompanied by a disclaimer, as they had previously, but instead by a *disclosure of the results generally achieved by consumers*.[142]

The illustrative Example sets typified by BOR.P are analogous to a testimonial or endorsement that touts the testimonialists' results, with the carefully chosen Examples serving as the issuer's "testimonial" as to possible results. Both marketing messages lead to mistaken inferences of typicality.[143] Basic and more sophisticated principles of CIP and the study of numeracy tell us that investors improperly manipulate the numerical illustrations provided by the issuer in a *predictably* erroneous effort to intuit their likely (or at least possible) return on the investment, much as viewers of ads containing testimonials infer that at least fifty percent of those who use the product will have results at least as good as the low end of any range of results mentioned.[144]

Beyond the substantive similarity between these two types of marketing messages, the FTC and the SEC share a strong consumer protection mission.[145] Like the FTC, the SEC and securities case law have long rejected the doctrine of *caveat emptor*.[146] But the FTC regulates such implied messages of typicality quite explicitly, labeling them likely to deceive. The FTC's safe harbor now overtly encourages the disclosure of a consumer's likely average outcome based on

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142. Guides Concerning the Use of Endorsements and Testimonials in Advertising, 73 Fed. Reg. at 72,386–87; Guides Concerning the Use of Endorsements and Testimonials in Advertising, 74 Fed. Reg. at 53,138–43.

143. *See* Hans-Bernd Brosius & Anke Bathelt, *The Utility of Exemplars in Persuasive Communication*, 21 COMM. RES. 48 (1994) (showing that testimonials outweigh the impact of base rate information and that respondents generalize readily from exemplar outcomes to the general population).

144. For example, in their "Second Endorsement Study," Federal Trade Commission staffers studied ads featuring individuals who claimed quantified benefits from having used a weight loss program, a cholesterol lowering supplement, or a business opportunity. According to this empirical research, a claim like "I am earning an extra $2,200 a month" conveyed to between 32% and 57% of respondents that at least half of new users would achieve results similar to the endorser's. Guides Concerning the Use of Endorsements and Testimonials in Advertising, 73 Fed. Reg. at 72,378–79. Even with disclosures like "results not typical" and "these testimonials are based on the experiences of a few people; you are not likely to have similar results," between 23% and 50% of respondents thought that at least half of new users would achieve similar results. By contrast, consumers exposed to an advertisement in which testimonialists claimed to have lost forty-eight to seventy-two pounds, but which clearly disclosed that the average user loses ten pounds, only 3.23% of survey respondents thought after viewing the ad that at least half of new users would lose at least forty-eight pounds. *Id.*

145. While the FTC is "protecting America's consumers," *see* FTC, http://FTC.gov (last visited July 19, 2010), the SEC's primary function is as "the investor's advocate," *see What We Do*, FTC, http://sec.gov/about/whatwedo.shtml (last modified May 5, 2010) ("The mission of the U.S. Securities and Exchange Commission is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.").

146. The philosophy of *caveat emptor* has been expressly rejected in the arena of securities disclosures. *See, e.g.*, Va. Bankshares, Inc. v. Sandberg, 501 U.S. 1083 (1991); Asher v. Baxter Int'l Inc., 377 F.3d 727, 733 (7th Cir. 2004) (addressing the statutory safe harbor for forward-looking statements contained within the Private Securities Litigation Reform Act of 1995). *See generally* O'Hare, *supra* note 128, at 1697, 1715–18.

historical data whenever typicality of results might be implied. The SEC should follow suit. In the case of investment products made available to retail investors, the SEC should require hypothetical-return projections to more closely mirror the investment results investors are likely to achieve.[147]

B. Federal Regulation of Examples Is Both Necessary and Feasible

In 1989, Professor Roger Schechter considered the FTC's shifting policy then-to-date with respect to combating deception, and he established a new model for defining it.[148] Schechter's research led to the conclusion that "high influence" ads—those most likely to induce consumer action in response thereto—should be regulated even when only a small percentage of consumers interpret them in an inaccurate way.[149] He described high influence marketing messages as those with "high credibility" and "low verifiability."[150] According to Schechter, credibility is established by reference to such variables as the way in which the message is phrased, the identity of the advertiser, and where the message appears.[151] Verifiability, on the other hand, is established by such factors as what information the consumer already has (or can easily obtain) about the product and how much incentive the consumer has to secure alternative information. A consumer's level of information about the product, in turn, is highly dependent on what types of product traits are at issue and what the consumer can readily observe about the product either before or after purchase.[152]

While Shechter's work was limited to the traditional advertising context, it holds equally true in the context of prospectuses that send implied messages to potential investors. According to Schechter's model, the Examples would be classified as "highly credible" with "low verifiability." Examples like those found in the BOR.P prospectus are highly credible because of the setting in which they are offered (typically with a licensed securities broker's recommendation) and the identity of the issuer (many if not most PPNs were issued by large financial institutions with household names, like JP Morgan, Citibank, and Lehman

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147. The newly enacted Dodd–Frank Wall Street Reform and Consumer Protection Act gives the SEC a mandate to study and identify "methods to improve the . . . content, and format of disclosures to investors with respect to . . . investment products" and "the most useful and understandable relevant information that retail investors need to make informed financial decisions before . . . purchasing an investment product." H.R. 4173, 111th Cong. § 917 (2010). Under section 912, the SEC now has express authority also to field test such disclosures. § 912. We posit that the investor protection concern raised in this Article falls squarely within the purview of the newly established Investor Advocate. *See* § 916.

148. Roger Schechter, *The Death of the Gullible Consumer: Towards a More Sensible Definition of Deception at the FTC*, 1989 U. ILL. L. REV. 571.

149. *Id.* at 616–17.

150. *Id.* at 573, 616.

151. *Id.* at 612–13.

152. *Id.* at 614. Products and services generally have three types of traits: search (observable before purchase), experience (observable only after purchase), and credence (those that are not observable). *Id.* (citing Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 J.L. & ECON. 67 (1973); Phillip Nelson, *Information and Consumer Behavior*, 78 J. POL. ECON. 311 (1970)).

Brothers).[153] Further bolstering this already-high level of credibility is the common investor misconception that securities prospectuses have somehow been "vetted" by the SEC.[154] The Examples are also difficult for investors to verify given the infrequency with which an individual consumer will have encountered the specific structured product or structured products generally and the long period of time (five years) before which the paltry investment outcome will become apparent to the investor.

Because "high influence" marketing messages put consumers at a significant risk of acting to their detriment, implied claims contained therein should be considered deceptive whenever a "nontrivial number of consumers would likely interpret the advertisement in the hypothesized [incorrect] fashion."[155] As already established here, the Examples put most if not all reasonably educated investors at risk for a mistaken interpretation of their implied message.

Even investors who seek out and pay for appropriate investment advice are unlikely to overcome these cognitive hurdles to understanding structured notes. In 2005, the National Association of Securities Dealers (n/k/a FINRA)[156] issued a cautionary notice to its broker–dealer members, warning them of the enhanced risk of structured investment products to retail investors.[157] The prefatory remarks and recommendations the regulator made to its broker members imply that either securities brokers selling these investments to the public did not themselves understand them or they otherwise were not adequately explaining them to their clients.[158]

As a result, the SEC should both study the practice of using Examples typified by BOR.P and create protective regulations. These could be either in the form of uniform Example premises across issuers, the average of which does not exceed the investor's likely return, or a requirement like that of the FTC that the average expected return be disclosed if any projection at all is made. Importantly,

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153. *See* Light, *supra* note 7; Fisher, *supra* note 7.

154. To combat any such misconception, SEC regulations require every prospectus to contain "[a] legend that indicates that neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the securities or passed upon the accuracy . . . of the disclosures in the prospectus and that any contrary representation is a criminal offense." 17 C.F.R. § 229.501(b)(7) (2005). This common misconception goes hand-in-hand with research showing that only 38% of investors know they are not insured against investment losses. APPLIED RESEARCH & CONSULTING, NASD INVESTOR LITERACY RESEARCH: EXECUTIVE SUMMARY 9 (2003) *available at* http://www.finrafoundation.org/web/groups/foundation/@foundation/documents/foundation/p118411.pdf.

155. Schechter, *supra* note 148, at 616–17.

156. The NASD was consolidated with the member regulation, enforcement, and arbitration functions of the New York Stock Exchange in July 2007 and is now known as the Financial Industry Regulatory Authority (FINRA). *See About the Financial Industry Regulatory Authority*, FINRA, http://www.finra.org/AboutFINRA/index.htm (last visited July 17, 2010).

157. NATIONAL ASSOCIATION OF SECURITIES DEALERS, NOTICE TO MEMBERS 05-59 (2005), *available at* http://www.finra.org/Industry/Regulation/Notices/2005/P014998.

158. *Id.*

research establishes that standard caveats like "these are only projections [or illustrations]" or "individual returns are likely to differ from those presented here" will not suffice.[159] These not only fail the FTC's standard, but they also fail to comport with the spirit of either SEC Rule 3(b)(6), which would require a reasonable factual basis and good faith, or the PSLRA's safe harbor for projections and predictions, which would require more detailed discussion or disclosure of important factors that could cause the investor's return to differ from any of the Examples shown (or from the average or weighted average of them).[160] Given what we know about consumer information processing and innumeracy even among highly educated populations, simple boilerplate cautionary statements are unlikely to ameliorate the powerful suggestive effects of skewed numerical examples that purport to merely illustrate the operation of a structured product's Return Formula.

Such a substantive regulation of the content of numerical examples like the ones studied here would in fact protect investors.[161] While Professors Stephen Choi and A.C. Pritchard have justifiably questioned the efficacy of regulatory intervention to correct investor irrationality induced by cognitive biases,[162] even they would recommend it in this setting. Choi and Pritchard suggest three levels of presumption against regulation to correct for investor biases. These occur along two dimensions: type of regulator and type of regulation. If the SEC (what they call a monopolistic regulator because it enjoys a form of "monopoly" over domestic securities regulation) will regulate, then there is a strong presumption against regulation, i.e., regulation is only appropriate when there is a "high likelihood of net benefits from the regulation and no less restrictive alternative."[163] This is one such case. The net benefits of the regulation are discussed in the next Section.

The other dimension on which Choi & Pritchard establish their presumptions against regulation is the *form* of regulatory intervention, which ranges from those regulatory measures that restrict the number and type of available investments on the one end, and on the other, those that "influence investors' decisions, but only minimally restrict their available choices."[164] At this latter end of the spectrum, there is only a weak presumption against regulation because the proposed regulation does not suggest the elimination of the product

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159. In addition to the FTC's findings on the inefficacy of disclaimers, there is also alarming behavioral research that demonstrates that warning people, especially seniors, about false claims causes them to later remember the suspect claim as being true. Ian Skurnik et al., *How Warnings About False Claims Become Recommendations*, 31 J. CONSUMER RES. 713 (2005).

160. 17 C.F.R. § 240.3b-6 (2009).

161. *See* Donald C. Langevoort, *Taming the Animal Spirits of the Stock Markets: A Behavioral Approach to Securities Regulation*, 97 NW. U. L. REV. 135, 175 (2003) [hereinafter Langevoort, *Behavioral Approach*] (citing Henry T. C. Hu, *Faith and Magic: Investor Beliefs and Government Neutrality*, 78 TEX. L. REV. 777 (2000)).

162. Choi & Pritchard, *supra* note 2, at 5 ("Even well-intentioned and fully rational regulators may find it difficult to solve the problem of cognitive illusions among investors.").

163. *Id.* at 44.

164. *Id.* at 56.

from the market, but instead a "modif[ication of] the decisionmaking environment for investors."[165] All that must be shown in such a case is that there is a likelihood of net benefits, which is discussed in the next Section.

The regulation we propose is far from an elimination of structured products from the marketplace.[166] Some of these investments can be a salutary and advisable addition to the right investor's portfolio.[167] But we do advocate in favor of significant restrictions on the use of the Examples in prospectuses, especially where the investment is to be marketed to retail investors. The type of regulation we propose would be "tailored to address the needs of the specific groups of investors,"[168] and would target a type of disclosure with a high probability of inducing cognitive error. Consequently our proposal would pass Choi and Pritchard's test for the efficacy and advisability of regulation.

Similarly, other scholarly views on regulatory intervention by the SEC support our proposed approach. For example, Professor Langevoort has long doubted the ability of the SEC to cope with the "disorienting" findings of behavioral research.[169] Still, even in the absence of a coherent SEC approach to regulating the retail investor marketplace, Professor Langevoort posits that a more "heavy handed" regulatory approach is probably justified at least vis-à-vis retail investor protection.[170] He also notes that despite the SEC's timid attempts to incorporate findings of behavioral research into its rulemaking and enforcement activities so far, regulatory efforts to de-bias retail investors are probably indicated in the mature U.S. financial marketplace with its ingrained culture of investing.[171]

As regards responses to behavioral science more generally, noted libertarian paternalists Cass Sunstein and Richard Thaler have also articulated justifications for regulatory responses. Their approach expressly seeks to "steer" consumers toward better choices, including financial choices like saving for retirement and investment decisions, without eliminating choice from the marketplace.[172] They approve of regulation that accords advantages to

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165. *Id.* at 56, 64.

166. European regulatory regimes that have more experience with the poor performance of these investment products may be more inclined to eliminate them. Notably, the Norwegian government has banned sale of structured products to retail investors altogether. Wojciech Moskwa, *Norway to Tighten Rules on Structured Products*, REUTERS UK, Feb. 11, 2008, http://uk.reuters.com/article/idUKL1170675820080211.

167. Bethel & Ferrell, *supra* note 4, at 171, 173.

168. Choi & Pritchard, *supra* note 2, at 17.

169. Donald C. Langevoort, *Selling Hope, Selling Risk: Some Lessons for Law from Behavioral Economics About Stockbrokers and Sophisticated Customers*, 84 CALIF. L. REV. 627, 640–41 (1996) [hereinafter Langevoort, *Selling Hope*]; *see also* Langevoort, *SEC & Retail Investors*, *supra* note 5, at 1050; Langevoort, *Behavioral Approach*, *supra* note 161, at 154.

170. *See* Langevoort, *SEC & Retail Investors*, *supra* note 5, at 1027–28 (concluding that the UK's Financial Service Authority's and other new governance schemes' light touch regulatory model "maps poorly" onto the SEC, likely due to differences in size, scope, and maturity of the markets they regulate).

171. *Id.* at 1053–55.

172. *See, e.g.*, Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is Not an Oxymoron*, 70 U. CHI. L. REV. 1159, 1159 (2003) ("Equipped with an understanding

disadvantaged consumers, as long as there is little or no harm to fully rational ones.[173] There is no indication that this proposal for regulation would harm fully rational investors, while the benefit to investors whose error is induced by improper use of Examples is obvious. Thus, this proposal also comports with the theory of "asymmetric paternalism" proposed by Professor Camerer and others.[174]

C. Additional Policy Arguments Supporting Regulation of Examples

Several policy arguments weigh on the side of the type of regulation we recommend here. The continued popularity of these investment vehicles—especially in the face of increasing data showing their limited utility for the retail investor—establishes that reputational and competitive constraints are unlikely to weed this abuse out of the marketplace.[175] Instead, herding behavior has resulted among issuers, with more and more of them rushing to offer derivative products.[176] This either produced or was produced by the products' heightened treatment in the finance literature, which seeks to optimize structure vis-à-vis issuer payoff and studies methods for their sale that exploit cognitive biases and investor innumeracy.[177]

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of behavioral findings of bounded rationality and bounded self-control, libertarian paternalists should attempt to steer people's choices in welfare-promoting directions without eliminating freedom of choice.").

173. *Id.* at 1160 n.6; *see also* REZA R. DIBADJ, RESCUING REGULATION 128 (2006) (urging regulators to "[get] beyond the seduction of neo-classical economics . . . [which] all but ignores consumer and employee interests").

174. They describe asymmetric paternalism thusly:

> A regulation is asymmetrically paternalistic if it creates large benefits for those who make errors, while imposing little or no harm on those who are fully rational. Such regulations are relatively harmless to those who reliably make decisions in their best interest, while at the same time advantageous to those making suboptimal choices.

Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism,"* 151 U. PA. L. REV. 1211, 1212 (2003).

175. A lighter regulatory touch may be justified when "nonlegal checks on industry opportunism are very strong." Langevoort, *SEC & Retail Investors*, *supra* note 5, at 1041.

176. *See* Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 N.Y.U. L. REV. 630, 724 (1999) ("Once it is acknowledged that consumer risk perceptions may be affected by, for instance, the manner in which information is framed, then it becomes inevitable that manufacturers will exploit those framing effects in a way that maximizes manufacturer profits."). As Professors Hanson and Kysar point out, in the context of product liability, this is a predictable and perhaps unavoidable consequence of a competitive marketplace: "Cognitive biases present profit-maximizing opportunities that manufacturers *must* take advantage of in order to stay apace with competition." *Id.* at 726 (emphasis in original). *See generally* Langevoort, *Selling Hope*, *supra* note 169, at 652–55 (noting that firms respond strategically and opportunistically to buyers' cognitive biases).

177. *See, e.g.*, Carole Bernard et al., *Optimal Design of Structured Products and the Role of Capital Protection* (Paris Finance International Meeting AFFI-EUROFIDAI Paper Dec. 2007), *available at* http://ssrn.com/abstract=1070803 (using mathematical modeling to derive the optimal payoff); Paolo Vanini & Barbara Döbeli, *Stated and*

A simple cost–benefit analysis favors regulation of Examples over other solutions. Others have suggested more indirect methods of ameliorating the problem of misunderstanding structured products generally.[178] These include a new licensing requirement for brokers and salespeople, and a central warehouse for prospectuses that would facilitate investor comparisons.[179] A pointed and well-crafted SEC regulation would be more likely to achieve the normative regulatory objective of promoting investor choice while optimizing investor protection, and would be less expensive to operationalize than any of these proposals or combination of them. Licensing, restructuring the offerings, and warehousing of prospectuses impose significant costs on large and diverse groups of actors in the securities industry, and in the case of a central warehouse, could require a significant capital investment to establish as well as fund ongoing maintenance and oversight. Because our proposed regulation takes cognitive error into account and is directed squarely at stamping out only the component of the prospectus that operates either as a manipulative or merely deceptive device, our proposal is also more likely to be effective than these less direct methods.

In fact, requiring issuers to provide better disclosures regarding actual results (or average outcomes) that are realistic given the investment's specific structure is likely to eliminate the worst of these products from the market—surely a salubrious effect both for consumers and competition. Here an interesting analogy to the rationale for the late 1960s reform of interest calculations and disclosures can be made. The policy rationales achieved by the Truth in Lending Act were improving consumer choice by way of more and more easily comparable information, and hence fairer competition.[180] These market enhancements could also be achieved in the context of structured investment products if questionable projections were eliminated from their prospectuses in favor of more meaningful and uniform financial outcome disclosures.[181]

Revealed Investment Decisions Concerning Structured Products, J. BANKING & FIN. (forthcoming) (manuscript at 1, 15–16), *available at* http://ssrn.com/abstract=991868 (finding simplified oral description induces motivation to purchase); *see also* Breuer & Perst, *supra* note 4, at 830.

178. Bethel & Ferrell, *supra* note 4, at 185–89.

179. *Id.* Professors Bethel & Ferrell also suggest redefining "accredited investor" and increasing the denominations of the structure product offerings. While these measures may assist in culling some retail investors from the pack, they do so at the significant cost of reducing the availability of the best of these investment products to knowledgeable retail investors who seek to include them in their portfolios. *Id.*

180. *See* Robert L. Jordan & William D. Warren, *Disclosure of Finance Charges: A Rationale*, 64 MICH. L. REV. 1285, 1293–94 (1966).

181. This is in line with Professor Jolls's early suggestion that to achieve the regulatory goal of "informed decision-making," the *form* of disclosure should be regulated as well, so as to account for systematic cognitive biases. Jolls et al., *supra* note 32. *See also* Sharon Hannes, *Comparisons Among Firms: (When) Do They Justify Mandatory Disclosure?*, 29 J. CORP. L. 699, 702 (2004) (discussing the importance of comparisons by way of cross-sectional analysis).

Moving from the specific to the more general, our proposal is also in line with the current "plain English" movement at the SEC.[182] The movement is designed, quite simply, to provide investors with more readily understandable information from which they can make better informed investment decisions. In 1998, the SEC extended the movement to rules affecting prospectuses.[183] Applied there, more uniform and measured use of Examples would achieve the objective of providing investors with the information they need, *in a form in which they can use it*, to make their investment decisions. This is especially true with the target market for PPNs, which consists largely of individual investors nearing retirement.

Finally, our proposal for regulation fits nicely within the federal securities laws' remedial statutory framework and the Supreme Court's own pronouncements about the need for meaningful disclosure by issuers. A primary purpose of the '33 and '34 Acts is investor protection. The Court has described the foundational paradigm of federal securities regulation as an effort to override *caveat emptor* with a "philosophy of full disclosure."[184] Along with that platitudinous directive, let us here be more pertinently reminded of the Court's similarly strong admonition that "the point of [disclosure], after all, should be to inform, not to challenge the reader's critical wits."[185]

CONCLUSION

We have identified a latent and insidious marketing practice that operates in the heady financial sphere of derivatives, so-called structured products. Numerical examples illustrating the return formula of a structured note may well be just that: innocuously chosen to illustrate a variety of return hypotheticals. But research demonstrates that investor innumeracy and cognitive biases can be and are typically strategically leveraged by issuing firms. This deception has enormous implications for the retail investor population—implications that are only starting to be felt and understood given the timing of the popularity of these investment instruments and their medium-term maturity dates.

While the current state of our anti-fraud laws probably makes this practice misleading and therefore prohibited, the class action as a deterrent device is unavailable in this context because these securities are only very thinly traded on the exchanges. Without this traditional legal constraint, we have only nonlegal

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182. The so-called "Plain English Rule" is found in Rule 421, 17 C.F.R. § 230.421 (2009), but the movement or "rule" read more broadly encompasses a number of revisions to other SEC rules regarding disclosure. *See also* Plain English Disclosure, Securities Act Release No. 7497, 63 Fed. Reg. 6370, 6373 (Feb. 6, 1998) (establishing, *inter alia*, definitions that must be used when calculating the ratio of earnings to fixed charges, and defining "earnings" by reference to required formulas only). Notably, Rule 421 expressly prohibits misleading disclosures when employing some of the suggested methods for writing in "plain English," i.e. charts, graphs, pictures. 17 C.F.R. § 230.421(d)(3).

183. Plain English Rule, 63 Fed. Reg. at 6373.

184. SEC v. Capital Gains Research Bureau, 375 U.S. 180, 186 (1963) ("A fundamental purpose . . . [of the federal securities laws is] to substitute a philosophy of full disclosure for the philosophy of *caveat emptor* and thus to achieve a high standard of business ethics in the securities industry.").

185. Va. Bankshares, Inc. v. Sandberg, 501 U.S. 1083, 1097 (1991).

constraints on which to rely to weed these unwise products out of the marketplace. But neither competition nor reputation has limited the proliferation of structured notes, despite scholarly and occasional journalistic expressions of consternation. Instead, principal protected notes in particular continue to be marketed to retail investors as a "safe" alternative to equities. While they may be safer, assuming more issuing financial institutions do not fail, sophisticated mathematical models demonstrate that the typical return on an ordinary principal protected note is less than what would be garnered by investing in a federally insured certificate of deposit.

So what is the proper reaction to this state of affairs? Armed with an understanding of the principles of investor innumeracy and consumer information processing, we have shown that a salutary response is regulation of the use of numerical examples that give rise to unrealistic investor expectations regarding the returns these investments will generate. This is consistent with what other regulators have done with implied messages of typicality, it is consistent with the law of disclosure of projections, and it is consistent with the type of measured regulatory response favored by most scholars who have addressed the question of regulation to de-bias investors. Such a regulation fulfills a sound regulatory policy of investor protection in a marketplace with abundant investment alternatives. It also preserves investor choice, leaving sophisticated investors with structured notes as a menu option when creating their portfolios, but protecting the unsophisticated retail investor from the inevitably mistaken inferences that motivate their purchases.

The numerical examples that illustrate the operation of a structured investment product's return formula are not chosen at random. They can either be chosen in a way that enlists known investor innumeracy and cognitive biases to improperly skew investor expectations, or they can be chosen with sound principles of consumer information processing acting as limits on such latent deception. The SEC should study this practice and define the premises that issuers use when employing numerical illustration sets in investment offerings.

APPENDIX A

Excerpt from BOR.P

Example 1

The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is greater than its closing level as of the pricing date, and the appreciation of the AMEX Biotechnology Index, or the Periodic Return, is 2.00% (an amount less than the Return Cap) during each Reference Period throughout the term of the notes:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	754	2.0%	7.0%
April	769	2.0%	7.0%
July	784	2.0%	7.0%
October	800	2.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	816	2.0%	7.0%
April	832	2.0%	7.0%
July	849	2.0%	7.0%
October	866	2.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	883	2.0%	7.0%
April	901	2.0%	7.0%
July	919	2.0%	7.0%
October	937	2.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	956	2.0%	7.0%
April	975	2.0%	7.0%
July	994	2.0%	7.0%
October	1014	2.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	1035	2.0%	7.0%
April	1055	2.0%	7.0%
July	1076	2.0%	7.0%
October	1098	2.0%	7.0%

Index Return =
$(1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times$
$(1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times$
$(1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times$
$(1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) \times (1.00 + 0.02) - 1.00$
$= 0.4859$ or 48.59%
Supplemental Redemption Amount = $1000 \times 0.4859 = \$485.90$
Total payment at maturity = $1,000 + $485.90 = $1485.90 per note
Pretax annualized rate of return: 8.23%

Example 2

The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is greater than its closing level as of the pricing date, and the appreciation of the AMEX Biotechnology Index, or the Periodic Return, is 7.00% (an amount equal to the Return Cap) during each Reference Period throughout the term of the notes:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	791	7.0%	7.0%
April	846	7.0%	7.0%
July	905	7.0%	7.0%
October	969	7.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	1036	7.0%	7.0%
April	1109	7.0%	7.0%
July	1187	7.0%	7.0%
October	1270	7.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	1358	7.0%	7.0%
April	1454	7.0%	7.0%
July	1555	7.0%	7.0%
October	1664	7.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	1781	7.0%	7.0%
April	1905	7.0%	7.0%
July	2039	7.0%	7.0%
October	2181	7.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	2334	7.0%	7.0%
April	2497	7.0%	7.0%
July	2672	7.0%	7.0%
October	2859	7.0%	7.0%

Index Return =
$(1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) - 1.00$
$= 2.8697$ or 286.97%
Supplemental Redemption Amount = $1000 × 2.8697 = $2869.70
Total payment at maturity = $1000 + $2869.70 = $3869.70 per note
Pretax annualized rate of return: 31.04%

Example 3

In this example, for the Reference Periods where the Periodic Returns are in excess of 7.00%, the Periodic Returns for those Reference Periods used in the calculation of the Index Return shall be the Return Cap of 7.00%. The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is greater than its closing level as of the pricing date, and the appreciation of the AMEX Biotechnology Index, or the Periodic Return, is 9.00% (an amount greater than the Return Cap) during each Reference Period throughout the term of the notes:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	805	9.0%	7.0%
April	878	9.0%	7.0%
July	957	9.0%	7.0%
October	1043	9.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	1137	9.0%	7.0%
April	1239	9.0%	7.0%
July	1351	9.0%	7.0%
October	1472	9.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	1605	9.0%	7.0%
April	1749	9.0%	7.0%
July	1907	9.0%	7.0%
October	2078	9.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	2265	9.0%	7.0%
April	2469	9.0%	7.0%
July	2691	9.0%	7.0%
October	2934	9.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	3198	9.0%	7.0%
April	3486	9.0%	7.0%
July	3799	9.0%	7.0%
October	4141	9.0%	7.0%

Index Return =
$(1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) - 1.00$
$= 2.8697$ or 286.97%
Supplemental Redemption Amount = $1000 × 2.8697 = $2869.70
Total payment at maturity = $1000 + $2869.70 = $3869.70 per note
Pretax annualized rate of return: 31.04%

Example 4

The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is less than the closing level of the AMEX Biotechnology Index as of the pricing date, and the Periodic Return declined throughout the term of the notes:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	724	-2.0%	7.0%
April	710	-2.0%	7.0%
July	695	-2.0%	7.0%
October	682	-2.0%	7.0%

2007–08		
Closing Level	Periodic Return	Return Cap
668	-2.0%	7.0%
655	-2.0%	7.0%
641	-2.0%	7.0%
629	-2.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	616	-2.0%	7.0%
April	604	-2.0%	7.0%
July	592	-2.0%	7.0%
October	580	-2.0%	7.0%

2009–10		
Closing Level	Periodic Return	Return Cap
568	-2.0%	7.0%
557	-2.0%	7.0%
546	-2.0%	7.0%
535	-2.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	524	-2.0%	7.0%
April	514	-2.0%	7.0%
July	503	-2.0%	7.0%
October	493	-2.0%	7.0%

Index Return =
$(1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times$
$(1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times$
$(1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times$
$(1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) \times (1.00 - 0.02) - 1.00$
$= -0.3324$ or -33.24%
Supplemental Redemption Amount = $50.00, the Minimum Supplemental Redemption Amount
Total payment at maturity = $1000 + $50.00 = $1050.00 per note
Pretax annualized rate of return: 0.98%

Example 5

The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is less than the closing level of the AMEX Biotechnology Index as of the pricing date, and the Periodic Return increased in one-half of the Reference Periods and decreased in the other one-half of the Reference Periods, with the magnitude of the decreases being larger than the magnitude of the increases:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	791	7.0%	7.0%
April	846	7.0%	7.0%
July	905	7.0%	7.0%
October	969	7.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	1036	7.0%	7.0%
April	1109	7.0%	7.0%
July	1187	7.0%	7.0%
October	1270	7.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	1358	7.0%	7.0%
April	1454	7.0%	7.0%
July	1308	-10.0%	7.0%
October	1177	-10.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	1060	-10.0%	7.0%
April	954	-10.0%	7.0%
July	858	-10.0%	7.0%
October	772	-10.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	695	-10.0%	7.0%
April	626	-10.0%	7.0%
July	563	-10.0%	7.0%
October	507	-10.0%	7.0%

Index Return =
$(1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) \times (1.00 - 0.10) - 1.00 = -0.3141$ or -31.41%
Supplemental Redemption Amount = $50.00, the Minimum Supplemental Redemption Amount
Total payment at maturity = $1000 + $50.00 = $1050.00 per note
Pretax annualized rate of return: 0.98%

Example 6

The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is greater than the closing level of the AMEX Biotechnology Index as of the pricing date, and the Periodic Return fluctuated during the term of the notes, increasing in one-half of the Reference Periods and decreasing in the other one-half of the Reference Periods, with the magnitude of the increases being larger than the magnitude of the decreases:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	791	7.0%	7.0%
April	846	7.0%	7.0%
July	804	-5.0%	7.0%
October	763	-5.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	817	7.0%	7.0%
April	874	7.0%	7.0%
July	830	-5.0%	7.0%
October	789	-5.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	749	-5.0%	7.0%
April	712	-5.0%	7.0%
July	762	7.0%	7.0%
October	815	7.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	872	7.0%	7.0%
April	933	7.0%	7.0%
July	887	-5.0%	7.0%
October	842	-5.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	901	7.0%	7.0%
April	964	7.0%	7.0%
July	916	-5.0%	7.0%
October	870	-5.0%	7.0%

Index Return =
$(1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 - 0.05) \times (1.00 - 0.05) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 - 0.05) \times (1.00 - 0.05) \times (1.00 - 0.05) \times (1.00 - 0.05) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 - 0.05) \times (1.00 - 0.05) \times (1.00 + 0.07) \times (1.00 + 0.07) \times (1.00 - 0.05) \times (1.00 - 0.05) - 1.00 = 0.1778$ or 17.78%
Supplemental Redemption Amount = $\$1{,}000 \times 0.1778 = \$177.80$
Total payment at maturity = $\$1{,}000 + \$177.80 = \$1177.80$ per note
Pretax annualized rate of return: 3.32%

Example 7

In this example, for the Reference Periods where the Periodic Returns are in excess of 7.00%, the Periodic Returns for those Reference Periods used in the calculation of the Index Return shall be the Return Cap of 7.00%. The closing level of the AMEX Biotechnology Index as of the final scheduled Reset Date is greater than its closing level as of the pricing date, and the Periodic Return fluctuated during the term of the notes, increasing in three-fourths of the Reference Periods and decreasing in the other one-fourth, with a wide variance in the magnitude of the increase:

	2006–07		
	Closing Level	Periodic Return	Return Cap
January	761	3.0%	7.0%
April	784	3.0%	7.0%
July	627	-20.0%	7.0%
October	753	20.0%	7.0%

	2007–08		
	Closing Level	Periodic Return	Return Cap
January	775	3.0%	7.0%
April	798	3.0%	7.0%
July	639	-20.0%	7.0%
October	766	20.0%	7.0%

	2008–09		
	Closing Level	Periodic Return	Return Cap
January	789	3.0%	7.0%
April	813	3.0%	7.0%
July	651	-20.0%	7.0%
October	781	20.0%	7.0%

	2009–10		
	Closing Level	Periodic Return	Return Cap
January	804	3.0%	7.0%
April	828	3.0%	7.0%
July	663	-20.0%	7.0%
October	795	20.0%	7.0%

	2010–11		
	Closing Level	Periodic Return	Return Cap
January	819	3.0%	7.0%
April	843	3.0%	7.0%
July	675	-20.0%	7.0%
October	810	20.0%	7.0%

Index Return =
$(1.00 + 0.03) \times (1.00 + 0.03) \times (1.00 - 0.20) \times (1.00 + 0.07) \times (1.00 + 0.03) \times (1.00 + 0.03) \times (1.00 - 0.20) \times (1.00 + 0.07) \times (1.00 + 0.03) \times (1.00 + 0.03) \times (1.00 - 0.20) \times (1.00 + 0.07) \times (1.00 + 0.03) \times (1.00 + 0.03) \times (1.00 - 0.20) \times (1.00 + 0.07) \times (1.00 + 0.03) \times (1.00 + 0.03) \times (1.00 - 0.20) \times (1.00 + 0.07) - 1.00 = -0.3824$ or -38.24%
Supplemental Redemption Amount = $50.00, the Minimum Supplemental Redemption Amount
Total payment at maturity = $1,000 + $50.00 = $1,050.00 per note
Pretax annualized rate of return: 0.98%

APPENDIX B

Results of Back-Test of BOR.P's Return Versus AMEX Biotech Index Return for the 39 Rolling Five-Year Periods Prior to Issuance

AMEX Biotech Index Return (Total return in %)	**Observed Frequency** (Out of 39)	**Average Return** (Total return in %)
Less than 30%	11	0.0%
30–149%	12	0.0%
150–300%	9	3.5%
Greater than 300%	7	32.0%

Summary Discussion:

Despite the fact that the average return on the underlying AMEX Biotech Index was extraordinarily high during the preceding fifteen year period, the corresponding "capped" returns (which the PPN investor would have received) for those same periods were remarkably low. In fact, the modal return to the PPN investor would have been the guaranteed minimum return of about 1% per annum.

In a 5-year period when the overall market performs in accord with its long-term average of roughly 9% to 10% per year, the Biotech Index is also likely to achieve a total return of approximately 30% to 100%. In every such case, the supplemental return to the PPS holder would have been exactly 0 (zero).

While the investor received more than the de minimis supplemental return in 6 out of 7 numerical Examples in the prospectus, the back-test found that this occurred in only 6 out of the 39 rolling five-year periods prior to issuance of BOR.P.

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