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Too Complex to Perceive? Drafting Cash Distribution Waterfalls Directly as Code to Reduce Complexity and Legal Risk in Structured Finance, Master Limited Partnership, and Private Equity Transactions

Ralph C. Mayrell*

I. Introduction

Consider new home construction contracts. Few homebuilders, homebuyers, or architects would associate “drafting” with “writing a contract.” When contracting for the construction of a new home, the homebuyer does not ask the architect to spec out the details of the house plan in the text of a written contract. No architect would, and probably none could, efficiently, accurately, and precisely explain in full text the height, width, thickness, and style of every door along with each doorway’s specific gap from the door, hinge location and style, doorstop depth, tolerance for all of the previous measurements, etc. Were the homebuyer to find an ambitious architect–lawyer to

*Associate, Vinson & Elkins, LLP; The University of Texas School of Law, J.D. 2013; Harvard College, A.B. 2009. The opinions expressed in this Article are those of the author and do not necessarily reflect the views of the author’s firm or its clients. I owe a debt to a banker, a securities regulator, and an industry litigation expert, each of whom provided a fundamental understanding of how these structured financial products are really made, regulated, and fought over without which this paper could not have been written and all of whom asked to remain unnamed. Thank you also to Professor Bill Stutts at The University of Texas School of Law for his advice throughout the research and writing process, as well as to my dear wife, Veronika Bordás, for patiently tolerating monologues on collateralized debt obligations and bankruptcy. Any mistakes are the author’s own.

draft such a behemoth, in the absence of an equally adept construction worker–lawyer, the construction crew likely could neither understand that contract nor translate it into a home. To “draft” a home in legalese would be a fool’s errand. Of course, no one “drafts” a home layout in the construction contract. Instead, the contract refers to drafted blueprints, diagrams, models, and specification sheets as the determinative legal source for the home design, writing out only the surrounding business operations and asset-quality guarantees for which transactional drafting is well-suited.¹

Now turn to structured financial products.² Complex arrangements ordering the distribution of cash flow from underlying assets to different classes (tranches) of bondholders and equity-holders characterize structured financial instruments

1. See, e.g., 2 NANCY SAINT-PAUL, CONSTRUCTION AND DEVELOPMENT FORMS § 18:3 (2d ed. 2013) (“Contractor agrees to furnish all services, materials, labor, tools, equipment, and all other items required to undertake and complete all work required by the general conditions of the contract attached hereto, and the drawings, plans, and specifications prepared by [name of preparer] for the construction of [description of project]. The following drawings, plans, and specifications identified by the signatures of the parties to this agreement form a part of this contract as if they were set out herein.”) (alterations in original), available at Westlaw CDFMS.

2. “There is no universal definition of structure[d] finance.” FRANK J. FABOZZI ET AL., INTRODUCTION TO STRUCTURED FINANCE 1 (2006). The Authors discuss several definitions of structured finance. *Id.* at 1-9. Identifying the use of a “special purpose vehicle,” a “bond issue that is asset-backed,” “a combination of interest-rate and credit derivatives,” among other traits, as characteristic of structured financial products. *Id.* at 2. Providing a slightly different set of criteria, the Committee on the Global Financial System from the Bank for International Settlements identified the following three characteristics:

- (1) pooling of assets (either cash-based or synthetically created);
- (2) tranching of liabilities that are backed by the asset pool (this property differentiates structured finance from traditional “pass-through” securitisations);
- (3) de-linking of the credit risk of the collateral asset pool from the credit risk of the originator, usually through use of a finite-lived, standalone special purpose vehicle (SPV).

COMM. ON THE GLOBAL FIN. SYS., BANK FOR INT’L SETTLEMENTS, THE ROLE OF RATINGS IN STRUCTURED FINANCE: ISSUES AND IMPLICATIONS 1 (2005), [hereinafter ROLE OF RATINGS], available at <http://www.bis.org/publ/cgfs23.pdf>.

like collateralized debt obligations (“CDOs”) and other similarly tranching products.³ These cash flow distribution arrangements, called waterfalls,⁴ are highly complex and include numerous interdependencies between distributions to different classes of investors.⁵ Like a house plan, structured financial product waterfalls are “too complex to depict”⁶ accurately or perceive accurately or precisely from a written contract. In spite of the limitations of the written word to express these agreements, dealmakers in structured finance contracts persist in their attempts to depict “complete contract[s]’ that fully specif[y] the rights of all the transaction’s participants and the rules for determining payments to note holders under alternative scenarios of asset pool performance.”⁷ Like the hypothetical Sisyphean architect–lawyer struggling and inevitably failing to depict completely in word-pictures each joist and beam in a home, structured finance dealmakers can waste a great deal of time and resources developing imperfect deal documents that cannot accurately depict the desired or functional (actual) reality of the distribution waterfall.

In order to free dealmakers from this Sisyphean task, this Article proposes that complex structured finance transactions involving sophisticated investors should adopt an analogous solution to the home construction agreements’ strategy of contracting by reference to blueprints. First, dealmakers should, preferably by choice, place as much of their waterfall distribution specification and related inputs as possible into automated, programmatic representations that will be used to make the actual distribution. In many cases, these agreements already

3. ROLE OF RATINGS, *supra* note 2, at 9-11. Collateralized loan obligations, collateralized mortgage obligations, and certain credit card asset-backed securities also have multiple classes or tranches of bondholders and equity-holders. *Id.* at 4-5.

4. See Henry T. C. Hu, *Too Complex to Depict? Innovation, “Pure Information,” and the SEC Disclosure Paradigm*, 90 TEX. L. REV. 1601, 1632-33 (2012) (citing Asset-Backed Securities, Securities Act Release No. 33-8518, Exchange Act Release No. 34-50905, 70 Fed. Reg. 1506, 1511 (Jan. 7, 2005) (codified at 17 C.F.R. pts. 210, 228, 229, 230, 232, 239, 240, 242, 245, & 249)).

5. See ROLE OF RATINGS, *supra* note 2, at 11.

6. See generally Hu, *supra* note 4 at 1633-42 (discussing failure in depiction of complex products such as asset-backed securities).

7. ROLE OF RATINGS, *supra* note 2, at 11.

have programmatic representations,⁸ so this change should pose relatively few practical challenges logistically. Second, they should, like their counterparts in construction contracts, define the terms of those waterfalls by reference to their functional representations. The contract should be depicted by the same code that will decide the actual distribution, and that coded depiction should be the legally binding contract. By unifying the functional and legal realities of the structured finance products, dealmakers will avoid wasting resources on creating unnecessary and inaccurate legal depictions, and will also reduce the legal and financial risk created by the imprecision and inaccuracy of perception those poor depictions create.

This Article will proceed as follows: In Part II, this Article sets out to restate and expand Professor Henry Hu's explanation of the intermediary depiction problem with what this Article terms the challenge of perception.⁹ Professor Hu observes that the difficulty with the current regulatory disclosure regime is one of imperfect depictions and could be fixed with pure information disclosure. By contrast, this Article contends that so long as there are multiple potentially legally determinative depictions, there will be financial, legal, and systemic risk. Because of that, no regime of additional disclosures can, by itself, reduce those risks; if anything, adding to the number of potentially legally binding disclosures increases risk. Therefore, in Part III, this Article proposes that in complex structured finance agreements' waterfalls and other similar agreements between sophisticated parties, the functional code that creates the functional reality should, as described above, become the contract by reference in the legal deal document and thus should become the legally determinative reality. This would reduce the confusion that impedes perception of the future reality of the financial product's cash flow distributions.

8. See DARREN SMITH & PAMELA WINCHIE, CASH CDO MODELLING WITH EXCEL: A STEP BY STEP APPROACH 1-2 (2010) (discussing the transition from primarily using Excel-based modeling of CDOs to the use of proprietary software solutions); Attachments to Memorandum from Rolaine S. Bancroft, Attorney-Advisor, Office of Rulemaking, Div. of Corp. Fin., Sec. & Exch. Comm'n, to Commission File No. S7-08-10 (Oct. 19, 2010) (on file with SEC), available at <http://www.sec.gov/comments/s7-08-10/s70810-170.pdf>.

9. Hu, *supra* note 4, at 1642-43.

II. Too Many Depictions Means Too Many Potential Realities to Perceive

A contract to build a home and its blueprint exhibits merely permit prediction of how the finished house will be built and how it will look.¹⁰ Until the home is finished, there are many potential homes that could exist given how the builders interpret the contract and the blueprints. The number of potential future homes that might exist expands further when many sources generate multiple design documents as well as separate specifications and specific contract terms, all of which might misalign, causing “document coordination errors.”¹¹ The number grows higher still when the possibility of a dispute arises, because once a court or arbitrator steps in to resolve that conflict, all bets are off as to how the contract and exhibits will be interpreted.¹² And even after the dispute is resolved, the original problem of builder implementation of that clarified contract’s requirements remains.

Structured financial products create a similar, but more difficult challenge of depiction and perception. Currently, there are two legally relevant depictions: (1) legal-English contracts and indentures,¹³ and (2) “plain”-English prospectuses, offering

10. There is a debate in the courts and academia about whether and to what exactitude builders should be held accountable to blueprints incorporated into contracts. For an example of this discussion in the context of the “economic waste” standard in the case of construction defects, see Richard D. Schepp, Comment, *A Call for Recognition of Owners’ Subjective Valuations in Residential Construction Defect Cases*, 1989 WIS. L. REV. 1139, 1146-49 (1989).

11. 2 PHILIP L. BRUNER & PATRICK J. O’CONNOR, JR., BRUNER AND O’CONNOR ON CONSTRUCTION LAW § 7:132 (2002 & Supps. 2003–2013), available at Westlaw BOCL.

12. *Id.* § 7:132 & n.9.

13. Some dispute the characterization of bond indentures that specify the operation of the trustee—the distributor of the cash flows from underlying assets according to the waterfall, in our case—as a contract. Martin Riger, *The Trust Indenture as Bargained Contract: The Persistence of Myth*, 16 J. CORP. L. 211, 211-15 (1991). Professor Martin Riger argues that indenture for public bonds are not contracts because the bondholders did not bargain for the terms of the indenture. *Id.* While there is some validity to this point, in the context of these highly complex structured financial instruments sold primarily to sophisticated buyers, this argument is likely not relevant.

memoranda, and other similar customer-facing disclosures.¹⁴ And if the SEC's proposed amendment to disclosure rules concerning asset-backed securities, Regulation AB, ever reaches final rule status, it will constitute a third legally relevant document.¹⁵ There are also non-legal formal mathematical depictions and the functional depictions. None of these depictions reflect accurately the desired reality of the parties, assuming there is a single such reality.¹⁶ Furthermore, in the act of

14. In as much as a misrepresentation in a prospectus about the underlying arrangement can create civil liability, the prospectus can provide an alternate legal reality to the contract for registered securities. For a discussion of liability for misstatements in registration statements, which include prospectuses, see Securities Act of 1933 § 11, 15 U.S.C. § 77k (2012) (creating civil liability for false registration statements); 12 C.F.R. § 16.2(m) (2013) ("*Registration statement* means a filing that includes the prospectus and other information required by section 7 of the Securities Act.") (citation omitted). For discussion of liability arising from misstatements in prospectuses made to the person purchasing the security, see Securities Act of 1933 § 12(2), 15 U.S.C. § 77l (2012). SEC Rule 10b-5 also forbids deceptive conduct with securities in an exchange or over-the-counter and in private transactions, including misstatements in prospectuses and other communications. 17 C.F.R. § 240.10b-5 (2013). For a useful table of the different laws and relevant liabilities, see JOHN J. CLARKE, JR. & LISA FIRENZE, HOW TO PREPARE AN INITIAL PUBLIC OFFERING: DUE DILIGENCE AND POTENTIAL LIABILITIES app. at 40 (Dec. 2010), *available at* http://www.dlapiper.com/files/upload/PLI_Materials_2011.pdf. The SEC has also proposed in Regulation AB II to impose increased disclosure requirements on privately traded, unregistered securities by conditioning 144A safe harbors upon disclosure equivalent to that required in Regulation AB. Asset-Backed Securities, Securities Act Release No. 33-9117, Exchange Act Release No. 34-61858, 75 Fed. Reg. 23,328, 23,332-33 (proposed May. 3, 2010) (to be codified at 17 C.F.R. pts. 200, 229, 230, 232, 239, 240, 243, & 249). This would effectively require a prospectus for those unregistered products. The American Bar Association believes that even after the Dodd-Frank Act, the SEC does not have the power to require privately issued securities falling under Securities Act of 1933 § 4(1) and § 4(2) to provide these sorts of disclosures. Letter from Jeffrey W. Rubin, Chair, Comm. of Fed. Regulation of Sec., Am. Bar Ass'n Bus. Law Section & Vicki O. Tucker, Chair, Comm. on Securitization & Structured Fin., Am. Bar Ass'n Bus. Law Section, to Elizabeth M. Murphy, Sec'y, Sec. & Exch. Comm'n at 83-86 (Aug. 17, 2010) (on file with SEC) [hereinafter Letter from Jeffrey W. Rubin], *available at* <http://www.sec.gov/comments/s7-08-10/s70810-150.pdf>.

15. Asset-Backed Securities, 75 Fed. Reg. at 23,379-80.

16. Assuming bonds are contracts, see *supra* note 13 and accompanying text, there remain concerns about whether bond purchasers reach a meeting of the minds with the issuers and underwriters, though Professor David Groshoff argues that they do. David Groshoff, *Would "Junkholder Primacy"*

translating between depictions—particularly by translating the legal depiction to the functional depiction that will create the functional reality—the ability to perceive precisely and accurately the legal reality is difficult or impossible because there are so many potentially conflicting legal depictions competing to be the legal reality. The combination of inherent and significant complexity within these structured financial agreements and the confusion of different potential legally determinative documents creates business and legal risk.

This Part explains the challenges of depiction and perception, how they increase financial and legal risks and costs for the parties to structured finance deals, and why the status quo as well as current proposals to remedy these difficulties will not solve these problems. Part A introduces briefly the relevant contractual arrangements.¹⁷ Part B demonstrates that the presence of multiple legally relevant depictions makes accurate and precise perception of the future legal reality, and thus the future functional business reality, difficult and perhaps impossible.¹⁸

A. *An Explanation of Waterfall Distributions in the Context of CDOs*

Stepping back, a brief introduction to our waterfall exemplar, CDOs, is in order to provide the context for what this Article proposes later, and, alas, there is no suitable construction analogy even though CDOs often sit atop residential mortgage securities. This subpart will provide relevant background on the structure and implementation of waterfalls in the context of the CDOs. It will then explain contexts outside of CDOs where waterfalls appear.

A basic understanding of an arrangement like a CDO is necessary to follow the remainder of this Article's discussion of waterfalls and their execution. Starting at the most basic level,

Reduce Junk Corporate Governance?, 13 J. BUS. & SEC. L. 59, 82-83 (2012).

17. See discussion *infra* Part II.A.

18. See discussion *infra* Part II.B.

bonds are a type of loan.¹⁹ Bonds are also securities, with all of the significance that label carries for regulation.²⁰ Companies sell bonds to get cash.²¹ These bonds receive credit ratings and pay out at different interest (coupon) rates depending upon risk, with one typical CDO bond structure paying out interest throughout the maturation of the bond and repaying principal at maturity.²² If certain requirements are met, the Trust Indenture Act of 1939 requires the assignment of a trustee to ensure the repayment of the loans for publicly offered bonds.²³ In any case, the agreement that the trustee enforces is called an indenture.²⁴

As a legal business structure, CDOs typically sit on top of this trust indenture framework²⁵ and add layers of legal and financial complexity. In CDOs, a special purpose vehicle (“SPV”), sells bonds and sometimes equity shares in order to finance the purchase of assets originated elsewhere.²⁶ These assets may include: secured home mortgages, credit card loans, student loans, commercial loans, asset-backed securities of these various types of debt, and sometimes other CDOs (called

19. FRANK M. WERNER & JAMES A.F. STONER, *MODERN FINANCIAL MANAGING: CONTINUITY AND CHANGE* 347 (3d ed. 2007).

20. Securities Act of 1933 § 2, 15 U.S.C. § 77b(a)(1) (2012).

21. See TIMOTHY J. GALLAGHER & JOSEPH D. ANDREW, *FINANCIAL MANAGEMENT: PRINCIPLES AND PRACTICE* 26-28 (4th ed. 2007).

22. See *id.*

23. Trust Indenture Act of 1939 §§ 310(a), 304(a)(9), 15 U.S.C. §§ 77jjj(a), 77ddd(a)(9) (2012).

24. WERNER & STONER, *supra* note 19, at 347. Depending upon the structure of the CDO and the role of the trustee, sometimes the language of pooling and servicing agreement is used in lieu of indenture. See CORPORATE TRUST COMM., AM. BANKERS ASS’N, *THE TRUSTEE’S ROLE IN ASSET-BACKED SECURITIES* 5 (2010) (“A pooling and servicing agreement, trust indenture or similar agreement forms the basic document which sets forth the relationship among the parties and the assets.”), available at <http://www.aba.com/aba/documents/press/RoleoftheTrusteeinAsset-BackedSecuritiesJuly2010.pdf>. For the sake of simplicity, this paper will refer to indentures and trustees.

25. Douglas J. Lucas et al., *Collateralized Debt Obligations*, in 1 HANDBOOK OF FINANCE: FINANCIAL MARKETS AND INSTRUMENTS 395, 399 (Frank J. Fabozzi ed., 2008) [hereinafter HANDBOOK OF FINANCE]. The following describes only one of many types of financial and business structures for a CDO for purpose of providing an example.

26. *Id.* at 396.

CDO-squared (“CDO²”), or, if taken a step higher, CDO-cubed (“CDO³”), etc.).²⁷ An investment bank arranges the structure of the relevant organizations and products by serving as a structurer.²⁸ This is where things become hairier. The structuring sponsor typically places assets of different risk classes into the SPV.²⁹ Cash flow from payments on these loans comes into the SPV, which then pays the trustee to monitor (and in some senses, to manage) the distribution of that cash flow to the bondholders as interest and principal payments and, if any cash remains, to the equity holders.³⁰ The trustee or its subcontractor ensures that the distribution aligns with the indenture.³¹

Adding to the complexity of the indenture that specifies cash distributions to bondholders, there are typically many classes or tranches of bondholders and the interest and principal cash flows pay each bond class successively.³² The cash pours down the waterfall of tranches, and if there is not enough to fulfill each tranche’s distribution requirement, then the lower tranches and the equity holders receive nothing.³³ There are often (but not always) different waterfalls for interest and principal as well as unique waterfalls in the case of a default.³⁴ Within the waterfall, shortfalls in the ability to pay interest or changes in the overcollateralization of underlying assets relative to stated bond principal amount can also change the order-

27. FRANCESCA CAMPOLONGO ET AL., QUANTITATIVE ASSESSMENT OF SECURITISATION DEALS 4 (2012); Lucas et al., *Collateralized Debt Obligations*, in HANDBOOK OF FINANCE, *supra* note 25, at 396. For useful diagrams of more complex types of securitization structures, see ANN RUTLEDGE & SYLVAIN RAYNES, ELEMENTS OF STRUCTURED FINANCE 135-38 (2010).

28. Lucas et al., *Collateralized Debt Obligations*, in HANDBOOK OF FINANCE, *supra* note 25, at 398.

29. *See, e.g., id.* at 399 (discussing the process of structuring CDOs).

30. John D. Finnerty, *Securities Innovation*, in HANDBOOK OF FINANCE, *supra* note 25, at 71-72.

31. Frank J. Fabozzi, *Bonds: Investment Features and Risks*, in HANDBOOK OF FINANCE, *supra* note 25, at 208.

32. Lucas et al., *Collateralized Debt Obligations*, in HANDBOOK OF FINANCE, *supra* note 25, at 399-400.

33. *See id.*

34. JAN JOB DE VRIES ROBBÉ, SECURITIZATION LAW AND PRACTICE: IN THE FACE OF THE CREDIT CRUNCH 48-50 (2008).

ing of cash flows.³⁵ External to the waterfall itself, the criteria for how the waterfall reacts to changes in assets' credit ratings or the meaning of default are often defined idiosyncratically in each indenture agreement.³⁶

The indenture that specifies the cash flow and other terms of the security acts as a written legal contract,³⁷ but knowing what a legal document is supposed to do is different from knowing how that transaction was made and then how the trustee implements it as a practical matter.³⁸ First, a banker, often a financial engineer or other quant, develops a mathematical or algorithmic model of the structure of the assets and the indenture.³⁹ Then the deal is arranged by teams of lawyers for the sponsor, underwriter, trustee, documentation managers, and in some cases the investors.⁴⁰ With varying degrees of interaction with the original financial engineer, the lawyers draft a written contractual representation as the indenture.⁴¹ The attorneys also craft a prospectus or other similarly definitive and effectively binding disclosures (prospectuses or offer memoranda/circulars), which they can do before, during, or after the

35. Lucas et al., *Collateralized Debt Obligations*, in HANDBOOK OF FINANCE, *supra* note 25, at 400-01.

36. JANET M. TAVAKOLI, COLLATERALIZED DEBT OBLIGATIONS AND STRUCTURED FINANCE: NEW DEVELOPMENTS IN CASH AND SYNTHETIC SECURITIZATION 106-08 (1st ed. 2003).

37. The relationship of the trustee, obligor entity (in this case the SPV), and the investor is more complicated than a traditional contract. For more discussion of the subtleties of the role of trust indenture as, among other capacities, trust and contract, see ROBERT I. LANDAU & JOHN E. KRUEGER, CORPORATE TRUST ADMINISTRATION AND MANAGEMENT 22-30 (5th ed. 1998); *see also supra* note 13 and accompanying text (discussing critics of the idea of indenture as contract).

38. Russell A. Hakes, *Focusing on the Realities of the Contracting Process—An Essential Step to Achieve Justice in Contract Enforcement*, 12 DEL. L. REV. 95, 101-09 (2011).

39. GEOFF CHAPLIN, CREDIT DERIVATIVES: TRADING, INVESTING, AND RISK MANAGEMENT 319-20 (2d ed. 2010).

40. *See* Cesar Estrada & Jonathan Karen, *On Waterfalls*, PRIVATE EQUITY INT'L, June 2012, at 13 (discussing waterfall formation in the less complex context of private equity hedge fund waterfall distributions), *available at* http://www.peimedia.com/resources/PEI/Supplements%202012/Supplement_Fund_Admin.pdf.

41. *See id.*

drafting of the indenture.⁴² The business team provides models designed in proprietary software like CDO Edge and Intex's solutions that link programmed models of the waterfall to past asset data, which investors and others then use to simulate and stress test the product.⁴³ The deal is then closed, and bonds and shares are sold.

At this point, the trustee or other paying agent creates or modifies a preexisting Excel spreadsheet or some other cash flow model made in other proprietary software, such as Moody's CDOnet Trustee.⁴⁴ Periodically the trustee enters data about cash flow from assets and other data, such as interest rates into the model. Often, there is a great deal of human intervention involved in the process of calculating the cash flows.⁴⁵ The collateral manager and the trustee also deal with questions of how to characterize when a missed payment (or some other covenant violation such as falling out of the asset pool quality requirements) constitutes a default.⁴⁶ Also, some CDOs are actively managed, meaning that the underlying assets are actively traded in and out of the asset pool to change the configuration of the underlying pool, per limitations in the indenture's covenants.⁴⁷ Through this combination of pro-

42. JEFFREY C. HOOKE, *SECURITY ANALYSIS AND BUSINESS VALUATION ON WALL STREET: A COMPREHENSIVE GUIDE TO TODAY'S VALUATION METHODS* 41-42 (2d ed. 2010).

43. Letter from Kevin F. McCarthy, Managing Dir., Intex Solutions Inc., to Elizabeth M. Murphy, Sec'y, Sec. & Exch. Comm'n (July 30, 2010) (on file with SEC) [hereinafter Letter from Kevin F. McCarthy], *available at* <http://www.sec.gov/comments/s7-08-10/s70810-57.pdf>.

44. *CDOnet*, MOODY'S ANALYTICS 3 (Oct. 25, 2010), <http://www.moodysanalytics.com/~media/Brochures/Structured-Analytics-Valuation/CDOnet/CDOnet-Brochure.ashx> [hereinafter *CDOnet*].

45. This assertion is based on a conversation with an individual who designed CDO models for a major investment bank and who asked to remain anonymous.

46. *See, e.g.*, Robert J. Coughlin, *Caught in the Cross-Fire: Securitization Trustees and Litigation During the Subprime Crisis* 11-12, NIXON PEABODY LLP (Sept. 18, 2009), http://www.nixonpeabody.com/files/securitization_litigation_subprime_crisis.pdf (discussing a case in which a bondholder disputed the determination of the majority of the class of senior tranche notes that a default event had occurred).

47. John D. Finnerty, *Securities Innovation*, in *HANDBOOK OF FINANCE*,

grammatic depictions, human intervention, and sometimes surprisingly extensive amounts of discretion, cash distributions are determined and executed.

As a final point of background, it is important to note that similarly styled waterfalls are used in other securitized products like collateralized loan obligations, collateralized mortgage obligations, and credit card debt backed master trusts. Master limited partnerships (MLPs) also can use waterfalls. MLPs are a creature of the tax-system used by pipeline entities and other entities with relatively stable cash flow (though less stable cash flows have become more common).⁴⁸ MLPs issue market-tradable limited partnership interests and have a similarly, if not equally, complex structure of prioritized payments to interest-holders.⁴⁹ The arguments and proposals made throughout the rest of this Article are equally applicable to MLP waterfall structures.

Structurally complex waterfalls also characterize private equity funds', hedge funds', and venture capital funds' cash distributions between general and limited partners.⁵⁰ In private equity funds, "[d]epending on a fund's performance, the [general partner] (GP) may receive more than its pro rata share of proceeds based solely on its invested capital; these additional amounts potentially payable to the GP are referred to as 'carried interest.'"⁵¹ Two members of the field expressly identify in the fund context the insufficiency of drafting to translate a

supra note 25, at 72.

48. David N. Fleischer et al., *Master Limited Partnerships*, in THE HANDBOOK OF INFRASTRUCTURE INVESTING 81, 86-87, 89 (Michael Underhill ed., 2010) [hereinafter THE HANDBOOK OF INFRASTRUCTURE INVESTING]; *Application of the Two-Class Method Under FASB Statement No. 128, Earnings Per Share, to Master Limited Partnerships*, FIN. ACCOUNTING STANDARDS. BD. EMERGING ISSUES TASK FORCE 2 (May 23, 2007), <http://www.fasb.org/cs/BlobServer?blobkey=id&blobwhere=1175818822993&blobheader=application%2Fpdf&blobcol=urldata&blobtable=MungoBlobs>.

49. David N. Fleischer et al., *Master Limited Partnerships*, in THE HANDBOOK OF INFRASTRUCTURE INVESTING, *supra* note 48, at 87.

50. See generally Estrada & Karen, *supra* note 40, at 13 (explaining the difficulties in designing waterfalls and translating between the legal, business, and back-office management teams).

51. *Id.*

model into language and language into implementation.⁵² And, like the waterfalls in structured finance products, waterfalls in private equity firms have multiple variations (e.g., American versus European), contingencies (clawbacks, catch-ups), and linguistic vagaries (e.g., how often should interest compound).⁵³ These agreements suffer from the same complexity and drafting challenges as a CDO and thus this proposal could be applicable to them.

B. *Mutually Inaccurate Depictions Interfere with Precise Perceptions of the Future Functional Reality of Cash Distribution, Creating Business, Legal, and Systemic Risks*

CDO waterfalls are, as Professor Hu examines in his article “Too Complex to Depict?” and as members of the industry recognize, fairly complex systems, and the “slippages” between different depictions—models, prospectus, contract, and functional (“effective”) reality—can sometimes be substantial.⁵⁴ This subpart will first explain how the various depictions are inaccurate relative to one another and imprecise if examined as collections of depictions, following a similar line of argument as raised by Professor Hu. Then, moving beyond Professor Hu’s discussion of depiction, this subpart will show how these multiple depictions impede precise and accurate perception of the desired and future legal and functional realities. Finally, this subpart will finally explain how the inability to perceive precisely and accurately the future legal reality creates risk in the creation of the functional implementation reality that will actually dictate cash flows.

As a preliminary matter, it will be helpful to define depiction, perception, and reality. Depictions refer to mathematical models and business plans, prospectuses and offer memoranda or circulars, contracts and indentures, and programmed models. Furthermore, to depict is to create these depictions.⁵⁵ Per-

52. *See id.*

53. *See id.* at 14-16.

54. Hu, *supra* note 4, at 1636-42.

55. This following discussion of depictions agrees with and owes a great deal to Professor Hu’s conception of intermediary depictions discussed in Hu’s

ception is the understanding derived from reading, observing, probing, or analyzing the relevant depiction in order to decide how the reality of the world—in this case the distribution of cash flows for a CDO—should be ordered. Reality is the result of the perception that represents a sort of determinative truth that predicts or defines what happens in the real world—i.e., the desired reality and the predictive reality create the real world or the future real world. Sometimes we try to perceive depictions for purposes of building the world, and other times we try to perceive in a determinative or predictive fashion what reality will be in the future to evaluate risk by looking to depictions of that reality.

Some additional terms are relevant to understanding the relationship between various depictions, perception, and reality. At a high level, these are the concepts of accuracy and precision.⁵⁶ Accuracy refers to the proximity of the point or depiction of interest to some objective reference point.⁵⁷ So, on a dart board, if all of the darts circle closely the inner ring of the bull's-eye, but do not land inside of it, they are relatively accurate because they landed close to the objective reference point: the bull's-eye.⁵⁸ Precision, on the other hand, is a reflection of how closely together the various points or depictions of interest are to one another.⁵⁹ Thus, if all of the darts land in the top-most point of the dart board (hence, they landed inaccurately), so long as they clustered closely together, they are thrown with precision.⁶⁰

“Too Complex to Depict?,” *supra* note 4, though it does not perfectly align with his description in the details. The concepts of perception and realities are, however, distinct from his discussion.

56. SOC'Y OF MFG. ENG'RS, TOOL AND MANUFACTURING ENGINEERS HANDBOOK 12-1 to -2 (Desk ed. 1989).

57. *Id.*

58. *Id.* at 12-2 fig.12-1.

59. *Id.* at 12-1 to -2.

60. *Id.* at 12-2 fig.12-1.

1. The Challenge of Accurate, and Thus of Precise,
Depiction

Depiction of a complex idea in different media—each with its own constraints—inevitably results in errors in translation. In the construction context, the differences between artistic representation for the homebuyer, 3-D AutoCAD and physical models for the architect, 2-D construction blueprints for the builder, and the completed built home each reflect the limitations of their separate media.⁶¹ At least with these media and methods of depiction, however, the process of translation between them is professionally standardized and there are generally no disputes about their order of relative priority in the case of a conflict. Those depicting structured financial products have no such luck and far less standardization in the methods of depiction.⁶² Unlike in the case of construction contracts, it might be impossible for many types of depictions to convey sufficiently accurate and precise information to perceive the present or future reality of how a trustee will distribute cash. In structured finance, there are several potential depictions, but we will focus on a few of the most relevant: the financial engineer's model depiction, the contractual/indenture depiction, the prospectus depiction, the predictive model depiction, and the functional implementation depiction.⁶³

61. For an example of an analogous discussion of depiction and perception in the context of construction, see MICHAEL JOYCE, *RESIDENTIAL CONSTRUCTION ACADEMY: PLUMBING* 229-30 (1st ed. 2004).

62. See Estrada & Karen, *supra* note 40, at 13 (“[Fund] waterfall provisions are often highly negotiated and bespoke arrangements, where nuances in words and implementation often produce significant differences in the calculation and/or timing of distributions.”).

63. See Hu, *supra* note 4, at 1636-42 (referring generally to the same categories of depictions though with a slightly different nomenclature).

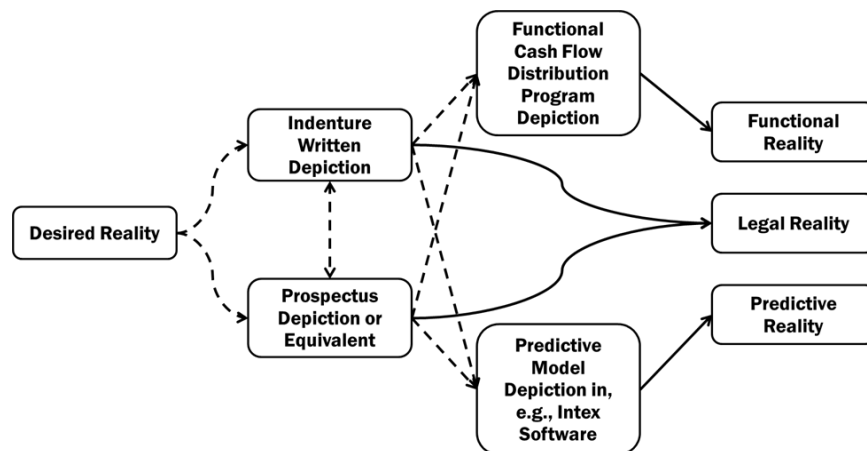


Figure 1. The Conventional Model of Depictions and Potential Future Realities

Typically, the structurer, perhaps in negotiation with an anchor investor, attempts to accurately depict the desired reality of the waterfall as indenture terms and prospectus or other similar “plain English” depiction. These two documents compete for control of the legal reality. These documents also guide the production of a computerized model used to predict the cash distribution of the bonds given various assumptions, and is the predictive reality. After the bonds are issued, the servicer, trustee, or other party implements a mixed manual and automated model to actually manage cash flows and convert them into distributions, and, barring a dispute, these are the functional reality.

First, there are the financial engineer’s model depictions, which are typically expressed as a combination of theoretical mathematical models and technical specifications.⁶⁴ The structurer works with its quant to prepare business plan documents that relatively precisely specify the initial model.⁶⁵ They represent a simplified, mathematically idealized version of world—often perception of these depictions constitutes the closest to

64. CHAPLIN, *supra* note 39, at 319.

65. *Id.*

the desired reality of the quant that will ever exist. Mathematical and technical depictions made by the structurer for purposes of creating the waterfall and the rest of the CDO or other structured financial product typically are the first depiction made outside of the mind where the idea originated.

Then the lawyers come to create the two legal depictions: the prospectus and the underlying contract—in the case of CDOs, the indenture. The indenture is legally binding and the parties negotiate as if it constitutes the legal reality of the cash flow.⁶⁶ That said, sometimes the prospectus, if misaligned with the indenture, can create legal liability.⁶⁷ In that case, the pro-

66. More precisely, there is typically an anchor investor with which the structurers negotiate about the terms of the agreement. *Cf.* BABSON CAPITAL, WHAT ARE CLOS AND HOW DO THEY WORK? 5 (2009), available at http://www.babsoncapital.com/BabsonCapital/http/bcstaticfiles/Research/file/CLO%20White%20Paper_CLOWP4309_Jun09.pdf (referring to negotiations with anchor equity share investors); Lauren Macksoud, *Junior Noteholder Gets “ZING’d” as Bankruptcy Court Allows Involuntary Filing of CDO Issuer by Senior Noteholder*, BROKEN BENCH BYTES, KRAMER LEVIN NAFTALIS & FRANKEL LLP (Oct. 31, 2011), <http://www.brokenbenchbytes.com/blog.aspx?entry=89> (discussing how the junior noteholders might lose the benefit of negotiated terms in a bankruptcy proceeding).

67. See Howard Darmstadter, *Legal- ease: The Dark Underside of the Prospectus*, BUS. LAW TODAY, July/August 2000, at 30, 30 (“The prospectus gives investors rights that the indenture can’t undo. . . . It’s tempting — and most lawyers yield to the temptation — to imagine that the indenture is the sole source of the bondholders’ rights, and that the prospectus description of the bonds is just a gloss on the indenture. . . . In a sense, the indenture *is* the bond issue. But that doesn’t mean that it’s the only, or even the best, description of the bonds.”), available at <http://apps.americanbar.org/buslaw/blt/blt7-legal.html>. Regulation AB requires the prospectus to include detailed descriptions of all aspects of the cash distribution arrangement in ABSs. 17 C.F.R. § 229.1113(b) (2013). Prospectuses have a plain English requirement. 17 C.F.R. § 230.421(b), § 230.421(b) note (2013). Misstatements and failure to comply with prospectus requirements can lead to SEC and private actions. See Securities Act of 1933 § 11(a)(1)-(5), 15 U.S.C. § 77k (2012) (creating liability for misstatements and omissions made in registration statements for public offerings); Securities Act of 1933 § 12, 15 U.S.C. § 77l(a)(2) (2006) (providing liability for public offerings made in violation of the registration requirements); 2 THOMAS LEE HAZEN, TREATISE ON THE LAW OF SECURITIES REGULATION § 7.0-.11 (6th ed. 2009) (outlining the various liability regimes for public offerings of securities). Regulation AB does not apply to private placements in the secondary market, though the SEC’s proposed “Regulation AB II” rules could bring a similar disclosure regime to the unregistered market as a condition for registration safe harbors. See Re-Proposal of Shelf Eli-

spectus becomes the effective legal reality.

Starting with the depiction as a legal contract or indenture, with varying degrees of direct collaboration with the designers of the CDO, attorneys begin drafting the prospectus and the indenture agreement in varying order depending upon their drafting preference.⁶⁸ Some in the banking industry have warned that in the context of private equity waterfalls—which are typically less complex than CDO waterfalls—that best practices should require more direct involvement of the finance team with the legal team to ensure that the deal documents are correctly designed.⁶⁹ As a J.P. Morgan manager and Simpson Thacher partner explain, for example, in the context of private equity, the business side should not depend on legal staff to correctly depict the desired reality using the financial model depictions as a basis,⁷⁰ a concern that grows even larger when dealing with CDOs, and bespoke CDOs,⁷¹ and other arrangements that introduce a great deal of potential discretion and ambiguity into arrangements.

Seasoned finance and accounting professionals—including those at experienced private fund administrators—know firsthand that no matter how precise the drafting, prose often fails to translate perfectly to mathematical implementation in a manner that is completely free of ambiguity—or

gibility Conditions for Asset-Backed Securities, Securities Act Release No. 33-9244, Exchange Act Release No. 34-64968, 76 Fed. Reg. 47,948, 47970-71 (reproposed Aug. 5, 2011) (to be codified at 17 C.F.R. pts. 229, 230, 239 & 249) (requesting further comment on the proposal). *See also supra* note 14 and accompanying text (discussing prospectus liability and the SEC's efforts to expand disclosure requirements to unregistered securitized products).

68. *See* HOOKE, *supra* note 42, at 42.

69. *See* Estrada & Karen, *supra* note 40, at 13-14.

70. *See id.* (discussing waterfalls in the context of private hedge fund waterfall distributions).

71. A bespoke CDO is “a CDO tranche designed to meet the needs of a particular client with the investment bank taking on the responsibility of hedging or laying off the risk relating to the rest of the CDO.” *How Big Is the Difference Between CDOs and CDS?*, SYNTHETIC ASSETS (Apr. 27, 2010), <http://syntheticassets.wordpress.com/2010/04/27/how-big-is-the-difference-between-cdos-and-cds/>.

that does not require the making of some unwritten assumptions.⁷²

As Professor Hu explained, quoting Robert J. Coughlin and Ripley E. Hastings, those drafting indentures have found that the complexity “has ‘seemingly outpaced discipline in drafting.’”⁷³ Combined with the difficulties of time constraints in drafting, these limitations of expression mean that the contract depictions do not express the same desired reality as the mathematical model depiction. Furthermore, as Professor Hu observed, similar to other contracts, lawyers introduce ambiguity into contracts to add flexibility and the ability to cope with the unknown, but in doing so they make the legal reality less determinable.⁷⁴

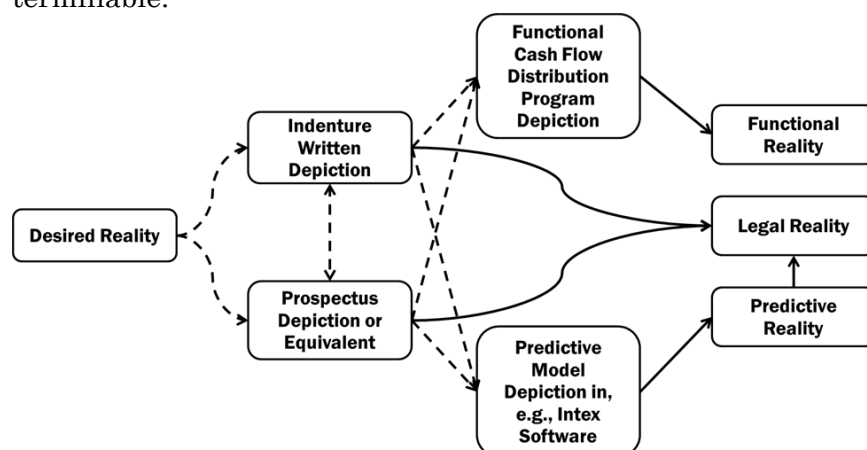


Figure 2. The Predictive Disclosure Model

The SEC’s model disclosure proposal effectively makes the predictive depiction and thus the predictive reality an additional competing depiction for control of the legal reality.

72. See Estrada & Karen, *supra* note 40, at 13.

73. Hu, *supra* note 4, at 1637 & n.178 (quoting Robert J. Coughlin & Ripley E. Hastings, *Survival Skills Amid the Rubble: Life as a Trustee in a Market Collapse*, 16 J. STRUCTURED FIN. 37, 42 (2010)).

74. *Id.* at 1637.

Lawyers face as difficult a challenge drafting the plain English prospectus—itsself another potential legal reality—as they do drafting the indenture.⁷⁵ The SEC imposes restraints of plain language on prospectuses, though those are rarely met.⁷⁶ In the case of Regulation AB, which specifies additional requirements for asset-backed securities prospectuses for registered, publicly offered products, there are requirements to disclose the indenture as well as to provide diagrams and aggregate statistics if they would be useful.⁷⁷ However, while the reading level can be lowered in the prospectus and instances of “heretofore” reduced in number, these waterfalls are inherently complex and made only more so by the contractual depiction.

Structurers and other parties to the deal also create predictive models in tools like Intex and CDO Edge for purposes of analyzing the risk in the cash flow against past asset performance and assumptions about the exogenous world (i.e., interest rates).⁷⁸ These tools do not usually analyze the actual static or dynamic pool of assets included in the specific deal, and instead use past asset information and information from other deals.⁷⁹ They also apply various mathematical stress tests.⁸⁰

75. *Id.* at 1640-42.

76. 17 C.F.R. § 230.421(b), § 230.421(b) note (2013).

77. 17 C.F.R. §§ 229.1103-.1113 (2013); *see also supra* notes 14, 67 and accompanying text.

78. Letter from Kevin F. McCarthy, *supra* note 43, at 6 (“[I]ssuers will often make available their waterfall to actual or potential investors. We estimate that as many as 80% of deals are modeled by the dealer, with the issuer then subsequently, and in timely fashion, providing the model to the investor.”); *see also CDOEdge - A CDO Credit Model*, MOODY’S ANALYTICS 1 (2011), <http://www.moodyanalytics.com/~media/Brochures/Structured-Analytics-Valuation/CDOEdge/CDOEdge-Brochure.ashx>.

79. *See, e.g., Cashflow Models and Data*, INTEX, http://www.intex.com/main/solutions_cashflow.php (last visited Jan. 12, 2014) (explaining that Intex sells data products that reflect historical performance of CDOs as well as that attempt to keep up with information released on a specific product in investor reports).

80. *See, e.g., Global Regions*, INTEX, http://www.intex.com/main/solutions_markets.php (last visited Jan. 12, 2014) (“Each model contains the relevant cashflow characteristics of the deal, thereby enabling our users to apply their own prepayment, default, delinquency, and interest rate assumptions for rigorous stress-testing and cashflow analysis.”).

Credit rating agencies use these predictions to calculate credit risk and advise structurers on how to improve credit ratings of the products.⁸¹ Sophisticated investors also use, or others use on their behalf, these predictive modeling tools in order to analyze hypothetical risk as well as the structure of the waterfall.⁸² The models are often programmed by third-party vendors, like Intex, and then are put into large databases of models.⁸³

Currently, predictive models do not have the same legal potency as disclosures,⁸⁴ and companies, such as Intex who build these models, strongly oppose efforts by the SEC to have these or other models treated like legally relevant disclosures.⁸⁵ In 2010, the SEC proposed that issuers should have to disclose custom-programmed Python-language⁸⁶ models of the waterfalls for the same purpose, and that these models be subject to significant testing and verification.⁸⁷ These models would cre-

81. John M. Griffin & Dragon Yongjun Tang, *Did Subjectivity Play a Role in CDO Credit Ratings?*, 67 J. FIN. 1293, 1297-99 (2012).

82. See Letter from Kevin F. McCarthy, *supra* note 43, at 6.

83. See *id.*

84. *Id.* at 4-5.

85. *Id.*

86. Python is a common general programming language used in everything from websites server-side processing to scientific computing. *Organizations Using Python*, PYTHON WIKI, <http://wiki.python.org/moin/OrganizationsUsingPython> (last updated July 2, 2013).

87. Asset-backed Securities, Securities Act Release No. 33-9117, Exchange Act Release No. 34-61858, 75 Fed. Reg. 23,328, 23,378-80 (proposed May 3, 2010) (to be codified at 17 C.F.R. pts. 200, 229, 230, 232, 239, 240, 243, & 249). The London Stock Exchange has implemented a more flexible version of predictive model disclosure requirements in *Market Notice - Detailed Eligibility Requirements for Residential Mortgage Backed Securities and Covered Bonds Backed by Residential Mortgages*, BANK OF ENGLAND ¶¶ 26-28, annex B (Nov. 30, 2010), <http://www.bankofengland.co.uk/markets/Documents/marketnotice121002abs.pdf>. For securitized products based on residential mortgages, a waterfall in some form as well as asset-pool data must be disclosed and meet certain requirements. *Id.* Similar rules have been promulgated for commercial mortgage loans backed securities, small business corporate loans backed securities, auto loan backed securities, consumer loan backed securities, leasing backed securities, asset-backed commercial paper securities. See *Sterling Monetary Framework - Eligible Collateral*, BANK OF ENGLAND, <http://www.bankofengland.co.uk/markets/Pages/money/eligiblecollateral.aspx> (last visited Jan. 12, 2014) (follow “Detailed Information Transparency” hy-

ate legal liability to the degree that they do not align with the functional reality of cash flow distribution, and presumably would also create legal problems if they conflicted with the prospectus or the indenture itself.⁸⁸ Vendors do not currently guarantee that the predictive model is an accurate depiction of the legal or functional reality, and there are often programming errors as well as inaccuracies in depictions.⁸⁹

Then there is the functional reality (what Professor Hu calls the “effective reality”⁹⁰), which are created by depictions used by the trustee to distribute cash flow. These can be made in spreadsheet tools, like Excel, using a combination of formulas, macros written in Visual Basic, and separate programs written in other languages that feed data into Excel.⁹¹ Some trustees use tools like CDonet Trustee that serve a similar purpose by more closely integrating with the cash flow waterfall models used to create the predictive models.⁹² Intuitively, functional depictions suffer from the same problems of translation as predictive models. As Professor Hu and members of industry have observed, participants in industry take such slippages between legal and functional reality as givens.⁹³ Spreadsheets are error-prone and do not encourage good software design practices.⁹⁴ Additionally, programming a model to

perlinks under the heading “Information Transparency” to open each PDF for the various types of securities mentioned). Australia has also made a similar move, requiring disclosure of a Visual Basic for Applications-based waterfall for residential mortgage backed securities. *Finalisation of New Eligibility Criteria for Residential Mortgage Backed Securities*, RESERVE BANK OF AUSTRALIA (Apr. 19, 2013), <http://www.rba.gov.au/media-releases/2013/mr-13-08.html>.

88. See *supra* note 67 and accompanying text (explaining the legal structure of disclosure liability, including liability for representations that would be made under a revision of Regulation AB).

89. See Letter from Kevin F. McCarthy, *supra* note 43, at 4-5.

90. Hu, *supra* note 4, at 1642.

91. SMITH & WINCHIE, *supra* note 8, at 19.

92. CDonet, *supra* note 44, at 3.

93. Hu, *supra* note 4, at 1638-42; see also Estrada & Karen, *supra* note 40, at 13.

94. C.C. MOUNFIELD, *SYNTHETIC CDOs: MODELLING, VALUATION, AND RISK MANAGEMENT* 240 (2009). The European Spreadsheet Risks Interest Group has collected “horror stories” of the problems stemming from using spreadsheets to do critical analyses in finance and elsewhere. *Horror Stories*,

reflect all contingencies can impose a burden if written in Excel rather than programmed in specialized software, so current functional depictions often neglect to include all relevant conditions.⁹⁵ Returning to the J.P. Morgan and Simpson Thacher article on private equity waterfalls:

If we add to all of this the effect of increasingly complex fund terms and structures, it is clear that the time is now past when we can hope to rely with any confidence on the ability of a lone back-office worker—often armed solely with an Excel spreadsheet—to correctly implement the provisions of this critical legal documentation.⁹⁶

The takeaway is that, as Professor Hu and others have recognized, depicting structured finance agreements, and in particular the waterfalls and their inputs, can create significant inaccuracy relative to some absolute hypothetical truth, desired reality, legal reality, or functional reality. And, furthermore, these depictions are imprecise with respect to one another.

2. Incongruous Depictions Yield Imprecise Perception and Imperceptible Future Realities

As the previous section demonstrates, there are many incongruous depictions of structured financial products. These slippages create two levels of problems. First, it becomes hard to perceive any given reality, particularly in the future (or even present) legal and functional realities.⁹⁷ Second, because these two realities are themselves dissimilar and because the legal

EUSPRIG: EUROPEAN SPREADSHEET RISKS INTEREST GROUP,
<http://www.eusprig.org/horror-stories.htm> (last visited Jan. 12, 2014).

95. See Hu, *supra* note 4, at 1639.

96. Estrada & Karen, *supra* note 40, at 13.

97. This argument is derived from the ABA's point in their comments on proposed Regulation AB's Python proposal that the SEC's proposed programmatic models are merely predictive, and those predictive models are thus simply another potential source of confusion. See Letter from Jeffrey W. Rubin, *supra* note 14, at 58-59.

reality presumably ever more strongly influences and eventually usurps functional reality in the event of a legal dispute and eventual legal decision, dealmakers cannot perceive the future functional reality even if they could perceive the separate future legal and presumed functional (but really predictive) realities.

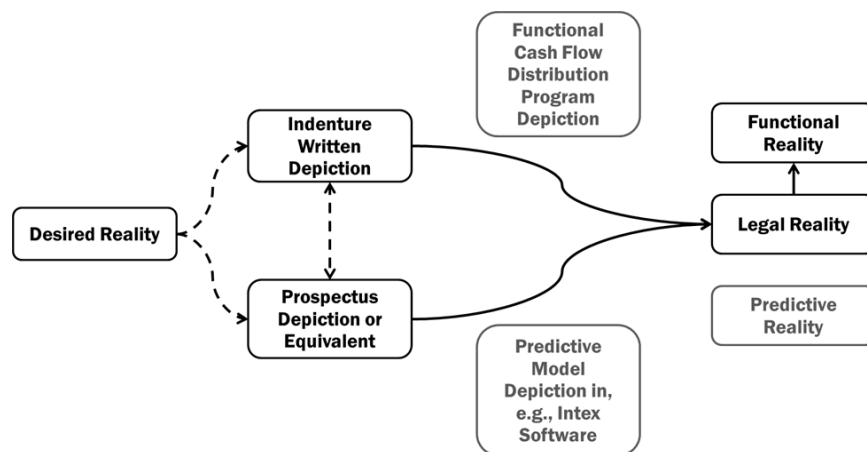


Figure 3. The Conventional Model in a Legal Dispute

When the Conventional Model from Figure 1 enters into a dispute, the legal depictions and thus the legal reality trump the other depictions and thus define the functional reality.

The first challenge facing dealmakers anticipating the functional reality for risk evaluation and the trustees executing these deals is that each of the two most relevant realities—legal and functional—are difficult to precisely or accurately perceive because there are multiple potentially inaccurate depictions that could be a given reality's source. Take, for instance, the legal reality. The indenture agreement and other relevant contracts should dictate the legally relevant structure of the waterfall. They presumably represent a meeting of the minds that purportedly occurs between the parties when mak-

ing CDO deals about the waterfall, among other terms.⁹⁸ And yet, as discussed in the previous section, these deal documents often intentionally or accidentally suffer from ambiguity even in parts like the waterfalls that should be relatively procedural in nature.⁹⁹ Furthermore, often multiple relevant deal documents feed into the structure of the waterfall, a problem that itself introduces ambiguity in the structure of the deal.

Adding to the legal confusion, there are also the prospectuses or circulars and their exhibits, which themselves can be inconsistent relative to the contract (or vice versa) as well as potentially ambiguous and internally contradictory within themselves.¹⁰⁰ And, through liability for prospectus misrepresentations, these prospectuses and related attachments also become legally relevant to the structure of the agreement despite attempts to avoid that by incorporating the indenture by reference into the prospectus.¹⁰¹ Finally, if treated as legally relevant (à la the prospectus), disclosures of either the industry's predictive models (e.g., Intex), the SEC's predictive Python models, or even Professor Hu's impliedly proposed disclosure of the actual program used by the trustee to manage cash flows,¹⁰² liability for each of these additional disclosures adds even further to the uncertainty about how all of the parts will sift into the legal reality.

But intra- and inter-document inconsistencies and vagaries provide only the first part of the first problem of perceiving what the legal reality is. The future legal reality becomes fuzzier in light of the risk of a tribunal—a court or arbitrator—resolving the dispute. When courts interpret a contract or indenture, they quite often face the same challenges of interpretation as do the parties administering the document because they are not experts in the field. As a result, the outcome can

98. *But see supra* note 13 and accompanying text (criticizing the idea that indentures represent a meeting of the minds).

99. *See supra* notes 66-74 and accompanying text (discussing CDO drafting difficulties).

100. *See supra* notes 75-77 and accompanying text (addressing prospectus drafting difficulties).

101. Darmstadter, *supra* note 67, at 30-31.

102. *See* discussion *supra* Part II.B.1.

be unpredictable.¹⁰³ If arbitrators take on the task of assigning meaning to (or gap-filling) a contract, then, in light of the absence of precedent or even useful persuasive authority on these agreements' language, arbitrators' decisions would be partially unpredictable.¹⁰⁴ Even aspects of the deal like waterfalls, which are procedural and presumably deterministic, are subject to many possible meanings.¹⁰⁵ Only when a definitive interpretation arises and is given compulsory force has the legal reality been discovered.

Examples of ambiguous or vague waterfalls abound in the courts and elsewhere.¹⁰⁶ In one, a CDO in deferral—i.e., not paying interest—had a waterfall that did not specify at which step the deferred interest should be paid.¹⁰⁷ The waterfall placed various classes' interest payments before all classes'

103. In fact, it is not entirely clear when a court versus a jury (or judge as fact-finder) should interpret a contract. See Kenneth R. Berman & J. Charles Mokriski, *Judge, Jury, or Anybody's Guess: Who Decides What a Contract Means*, 50 BOS. B. J., 10, 11 (2006) ("While these principles are easy enough to state, it is difficult to predict whether a court will find conflicting interpretations reasonable and let the question go to the fact-finder, or find one interpretation unreasonable and pick the other as a matter of law."). Furthermore, in the case of incomplete contracts that do not address all possible contingencies, one scholar has recognized that courts (and by implication arbitrators) are not the best entities for filling in the gaps. Gillian K. Hadfield, *Judicial Competence and the Interpretation of Incomplete Contracts*, 23 J. LEGAL STUD. 159, 160-64 (1994).

104. Richard A. Posner, *The Law and Economics of Contract Interpretation*, 83 TEX. L. REV. 1581, 1609 (2005).

105. See *R.J. Capital, S.A. v. Lexington Capital Funding III, Ltd.*, No. 10 Civ. 25(PGG), 2013 WL 1294515, at *8-12 (S.D.N.Y. Mar. 30, 2013) (declaring ambiguous indenture language about under what circumstances a waterfall would apply in the event of a funding request); *Bank of N.Y. Trust, N.A., v. Franklin Advisers, Inc.*, 674 F. Supp. 2d 458, 464-66 (S.D.N.Y. 2009) (resolving disputes over indenture terms determining whether alternative waterfall should apply in the case of an optional redemption and whether that redemption should be included in the calculation of a payment); *Cypress Assocs., LLC v. Sunnyside Cogeneration Assocs. Project*, No. Civ.A. 1607-N, 2007 WL 148754, at *4-14 (Del. Ch. Jan. 17, 2007) (belaboring the point that a non-CDO indenture waterfall was irresolvably ambiguous without parol evidence); see also Eric Adams et al., *New Woes for CDOs: The Effect of the Subprime Crisis on Real Estate CDOs and the Opportunity it Presents*, REAL EST. RESTRUCTURING & REORG. GUIDE, May 2008, at 12-14.

106. See *supra* note 105 and accompanying text.

107. PF2, *Deferred 4 Ever*, EXPECT[ED] LOSS (Jan. 5, 2011, 3:12 PM), <http://expectedloss.blogspot.com/2011/01/deferred-4-ever.html>.

principal distributions, and did not specify whether deferred interest constituted interest or principal in its definitions.¹⁰⁸ If deferred interest was interest, then lower tranche bondholders would receive their deferred interest before senior bondholders were paid their principal.¹⁰⁹ On the other hand, call it principal, and lower bondholders are unlikely to ever receive that interest.¹¹⁰

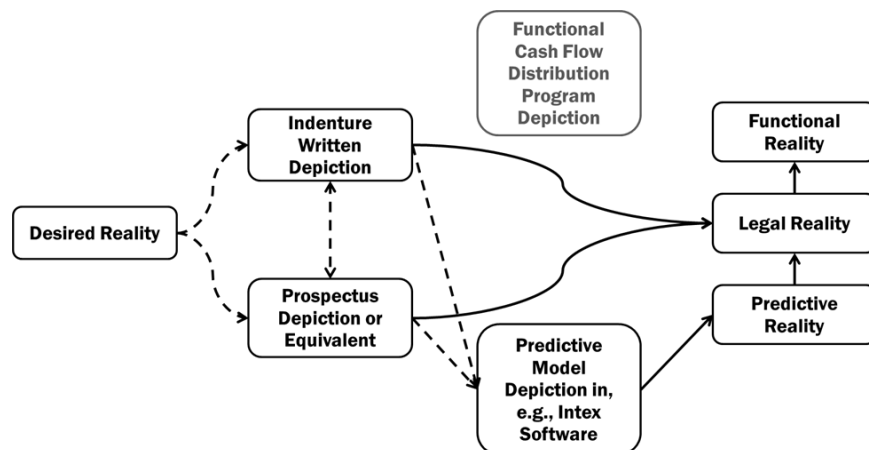


Figure 4. The Predictive Disclosure Model in Dispute

Just as in the Conventional Model, when the Predictive Disclosure Model enters dispute, it competes with the other legal depictions to define the legal and thus functional reality.

Ambiguity can also crop up in the calculation of the collateral value input for the waterfall's overcollateralization test. An overcollateralization test determines whether the CDO has a certain amount of assets beyond the tranche principal specified in the indenture.¹¹¹ Assets with a lower credit rating are

108. *Id.*

109. *Id.*

110. *Id.*

111. See Memorandum of Law in Support of Barclays Bank Plc's Motion

adjusted to reflect their lower quality as collateral.¹¹² This adjustment is called a haircut, the amount of which is specified in the indenture.¹¹³ These assets are actively evaluated by the credit rating agencies, and one or more of the agencies could decrease an asset rating.¹¹⁴ This creates ambiguity.¹¹⁵ Where the indenture specifies when a haircut should apply, the word “or” may be used: if S&P *or* Moody’s downgrades an asset below a certain standard, then apply the haircut.¹¹⁶ The parties intend that when both agencies downgrade an asset it enters a state of default, but lawyers use “or” to take into account situations where there is only one rating available. Most of the time this is not a problem, but frequently the ratings diverge. In these cases, whether an asset should have the haircut applied, and thus whether the overcollateralization test is passed, depends upon whether or not “or” means “and,” or, alternatively, whether “or” simply defines the possible members of the set of credit ratings but not the test itself.¹¹⁷ A related problem that can arise in this same context is that the indenture and the functional implementation accidentally apply the haircut twice, once for each credit rating agency’s downgrade, when in fact it is only supposed to be applied once.¹¹⁸

for Summary Judgment at 5-6, U.S. Bank Nat’l Ass’n v. Barclays Bank PLC, No. 11 Civ. 9199(WHP), 2013 WL 1180414, at *1 (S.D.N.Y. Mar. 12, 2013) (No. 11 Civ. 9199), 2012 WL 5272325 [hereinafter Motion for Summary Judgment]; *see also* U.S. Bank Nat’l Ass’n v. Barclays Bank PLC, No. 11 Civ. 9199(WHP), 2013 WL 1180414, at *2 (S.D.N.Y. Mar. 12, 2013).

112. *See, e.g., id.* at 5-7.

113. *See, e.g., id.*

114. *See, e.g., id.*

115. The Barclays Bank’s motion papers and case are cited in notes 111-114, *supra*, solely in order to provide example of the ambiguous haircut criteria about to be described. The decision and pleadings in this case do not concern this ambiguity directly. Instead, the following high-level examples of waterfall ambiguities are based on a discussion with an industry expert who asked to remain anonymous.

116. *See, e.g.,* Motion for Summary Judgment, *supra* note 111, at 5-7 (discussing that the indenture in this case specified that either a downgrade by Moody’s or by S&P would result in an event of default); *see also supra* note 115 and accompanying text.

117. *See supra* note 115 and accompanying text.

118. *See supra* note 115 and accompanying text.

This legal ambiguity leads to the second problem of perception: parties face equal difficulty perceiving the future functional reality. Assume, for a moment, that the legal reality does not dictate directly how cash distributions in the waterfall will occur. In that case, disclosures currently provide only the predictive reality of what might happen given certain conditions. If the model disclosed is not the actual tool used by the trustee to parcel out cash to beneficiaries of the indenture and equity holders (and we know from the previous section that the various models yield potentially different results), a disclosure of a predictive model can only provide accurate and precise information about that predictive reality.¹¹⁹ Everything the model says about the functional depiction is an estimate (or guess) that might not hold up under important conditions, like default, just as models failed to hold up in the build-up and aftermath of the financial crisis like in the cases discussed above.¹²⁰ Instead, the only way to know the behavior of the functional model is to disclose the functional model, as Professor Hu's "pure information" goal¹²¹ would imply should be done.

119. See discussion *supra* Part II.B.1.

120. See cases cited *supra* note 105.

121. Hu, *supra* note 4, at 1642-43. Professor Hu says his goal is a pure information disclosure model. *Id.* While he then proceeds to discuss the SEC's Python-proposal, *id.* at 1646, 1680-81, that proposal is inherently not a pure information model. It is, as discussed above, a predictive model special-made for prediction of risk. But it is not the model that will be used to execute. So it is not, despite Professor Hu's lengthy discussion of the SEC's proposed rule, the Python proposal is not a real example of pure information. Therefore, this Article aims to give Professor Hu's conceptual model more bite than he seemed to give it credit for, and read "pure information" to mean the disclosure of the model or code actually used to execute the deal and the cash distributions. Because this description of a pure information proposal is arrived at by implication from Hu's conceptual model, in Part III, this Article first fills in some details about what prerequisites must be attained to get the most out of a pure information disclosure. Only after coloring in the amorphous lines of a pure information disclosure regime does this Article then go on to pivot away from disclosure and deal with the perception problem by re-considering the deal structure, the types of investors who should participate in these markets, and the legal issues with departing from the disclosure regime.

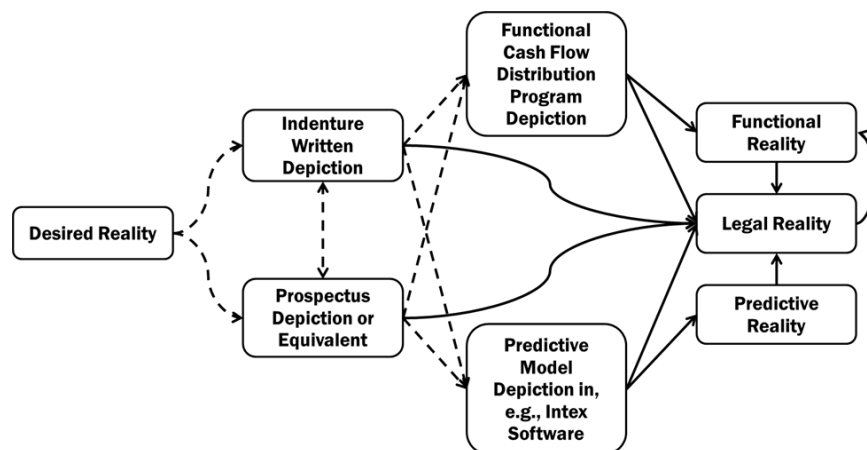


Figure 5. The Hu-esque “Pure Information” Model In Dispute

Like in Figure 4, the Hu “pure information” model simply adds another competing depiction, and in the end however the court churns the butter of depictions to determine the legal reality will control the functional reality.

Ultimately, Professor Hu’s “pure information” proposal’s implied practical implementation actually provides only yet another predictive model because,¹²² taking away the assumption of the last paragraph, the legal reality will in fact trump the functional model in the event of a dispute between the debt holders, equity holders, and the trustee. When a dispute arises about the trustee’s waterfall payouts—and disputes have arisen¹²³—the final legal interpretation and ensuing order to the

122. This argument owes its origination to the American Bar Association’s comment to the SEC’s Python proposal, and holds equally valid as a reply to the solution implied by Professor Hu’s argument. Letter from Jeffrey W. Rubin, *supra* note 14, at 57.

123. See *supra* note 105 and accompanying text (listing cases of courts interpreting waterfalls in CDOs and other similar indentures). For an overview of litigation strategies and a list of CDO cases that are in part related to contractual ambiguity in the indenture, see *American and English Perspectives on CDO Litigation*, JONES DAY 1-62 (March 2008),

trustee will prevail over whatever structure the trustee had previously implemented as the functional reality.¹²⁴ The trustee must interpret that order as a new document and must create another functional depiction (and thus another functional reality) to reflect its interpretation of that order. In fact, intuitively, the act of perceiving and implementing the order will face similar challenges as the problems of perceiving the original indenture used in the first place.¹²⁵ In any case, this potential legal risk means that even if the actual functional model of the waterfall is disclosed to an investor and any other relevant party, as has been suggested might be desirable, the fact of the legal reality's existence and power to trump that functional reality makes the future functional reality difficult to perceive accurately.

The necessary result of these difficulties of perception is that disclosure merely facilitates predictive triangulation onto what the future reality will be, and, like most predictions, that predictive reality is inaccurate relative to the actual functional reality and imprecise between the various predictive depiction sources.

3. Indefinite Reality Creates Business, Legal, and Systemic Risks

Because the future functional and legal realities remain uncertain with respect to waterfalls, CDOs and similarly structured arrangements face related material business and legal risks.

From the business perspective of the structure and issuer, deal documents and indentures make for poor specification diagrams. Those designing these models start with the "Σ" and

http://www.jonesday.com/files/upload/Tambe_American_English_Perspectives.pdf.

124. Trustees file interpleader actions in order to have a judge settle the correct interpretation of the indenture. Eric S. Adams, *CDOs in the Financial Crisis*, 15 J. STRUCTURED FIN. 11, 12 (2010).

125. Cf. Scott Moise, *Plain English*, S.C. LAWYER, Nov. 2002, at 49, 50 (referring to applying the same rules of interpretation to court orders as are applied to statutes and contracts).

" $f(x)$ " rather than the "heretofore" and "dispute, controversy, or claim" for a reason: the model is a better guide for analyzing risks and eventually building the tools that the trustee will use to distribute cash than the written, legal transactional documents. And yet the business managers must devote their time and money to contributing to the creation of the language and then at least try to ensure that the tools and predictive models they build reflect the legal depiction rather than the more useful depiction. Through these many translations, the original business objective can be lost and energy is wasted in an effort to make "complete" deal documents as well as the rest of the tools.¹²⁶ Error is inevitable and thus the structurer's ability to understand its risks becomes tainted through that imperfection.

The investor faces similar risks. The investor wants to know the future functional reality. That future functional reality of the waterfall is imperceptible in the status quo, as discussed in the previous section.¹²⁷ If the investor did not have to expend its money and time analyzing waterfall structures and related aspects of the indenture, it might instead devote those resources to assessing risks outside of the waterfall structure, such as the quality of the representations made by the issuer and sponsor about the underlying assets.¹²⁸ As matters now stand, in a world of limited resources, the investor must attempt to perceive both the risks in the waterfall reality and the risks in the underlying assets. Its inability to perceive the future functional waterfall reality is a risk. Furthermore, the distraction of the waterfall risk hampers its already (and always) imperfect knowledge of the real economy risks it faces by in-

126. Estrada & Karen, *supra* note 40, at 13.

127. *See supra* Part II.B.2.

128. While this is only a counterfactual, perhaps institutional investors would have been caught less flatfooted had they paid their attorneys and bankers to engage in due diligence of the assets underlying CDOs rather than analysis of the legal payout structure—though considering that institutional investors apparently did not even use the data they were given, perhaps that is a pipe dream. *See* Kevin G. Brolley, *Occupy the Buy Side: Institutional Investors Deserve Far More Blame For the Financial Crisis*, BUS. INSIDER (Jan. 25, 2012, 10:34 AM), <http://www.businessinsider.com/occupy-the-buy-side-institutional-investors-deserve-far-more-blame-for-the-financial-crisis-2012-1>.

vesting in a given CDO. This is an inefficient use of its resources and increases the business and legal risk faced by the investor.

The trustee and servicer also face risk in this management of the indenture's cash flow.¹²⁹ The trustee must monitor that waterfall distributions occur according to the terms of the indenture using tools that it built to some extent in concert with the sponsor.¹³⁰ It also must ensure other conditions of the indenture governing asset quality and management are met.¹³¹ But when there is a dispute, the trustee can find itself at the center of the fight between senior and junior tranches of the CDO over contractual terms about the various tests and other decision-points in the waterfall.¹³² The inherent instability of the interpretation of the indenture means that a once acceptable arrangement to all parties involved can, in the right (or wrong) context, become a legal risk to the trustee. Just as with the other parties to the deal, the trustee can find itself in court over its implementation or over the demands placed upon it to reinterpret parts of the indenture by majority holders of the senior tranche.¹³³

Taking the broader view of the markets for these products, the inability to perceive how a CDO waterfall will function in various circumstances limits the ability of market participants, clearinghouses, exchanges, self-regulatory entities, and government regulators to perceive the market in these products. A

129. See Coughlin, *supra* note 46, at 1-2.

130. For example, U.S. Bank's Global Corporate Trust Services provides the technology to provide "[c]ash flow modeling and payment distribution" as a "CDO trustee." *Products and Services - CDO and Securities Services*, US BANK, <https://usbtrustgateway.usbank.com/portal/public/collDebtObligSvcs.do> (last visited Jan. 14, 2014).

131. See Nicola Cetorelli & Stavros Peristiani, *The Role of Banks in Asset Securitization*, 18 ECON. POL'Y REV. 47, 58 (2012) (stating that trustee's "sole purpose is to represent the investor"), available at <http://www.newyorkfed.org/research/epr/12v18n2/1207peri.pdf>.

132. Professor Steven L. Schwarz discusses the difficulties of the trustee as fiduciary during "tranche warfare" and provides an example of this type of conflict generally in Steven L. Schwarz, *Fiduciaries with Conflicting Obligations*, 94 MINN. L. REV. 1867, 1870-72 (2010).

133. See Coughlin, *supra* note 46, at 8-11.

contract or indenture must be translated into a predictive or functional model in order to be stress tested for its sensitivity to various inputs and conditions of underlying assets and other factors in the real economy. Under the status quo, predictive models are available for analysis against past data sets, but they suffer from the problems of inaccurate depiction and imprecise perception discussed earlier.¹³⁴ As such, the market in these products is relatively more imperceptible than it could be if the waterfalls were perceivable. If they were perceivable, they could be connected with the ever more granular, accurate, and timely information about underlying assets, real economy data, and market position data. This interconnect would permit more accurate predictive models of the market to be created and analyzed and in doing so, would reduce systemic risk to participants and those indirectly harmed by their risk-taking choices.

Written contracts make poor specifications for structured finance's more procedural aspects, like CDO indenture waterfalls. They inaccurately depict the desired reality and do not facilitate accurate or precise perception and creation of the functional reality. And because accurate perception of the future legal reality is necessary to accurately predict the future functional reality, their ineffectiveness at permitting perception of the relevant realities imposes risk both upon the parties to the deals and the system as a whole.

III. Make the Functional Depiction of the Waterfall the Legal Reality, Reducing Legal, Business, and Systemic Risks

Dealmakers structuring CDO waterfalls and other similarly procedural and numerical processes—e.g., calculating over-collateralization, interest rate test, cash allocation, etc.—should follow the lead of construction law practitioners and adopt the functional depiction by reference in the legal depiction. Furthermore, in order to maximize the portion of the indenture or contract that can be usefully expressed in an automated functional depiction like a program or Excel file, the

134. See discussion *supra* Part II.B.1.

CDO should be structured to minimize human intervention and discretion to few or no points in the waterfall and its inputs. By defining the waterfall and its related inputs through reference to its blueprint—the functional depiction that will be used by the trustee to distribute cash—the legal reality will then equal the functional reality. Because the functional depiction is necessarily determinative as a programmatic representation, it will not suffer from the same problems of perception that the written contract does, and this combined future legal and functional reality will not suffer from the imperceptibility of a written contract. This will reduce the risk to market participants and the financial system caused by an inability to perceive definitively the future functional and legal realities of an indenture waterfall.

Part A below will explain in greater detail a proposal to include the functional depiction by reference in structured finance contracts and will explain the benefits for dealmakers and parties to these agreements of using that model.¹³⁵ Part B will address whether regulatory agencies should require waterfalls and similar procedural arrangements to be made in this way and whether they can do so as a matter of law.¹³⁶ Part B will also address what role the bankruptcy regime might play in this proposal's viability.¹³⁷

A. *Dealmakers Should Contract for Waterfalls through Negotiations About the Programmatic Functional Depictions*

This Article's proposal has three parts, two instrumental proposals and one ultimate proposal, the latter of which the former two facilitate. First, minimize the amount of unnecessary discretion and imperfect specification intentionally included in CDO indentures and analogous arrangements. Second, structurers and other dealmakers should automate the waterfall portion of the contract using Excel, proprietary software, or other tools. This is facilitated by the reduction in the number of

135. *See infra* Part III.A.

136. *See infra* Part III.B.

137. *See infra* Part III.B.3.

points of human discretion involved in what should otherwise be a very procedural waterfall cash distribution process. Finally, these models, built as part of the deal-making process, should be incorporated by reference as the legally determinative blueprints of the waterfall to the exclusion of other depictions. This new approach to a legal depiction of waterfalls would reduce initial legal costs as well as legal risks. Accordingly, it is a desirable business change for structurers, investors, and trustees alike.

1. Minimize Discretion Where It Does Not Independently Add Value

As discussed earlier, CDO indentures often suffer from many levels of ambiguity introduced throughout the design process and often include discretion solely for the purpose of overcoming drafting challenges.¹³⁸ Reducing unnecessary discretion will limit the problem of slippage and facilitate a programmatic representation of a waterfall. While nothing inherent in the nature of a programmatic depiction limits the opportunities for human intervention, the greater the amount of human manipulation of data and processes, and the more discretion introduced into a program, the less it resolves the problem of contractual depictions. Therefore, those planning the desired structure of CDO waterfalls and inputs should minimize discretion to expressly limited points in the structure where human judgment adds value to the product.

Qualitative and subjective judgments seemingly do not add value, for example, to resolving the question of whether the overcollateralization or interest tests in the waterfall have been met. Nor does discretion add value if it concerns the meaning of default in the context of standardized underlying assets where all parties know what they think constitutes a defaulted asset. Similarly, if the CDO itself has defaulted and that affects the choice of waterfall,¹³⁹ discretion does not belong in that judg-

138. *See supra* Part II.B.

139. Greg B. Cioffi, *Collateralized Damage*, DAILY DEAL, Feb. 1, 2008, available at 2008 WLNR 1910083.

ment and results should instead be determined according to certain specified rules based on the underlying cash flows and asset classes. The question in these cases is often whether cash available for interest payments is greater or less than that due or whether the overcollateralization test has or has not been met for underlying assets.¹⁴⁰ These are not questions in need of human judgment any more than the question of whether five is greater than four.

Participants in the deals creating these CDOs should recognize that discretion left in the hands of asset managers and even fiduciaries like the trustees creates business risk.¹⁴¹ While discretion in asset management can add value, discretion in the hands of the trustee in the context of the cash distribution waterfall and inputs such as default status probably does not. Discretion in the hands of a trustee is a great deal like the court's or arbitrator's power of interpretation. It creates problems of perception of the future functional reality. Thinking along the same lines as the Theory of Second Best, as soon as more than one dimension is not measurable or, more commonly, is restricted from being optimal in a multidimensional setting, the interaction between the different dimensions makes predicting the result of changing another factor difficult.¹⁴² Dis-

140. *Id.*

141. This proposal has independent value even in the event that the second and third proposals are not followed. Failure to tackle ambiguity and leave effective discretion in execution in the hands of trustees has and will continue to create business and legal risks for the reasons already discussed.

142. The general theory of second best had one of its earliest explanations in R. G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11 (1956). A more approachable explanation is:

The problem of second best deals with the question of whether interventions directed at specific market imperfections can improve overall social welfare. According to the theory of second best, correcting specific market imperfections while leaving others untouched will not necessarily improve social welfare. . . .

The theory of second best in general states that in a system where conditions are such that a Pareto optimum exists, if one condition is changed so that it is no longer at its optimum state, then to reach a second best optimum (because

cretion adds infinite possibilities on one dimension and adds yet another layer of complexity to any stress testing analysis done upon a security. And when those points of discretion do not specify criteria for the decision-making process or leave broad (perhaps even *carte blanche*) discretion to accommodate unpredicted future circumstances, risk is taken on by the parties.

Those tasked with limiting discretion might respond that it is necessary to leave discretion to cope with the unknown. That is not true. There should be no unknown inputs. Structured financial products effectively define a function $f(x_1, x_2, \dots, x_n)$ where n is less than infinity (often, far closer to zero). The numbers of variables n can never approach infinity because the sponsors designing the financial model lack infinite time and infinite mental capacity to conceive of such a model that takes an infinite number of inputs. And every input into the model is placed into the model intentionally as a variable cannot write itself into a model, contract, or program. Models are by definition simple depictions of a more complex reality, but in the case of these waterfalls this simplified reality creates and defines the extent of the actual reality of cash flow distribution. As an example, in the Great Recession, financial participants did not fail to understand their inputs; rather, they misestimated the reasonable ranges of the inputs.¹⁴³ Moreover, if within the function there are not conditions to cope with, for example, situations where x_1 , which could be asset default, is greater than even a conservative analyst might allow for (say, because the correlation of housing foreclosures was greater than anyone

the first best optimum cannot be reached), all the other conditions must be changed from their original first best optimum states.

Joseph Rebello, *The Problem of Second Best: Are Partial Equilibrium and Third-Best Analyses Solutions?*, U. CHI. (May 15, 2002), <http://home.uchicago.edu/~rposner/rebello2.htm>.

143. Even those who will likely oppose a proposal like the one made in this Article agree with this point. For an accessible discussion of poor prediction of housing price correlation as one of the (many) causes of the Great Recession, see Felix Salmon, *Recipe for Disaster: The Formula that Killed Wall Street*, WIRED, Feb. 23, 2009, available at http://www.wired.com/techbiz/it/magazine/17-03/wp_quant?currentPage=all.

expected¹⁴⁴), then that possibility, however removed, should be able to be accounted for, even if it is accounted for by defaulting on the CDO to the detriment of all of the relevant parties. It might require more work, but it is little more than asking that when those designing structured financial instruments decide what they want to do when $x_l > 50$ they should also decide what to do with $x_l \leq 50$ rather than leaving that decision for the day disaster strikes.¹⁴⁵ The cost in up front effort is not tremendous, and the benefit in risk reduction and perception is substantial.

There might be an unknown variable x_{n+1} that was not and could not be anticipated at the time the model was made but that should or will have an effect on the cash flow distribution of $f(x_1, x_2, \dots, x_n)$. But, in fact, a mechanical process of determining cash flows according to collateralization, money available to pay interest and other costs is, as demonstrated above, a determinative process, and the parties can be expected to have determined how the relevant criteria will affect outputs. The only way that x_{n+1} can affect output is if one or more of the set of variables $\{x_1 \dots x_n\}$ is a function of x_{n+1} , $x_n(x_{n+1})$. Unless x_{n+1} represents some exogenous legal power from another part of the contract or from outside of the contract, the same argument made above applies here: parties should anticipate how they will react to the entire range of possible values of, for example, x_n , and if they do, then they can cope with any output of $x_n = x_n(x_{n+1})$. If x_{n+1} is an external business or legal factor that trumps the waterfall, then this Article's proposed removal of discretion cannot address that directly. Removing discretion from the waterfall does not remove the potential need for discretion outside of the waterfall in the business structure of the CDO, even though that weakens the power of the overall proposal to minimize risk.

144. See, e.g., Letter from Kevin F. McCarthy, *supra* note 43, at 1-2 ("Rather, the problems arose from shoddy lending standards, inadequate disclosure of loan level collateral detail . . . , and incorrect assumptions regarding housing prices and mortgage default rates by market participants.")

145. And they should take care not to make the same mistake as the author made in an early draft and test only for $x > 50$ and $x < 50$ while neglecting $x = 50$.

2. Automate the Waterfalls and Interpretation of Inputs Wherever Possible

Reducing discretion maximizes the parts of the waterfalls and surrounding framework of inputs that can be automated. The more that quantitative data directly is fed into determinative criteria, the less human intervention is required, and the more useful is an automated programmatic functional depiction. The more the waterfall and the surrounding inputs, including collateralization models for feeding into the overcollateralization tests, are automated into a programmatic functional depiction, the greater the utility the functional depiction has for informing sponsors, investors, trustees, and regulators of how the cash distribution will actually change given different economic assumptions about the assets and exogenous factors.

Automation is in principle a good choice for businesses because it reduces the need for trustees to hire large back-office staffs, which have a capacity for error,¹⁴⁶ to manage inherently procedural cash flow processes.¹⁴⁷ It also reduces liability arising from those likely mistakes. The effort to create management systems to cope over the long run with the continuous risk of human error almost certainly equals the cost of upfront investment in building functional depictions to manage most cash flow processes. Admittedly, there are costs to developing

146. See, e.g., PF2, *Is your CDO Leaking*, EXPECT[ED] LOSS (May 14, 2009, 11:30 AM), <http://expectedloss.blogspot.com/2009/05/is-your-cdo-leaking.html> (describing an instance of a CDO waterfall distribution being incorrectly calculated by \$4 million because of a waterfall implementation error by the trustee).

147. Others have considered the possibility of writing certain types of contracts in a formal language like programming code or pseudo-code, but none so literally as this Article proposes. Because the functional reality is literally created by code, waterfall agreements can be expressed as operational code rather than simply formal language designed to reduce ambiguity. See, e.g., *A Formal Language for Analyzing Contracts*, NICK SZABO'S PAPERS AND CONCISE TUTORIALS (2002), <http://szabo.best.vwh.net/contractlanguage.html> ("The author presents a mini-language for professional and researchers interested in drafting and analyzing contracts. It is intended for computers to read, too. The main purpose of this language is to, as unambiguously and completely and succinctly as possible, specify common contracts or contractual terms.").

these systems initially, but those costs are likely minimized by the fact that currently there is already software on the market like CDOnet Trustee for managing many aspects of day-to-day cash distribution by the trustee and other parties. Because the tools already exist to build these models, it is important to shift that construction to a point in time before the transaction has been completed and to focus more resources on making sure that the automation is correctly designed.

Programming these models does not mean removing human oversight, as might be mistakenly presumed. The trustee and the other parties and beneficiaries to the CDO have a role to monitor performance against predictive models in order to ensure that everything outside of the waterfall and its inputs operate correctly. Furthermore, just as with long-term manual data manipulation, these programs are, of course, man-made and thus subject to error. But, as the next section will discuss, all parties will and should refocus their analytical and error-checking efforts towards ensuring that the functional depiction actually represents their desired functional reality.¹⁴⁸ Also, there should always be the opportunity to renegotiate if the parties agree that the structuring suffers from an obvious programmatic error, but *caveat emptor* (buyer beware), *caveat venditor* (seller beware), and *caveat commissarius*¹⁴⁹ (trustee beware) all need to apply if the functional depiction is to constitute the legal reality.

A question related to automation is whether the code should be open or closed to investors and regulators. Open source code, as distinct from the SEC's emphasis in its Python proposal on using an "open source programming language,"¹⁵⁰

148. See *infra* Part III.A.3.

149. Thanks to Shane Morgan, classics major extraordinaire, for bringing structured finance to Ancient Rome.

150. Asset-Backed Securities, Securities Act Release No. 33-9117, Exchange Act Release No. 34-61858, 75 Fed. Reg. 23,328, 23,380 (proposed May 3, 2010) (to be codified at 17 C.F.R. pts. 200, 229, 230, 232, 239, 240, 243, & 249). Open source code refers to the idea that the code can be seen by the relevant parties rather than hidden behind a compiled binary executable. See *The Open Source Definition*, OPEN SOURCE INITIATIVE, <http://opensource.org/osd> (last visited Jan. 16, 2014). What is important is not that the language be open source in the sense of the licensing agreement—

is necessary for there to be productive, informed negotiations about the nature of the cash distribution. Many in the industry already release a great deal of modeling information to investors in this context,¹⁵¹ and the predictive models can be made to disclose the underlying code used to make them.¹⁵² There is no fruitful discussion of terms as well as a meaningful audit of the code, as is necessary to fairly implement a *caveat emptor* rule, without open code. The risks of open code, in terms of proprietary methods, are minimal in light of what appears to be current industry practice of sharing models. And the underlying data and analytical methods used to calculate some of the inputs, while they should likely also be open and disclosed, could be agreed upon by the parties to be treated as black boxed functions with open APIs¹⁵³ if not integral to the structure of the waterfall indenture itself.

which the open source community would disagree with, *id.*—but that the models themselves are open. Python in particular is a programming language the design and interpreter of which are open source. *Python Programming Language—Official Web Site*, PYTHON, <http://www.python.org> (last visited Jan. 16, 2014). In my mind, it is not as important that these models be designed in an open source language as it is that the models themselves are open source/open code in whatever language best-suited for the industry. What is important is that there are a limited number of languages used and that the models themselves have some sort of standardized, non-obfuscated coding methodology. Code can be just as incomprehensible as the written word regardless of the language used. See, e.g., *Obfuscated Python*, P-NAND-Q.COM, <http://www.p-nand-q.com/programming/obfuscation/python/more.html> (last visited Jan. 16, 2014).

151. See Letter from Kevin F. McCarthy, *supra* note 43, at 6.

152. See Larry Cordell et al., *Collateral Damage: Sizing and Assessing the Subprime CDO Crisis 10* (Research Dep't, Fed. Reserve Bank of Phila., Working Paper No. 11-30/R, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1907299.

153. API means Application Programming Interface, and is the collection of functions that a program makes “public” for use by other programs, versus functions that are accessible only internally within the program. MARTIN REDDY, *API DESIGN FOR C++ 1-2* (2011). The relevance of an API (or an analogous structure by any other name) in this context is that an API permits a user or programmer to interface with already written and compiled code and order it to run certain commands and return certain results without revealing how the process works. While a black box is not desirable, it is feasible and in fact is a common way to organize software even when the code is available for technical reasons separate and apart from the secrecy implicated here.

Closed source models, while less desirable for purposes of active negotiation, could also be an option in general, though they would require extensive stress test based negotiation, which, because of the number of possible inputs and interactions, could end up making the functional depiction effectively predictive for purposes of the negotiation. In a way, closed source would fall half-way between current practice and the present proposal, in that the functional reality would still be the legally determinative depiction, but the parties would negotiate over its output rather than over the code itself.

Open source without standardization of programming language or modeling tool, interfaces, and outputs, just like a contract or indenture without standardization, also poses serious challenges of comparability and comprehensibility. While this topic is beyond the scope of this Article, it seems likely that the industry would coalesce around a few products that already have a substantial infrastructure and network. Models with built-in tools like Intex, CDO Edge, and even Excel spreadsheets are widely used, understood, and exchanged as means of providing predictive information to investors and other market participants.¹⁵⁴ The market coalesced on these products naturally and not as a result of regulation.¹⁵⁵ Markets likewise should grow around a subset of products, and the industry should develop internal standards for presentation and interface, especially as many of the investors have equal bargaining power and experience as the sponsors and issuers.

154. Letter from Kevin F. McCarthy, *supra* 43, at 2.

155. *Cf.* *History*, INTEX, http://www.intex.com/main/company_history.php (last visited Jan. 16, 2014) (describing the product development of Intex without mention of it being given any regulatory advantage).

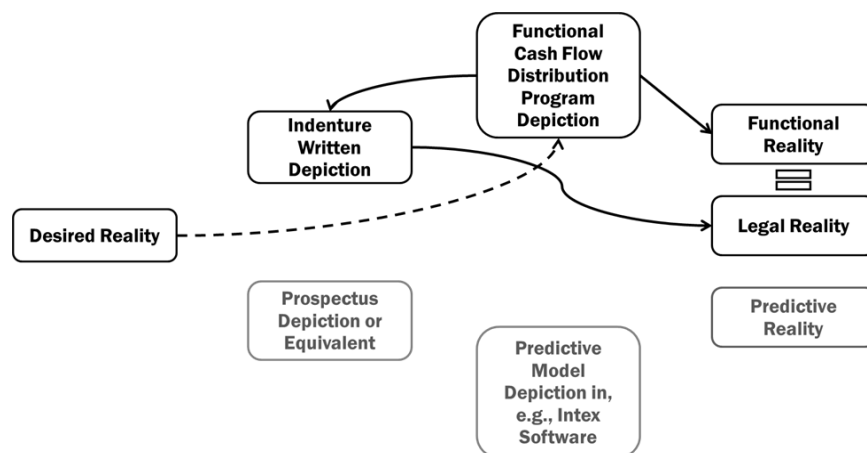


Figure 6. The Code as Contract Model In and Out of Dispute

By negotiating directly about the waterfall's functional depiction and incorporating that depiction into the contract as well as using it to create the functional reality, the functional reality and the legal reality become equivalents.

3. Make the Automated Waterfalls the Contract by Reference

These largely automated procedures, expressed in code with minimal discretion, should, like blueprints, replace the waterfall and surrounding input contract language as the legal depiction in CDO indentures and similar documents. By including the functional depiction by reference in the legally binding contract as a substitute for written contractual depiction of the indenture waterfall and other procedural inputs, drafters will reconcile legal and functional depictions and thus reconcile legal and functional realities. While the functional depiction might not perfectly match the desired reality, parties will at least focus on making sure that the implementation that will create the cash distribution regime is as accurate as possible, relative to the desired reality, and any limitations will be set out clearly in the implementing code.

This change to a legally binding functional depiction will reduce the problems of perceiving the future legal and functional realities and thus decrease the legal risk faced by businesses. Rather than operating through legal intermediaries to structure and depict the waterfall and its inputs, structurers, investors, and other relevant parties can directly negotiate about whether the code or formulas represent both the method and results that they desire. This removes problems of lawyers depicting and describing waterfalls in the text of contracts and then of back-office programmers depicting contracts as code. It also removes the problem of perception because there is only one depiction to perceive, and that depiction is not subject to interpretation or dispute because of its very nature as deterministic code.

Furthermore, this change means that lawyers, advisors, and negotiators can focus on other, higher risk parts of the indenture and related agreements, like the guarantees for representations about the underlying asset quality, as well as reviewing the quality of that information directly before settling the transaction. As an example, lawyers are better equipped to evaluate the quality of due diligence and secure against misrepresentations and other macro level risks to the deal than the nitty-gritty back-office procedures necessary to correctly calculate cash distributions. This proposal promotes a more efficient allocation of legal resources for the participants in the deal.

This change to reduce legal risk for all parties needs a reinforced regime of *caveat emptor*, *caveat venditor*, and *caveat commissarius*. This means that parties who purchase these CDO bonds, build these bonds, and are paid to manage these bonds must retain the risk of verifying that the code reflects their desired reality. When these waterfall programs become subject to dispute about their result, many of the benefits of using code instead of language are lost because multiple potential realities can exist. But, if each participant retains the responsibility of ensuring the code operates correctly, the code will be better vetted, the results will align better with the desired reality, and the risk of dispute based on misunderstanding will be reduced.

Of course, disputes will still exist about the remainder of the indenture that cannot be expressed in code. Questions of the meaning of certain asset structure requirements, points of discretion, and perhaps some of the inputs qualitative categorization will remain. But there will be a reduced dispute or risk of dispute about the waterfall itself, which is a reduction in hazard faced by parties. Risks of misrepresentation and fraud will remain. Some party may claim to the tribunal that the code is not what they agreed to. That said, in this contractual regime, unless that party can prove something that generally voids the contract from principles of general contract law—fraud, adhesion, etc.—tribunals should have little sympathy for that party's inability to evaluate the code directly.

That said, the regime of *caveat emptor* creates some concerns for unsophisticated and relatively less sophisticated investors. It has been reported that even sophisticated investors in CDOs and other ABSs relied at times almost entirely upon statements about the waterfall structure in the circulars plus the credit ratings.¹⁵⁶ And in particular, these investors relied upon the credit rating agencies' evaluations of a particular tranche to determine the size and scope of the risk they faced.¹⁵⁷ If sophisticated investors were unable or unwilling to assess directly the risk of the contracts and the predictive models, then it seems highly unlikely that individual or small, as well as less sophisticated investors, will have the capability to understand, let alone stress test, programmatically represented waterfall indentures. This indicates that, in order to maximize the benefits of the coding the contract regime and avoid accusations of abusing unsophisticated investors, CDO bond and share dealers should not deal to unsophisticated investors, an issue that will be discussed in the next part.¹⁵⁸

156. MELANIE L. FEIN, SECURITIES ACTIVITIES OF BANKS 13-7 (4th ed. Supp. 2013); Fanni Koszeg, *Will CDO Managers Be Held Accountable for Their Role in the Financial Crisis?*, BLOOMBERG LAW, <http://about.bloomberglaw.com/law-reports/will-cdo-managers-be-held-accountable/> (last visited Jan. 16, 2014).

157. FEIN, *supra* note 156, at 13-7.

158. *See infra* Part III.B.1.

Limiting the role of discretion will make it easier to perceive the future legal and functional reality of complex cash distributions like those involved in CDOs. It will also facilitate automation, which in and of itself should be desirable for the structurers and other parties involved in creating CDOs. Automation will decrease the cost of manual management and human error, and in doing so is inherently a desirable business move for those designing these products. Lastly, and most importantly, these automated programs, expressed preferably as open source code to all of the parties, should replace the written indenture as legally binding specification and deal doc for the waterfall and its relevant inputs. This will reduce business and legal risk faced by dealmakers designing CDOs, who will no longer have to waste resources building indeterminate legal depictions of waterfalls. Instead, there will be one depiction of the waterfall, perception of which is deterministic and, while perhaps complicated in details, is not subject to interpretive discretion and multiple legal depictions. The combination of these three proposals is risk-reducing for all of the parties to a CDO or other structured finance arrangement.

The technology is already being used, the models are already being built, and what needs to be done now is to remove the unnecessary, risk-creating legal depiction and substitute these automated tools. And in fact, as the swaps markets demonstrate, a change to programmatic representation is feasible.¹⁵⁹

159. As an aside, this proposal has partial precedent in the massive swaps market, which often negotiates over programmatic descriptions of standardized swap deals before creating the deal documentation. Other financial securities markets already negotiate over coded representations that more usefully describe the transaction's execution than can the deal documents. Gordon F. Peery, *Swap Documentation Must Conform to Three Final CFTC Rules by July 1, 2013*, DERIVATIVES CLIENT ALERT (Borden Ladner Gervais LLP, Toronto, Can.), June 2013, at 1, 1-7, available at http://www.martindale.com/members/Article_Atachment.aspx?od=1081999&iid=1853564&filename=asr-1853568.Swap.pdf. Swaps are often communicated, for example, using a descriptive language called FpML. *FpML Frequently Asked Questions*, FPML, <http://www.fpml.org/about/faq.html> (last visited Jan. 16, 2014). Information concerning the different legs of the swap (e.g., the different interest rates to be swapped), the timing of payments, etc., are specified in this language, and the models made in this language can also be used to monitor the transaction and execute payment(s). *FpML Financial product*

B. *Regulators Should and Can Facilitate and Require Dealmakers to Contract for Waterfalls in Code*

The proposals just discussed are desirable as a matter of legal–business strategy for the market participants to implement of their own volition. Using the transaction model of code as contract would save legal costs at the time of the transaction and reduce legal risk in the future. Market participants could adopt a standard or standards for coding as contract of their own volition, spiraling around a product like Intex or similar product just as they have in the market for predictive models. Given the dollar amounts in CDO or other structured finance transactions, the relative technological sophistication of the market participants on both sides of the deal, and the existence of commonly used tools in the market, the idea that market forces would lead participants to further develop their coded depictions and coalesce around a standard is quite feasible.

Markup Language Recommendation 3 March 2011, FpML, <http://www.fpml.org/spec/fpml-5-1-6-rec-1/html/confirmation> (last visited Jan. 16, 2014) (note especially parts 2.2 and 2.8). The relevant master agreement, confirmation, supplement, and other related contract documents are produced at different times, depending on the dealmakers. Sometimes, they are made before the deal is conducted and only the specific swap terms have to be set in the confirmation, sometimes simultaneously, often times after the electronic FpML-based deal has been made, and in some cases never at all. See Peery, *supra* at 1-2.

Problems have arisen because non-procedural parts of the deal—primarily the dispute resolution process—has been left out when deals were made without proper deal documentation. *Id.* at 1-4. These dispute resolution terms and related ambiguities, like analogous elements of the general proposal of this paper, are elements that largely are not rote and procedural and do in fact have a place in traditional legal drafting rather than programmatic representation. The failings of these electronic-only deals are largely a function of insufficient planning and drafting of the master agreements and relevant supplement documents to account for basic good practice in transactions. These problems are beyond the scope of this proposal to resolve.

The larger takeaway, however, is that this proposal is a credible one. Swaps are being made in unambiguous and programmatic forms that serve both to facilitate dealmaking and execution. The only remaining step is for these swap transactions to leave behind the paper trail for the core elements of the deal that are best expressed in terms of, for example, a document description language like FpML, in order to remove any of the potential ambiguities and coordination problems that might arise in the swaps context for the same reason they have arisen in the CDO context.

However, should government regulators have a role to play in facilitating or requiring the code as contract proposal? The discussion below will explain some of the current SEC rules that must change to facilitate coding the waterfall indenture and why the SEC should make those changes.¹⁶⁰ Following that is the question of whether the SEC, CFTC, or some other regulatory entity should or can require that waterfalls be contracted for as code.¹⁶¹ Finally, this discussion will conclude with recognition of the challenge that the bankruptcy regime, as a court-driven regulatory system, places in the way of this Article's proposal.¹⁶²

1. The SEC Needs to Adjust Its Disclosure Rules to Permit Code as Contract

The code as contract proposal facilitates the reduction of the number of legally relevant depictions. And, as mentioned above, this implies making the prospectus and other similar disclosures less or not legally relevant.¹⁶³ If the prospectus remains legally relevant, and if the SEC's proposed Regulation AB II rules that would expand similar disclosure requirements to some classes of unregistered securities is adopted as drafted (or even in a form similar to what was drafted),¹⁶⁴ there will be numerous legally relevant depictions to analyze for purposes of evaluating risk.

First, under the current statutes and regulations, the SEC requires issuers of publicly offered securities, including bonds like those involved in CDOs, to register the security with the SEC.¹⁶⁵ In order to register and sell the securities, the issuer

160. *See infra* Part III.B.1.

161. *See infra* Part III.B.2.

162. *See infra* Part III.B.3.

163. *See* discussion *supra* Part III.A.

164. Re-Proposal of Shelf Eligibility Conditions for Asset-Backed Securities, Securities Act Release No. 33-9244, Exchange Act Release No. 34-64968, 76 Fed. Reg. 47,948, 47970-71 (re-proposed Aug. 5, 2011) (to be codified at 17 C.F.R. pts. 229, 230, 239 & 249).

165. *See* Securities Act of 1933 § 2, 15 U.S.C. § 77b (2012) ("The term 'security' means any note, stock, treasury stock, security future, security-based swap, bond, debenture, evidence of indebtedness."); Securities Act of

must provide a prospectus that explains the relevant payouts and underlying assets.¹⁶⁶ Misstatements in the prospectus can create legal liability.¹⁶⁷ Regulation AB permits the waterfall structure to be disclosed and explained using diagrams and tables if helpful.¹⁶⁸ Regulation AB only applies to publicly offered securities,¹⁶⁹ however, and might not cover certain types of actively managed CDOs.¹⁷⁰

Privately placed CDOs are in a slightly less clear position with respect to the legal effect of disclosures. As it stands, privately placed CDOs need not be registered under the Securities Act, and thus need not disclose information like what is contained in a prospectus, though typically they do disclose offering memoranda or circulars.¹⁷¹ CDOs are often sold in the primary market to accredited investors, and thus can take advantage of the statutory exemptions to registration.¹⁷² The SEC specifies safe harbors for exemptions to registration in Regulation D, and in particular Rule 144A, for private offerings of sales to qualified institutional buyers.¹⁷³ The SEC has pro-

1933 § 4, 15 U.S.C. § 77d (2012) (enumerating exceptions to the registration requirement, including exemptions for private placements); Securities Act of 1933 § 5, 15 U.S.C. § 77f (2012) (requiring registration of any non-exempted security); Trust Indenture Act of 1939 § 304, 15 U.S.C. § 77ddd (2012) (specifying exceptions to trust indenture registration); Trust Indenture Act of 1939 § 306, 15 U.S.C. §§ 77eee-ggg (2012) (defining trust registration requirements).

166. Securities Act of 1933 § 5, 15 U.S.C. § 77e(b)(2) (2012).

167. See Securities Act of 1933 § 12, 15 U.S.C. § 77l (2012).

168. See 17 C.F.R. §§ 229.1103(a)(vi)-(ix) (2013); 17 C.F.R. § 229.1113 (2013).

169. See Regulation AB includes an elaboration of the general prospectus requirement and does not bypass the Securities Act of 1933 § 4 exemptions for privately issued securities. See Letter from Jeffrey W. Rubin, *supra* note 14, at 83-86.

170. See 17 C.F.R. § 229.1101(c)(2)(ii) (2013).

171. See Securities Act of 1933 § 4, 15 U.S.C. 77d(a)(2) (2012) (“The provisions of section 77e of this title shall not apply to . . . transactions by an issuer not involving any public offering.”).

172. See Bobby R. Bean, *Supervisory Insights: Enhancing Transparency in the Structured Finance Market*, FED. DEPOSIT INS. CORP., http://www.fdic.gov/regulations/examinations/supervisory/insights/sisum08/article01_transparency.html (last updated Dec. 7, 2007).

173. See 17 C.F.R. 230.144A(d) (2013). The rule explains what a quali-

posed modifying Rule 144A to condition using the safe harbor for asset-backed securities disclosure requirements upon sellers, making disclosures similar to those required under proposed Regulation AB II.¹⁷⁴ Relevant to coding the waterfall contract is that this would potentially include the Python proposal, though that appears to still be in notice and comment.¹⁷⁵ In any case, the American Bar Association has argued persuasively, and the SEC agrees, that these safe harbor conditions cannot apply to offerings that fall expressly under sections 4(1) and 4(2) of the Securities Act of 1933.¹⁷⁶ They would only cover those products that fall into the safe harbor provisions but not into the statutory exceptions.¹⁷⁷

fied institutional buyer is: “Any of the following entities, acting for its own account or the accounts of other qualified institutional buyers, that in the aggregate owns and invests on a discretionary basis at least \$100 million in securities of issuers that are not affiliated with the entity.” *Id.* § 230.144A(a)(1)(i). The rule lists examples, including insurance companies, investment companies, state employee benefit plans, trust funds, investment advisers, dealers, and others. *Id.*

174. Asset-Backed Securities, Securities Act Release No. 33-9117, Exchange Act Release No. 34-61858, 75 Fed. Reg. 23,328, 23,332-33 (proposed May. 3, 2010) (to be codified at 17 C.F.R. pts. 200, 229, 230, 232, 239, 240, 243, & 249).

175. Asset-Backed Securities, 75 Fed. Reg. at 23,395 (“The underlying transaction agreement for the securities must grant to purchasers, holders of the securities (or prospective purchasers designated by the holder) the right to obtain from the issuer of such securities the information, upon request, that would be required if the transaction were registered under the Securities Act and such ongoing information as would be required by Section 15(d) of the Exchange Act if the issuer were required to file reports under that section.”).

176. Letter from Jeffrey W. Rubin, *supra* note 14, at 85 & n.135 (citing Asset-Backed Securities, 75 Fed. Reg. at 23,394).

177. *Id.* (citing Asset-Backed Securities, 75 Fed. Reg. at 23,394).

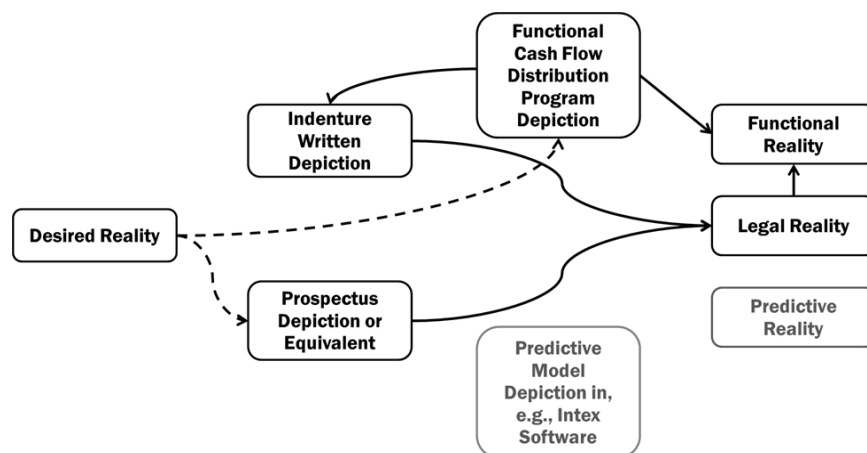


Figure 7. The Prospectus Problem for the Code as Contract Model

In public offerings, and perhaps also in private placements if the SEC moves on its Regulation AB II proposal with respect to 144A for ABS offerings, the prospectus comes back into play, competing to define the legal reality, with the legal reality able to trump the functional reality once again.

To remove the requirement of multiple legally relevant depictions of the waterfall, the SEC has options. First, for publicly traded securities, the SEC could permit the issuer to incorporate by reference into the prospectus as well as the contract the coded representation of the waterfall. This would resemble to current practice of those in the industry who try to incorporate the indenture or other agreement into the agreement.¹⁷⁸ What the SEC could allow, however, is that when the coded waterfall is incorporated by reference, no other description need be provided. And, furthermore, the SEC could recognize, if not dictate, that parties can agree that no matter what the pro-

178. Darmstadter, *supra* note 67, at 30 (“[M]any prospectuses still incorporate goodly chunks of the indenture without any explanation, concise or otherwise. The SEC has apparently acquiesced in the view that prospectus recitals of indenture provisions are ‘magic words’ that investors expect to see recited *verbatim*.”).

spectus states, the coded representation prevails.¹⁷⁹ This leaves the possibility of private claims under sections 11 and 12 of the Securities Act of 1933 based upon reliance upon the prospectus if descriptions are still provided,¹⁸⁰ but by removing unsophisticated investors from the market, most or all sales of these products would take place in private placements without a prospectus requirement to create liability.

Alternatively, the SEC could remove the prospectus requirement entirely in the context of explaining waterfalls¹⁸¹ and could discourage the use of written descriptions as risky representations bordering on deceptive under section 10(b) of the Securities Exchange Act of 1934.¹⁸² This would remove potential for private suits based on textual descriptions of the waterfall because making those descriptions would be unacceptable. On the other hand, textual descriptions in the prospectus or offering memorandum could remain useful as a starting point for understanding a coded representation. The real issue is not the presence of such descriptions or even necessarily of legal depictions in the indenture, but rather their potential as a legal trump against the functional depiction. So while this proposal would be the purest solution in terms of limiting the number of depictions, the first solution is likely the better one for providing useful information.

An objection to these proposals for publicly offered securitized products is that these products are already dangerous and hard to understand for sophisticated investors, many of whom relied upon credit ratings rather than their own evaluations of the products in the lead-up to the crisis.¹⁸³ Unsophisticated investors, who could potentially purchase these products if they are publicly traded, face an even greater handicap at under-

179. Securities Act of 1933 § 28, 15 U.S.C. § 77z-3 (2012) (“The Commission, by rule or regulation, may conditionally or unconditionally exempt any person, security, or transaction, or any class or classes of persons, securities, or transactions, from any provision or provisions of this subchapter or of any rule or regulation issued under this subchapter . . .”).

180. Securities Act of 1933 § 11, 15 U.S.C. § 77k (2012); Securities Act of 1933 § 12, 15 U.S.C. 77l (2012).

181. Securities Act of 1933 § 28, 15 U.S.C. § 77z-3.

182. Securities Exchange Act of 1934 § 10, 15 U.S.C. § 78j(b) (2012).

183. See *supra* note 172 and accompanying text.

standing the risks if the representations are made in coded form. This leads to a second component of the SEC's considerations: how to cope with unsophisticated investors' purchases of products with waterfalls like those in CDOs. The possible solutions range from banning the sale of these products to investors through FINRA suitability provisions¹⁸⁴ to making a carve-out from this proposal that keeps the status quo prospectus-focused regime. Even under the current regime of suitability, a sale of such a high-risk product to an unsophisticated investor might run afoul of FINRA suitability rules binding broker-dealers.¹⁸⁵ But, assuming that they are suitable in the status quo, the SEC should push FINRA and other self-regulators to reduce or eliminate sales of CDO-type products with complex waterfalls to "unsophisticated" investors, perhaps arguing that they are inherently deceptive given the relevant buyer's presumed inability to understand them. If, however, the SEC does not want to block sales of these structured financial products to unsophisticated investors, the SEC should likely carve out any non-qualified institutional investor from the code as contract regime.

Sophisticated ("accredited") investors can likely already implement the code as contract regime in private transactions.¹⁸⁶ Unless it includes the Python model, proposed Regulation AB II's expansion to the disclosure requirements of private placements will not interfere with their ability to choose the best legal depiction. FINRA's Rule 5123 also only requires that documents used in the offering document be filed, but does not specify what those documents should include.¹⁸⁷ It appears,

184. See FINRA Manual Rule 2111 (effective Feb. 4, 2013), available at http://finra.complinet.com/en/display/display_main.html?rbid=2403&record_id=14960. FINRA is a self-regulatory authority for broker-dealers. *Get to Know Us*, FINRA 2-3 (2012), <http://www.finra.org/web/groups/corporate/@corp/@about/documents/corporate/p118667.pdf>.

185. See FINRA, REGULATORY NOTICE 12-03, COMPLEX PRODUCTS: HEIGHTENED SUPERVISION OF COMPLEX PRODUCTS, 2 & n.9 (2012), available at <http://www.finra.org/web/groups/industry/@ip/@reg/@notice/documents/notice/p125397.pdf> (noting that FINRA has brought regulatory actions for transactions in complex financial products unsuitable for the relevant investors).

186. See *supra* note 158 and accompanying text.

187. See FINRA Manual Rule 5123 (effective June 20, 2013),

though it remains an open question, that the SEC does not have any rules standing in the way of private placements programming their waterfall indentures and incorporating that functional depiction as contract.¹⁸⁸

In summary, the SEC should remove unsophisticated, unaccredited investors from the market for complex structured finance products using waterfalls, and then should remove the

http://finra.complinet.com/en/display/display_main.html?rbid=2403&record_id=15199.

188. The role of regulation by Europe in the international market for securities products like CDOs also requires consideration. The European Securities and Markets Authority (ESMA), a European Union (EU) entity, promulgates directives and mandates that are then implemented by member states. See Kate Ball-Dodd & Justine Usher, *UK Implementation of Amendments to the Prospectus Directive - Where Are We Now?*, CAPITAL MKTS. LEGAL ALERT (Mayer Brown LLP, London, Eng.), June 2012, at 1, available at http://www.mayerbrown.com/files/Publication/c070727b-ec23-445f-9264-ab4c80ddcd66/Presentation/PublicationAttachment/a5547bcc-9c66-4dab-89a9-b0ae6dc4f855/UK_Implementation_of%20amendments_to_the_Prospectus_Directive.pdf. Like the US, public offerings of debt securities (like CDO bonds) are subject to a prospectus disclosure requirement with an exception for private placements with qualified investors. Directive 2010/73/EU, of the European Parliament and of the Council of 24 November 2010 Amending Directives 2003/71/EC on the Prospectus to Be Published When Securities Are Offered to the Public or Admitted to Trading, 2010 O.J. (L 327) 1, 6. The EU also provides an exception for the “wholesale market” in bonds as determined by the proxy that the minimum bond issue denomination size must be no less than €100,000 (anything smaller is the “retail market”), in which only a limited prospectus is required. *Id.* at 6.

Like in the U.S., the qualified investor category for private placements is likely the most relevant as it means that the EU Prospectus Directive would not apply, analogous to Rule 144A qualifying offerings in the US, meaning that in private placements the prospectus regime poses not challenges to the code as contract proposal. For public offerings of debt, including those in the wholesale market, ESMA should adopt modifications to the prospectus directive analogous to those suggested in this Article. For a useful discussion of debt security prospectuses under EU regulations, see *Guide to Listing Debt on European Stock Exchanges*, PWC (2012) 3-7, https://www.pwc.com/en_UA/ua/services/capital-markets/assets/guide-to-listing-of-debt-ua-en.pdf.

Also, for an extensive discussion of prospectus liability in EU member states, which could, like private claims in the US, create problems for a regulatory shift in prospectus requirements, see ESMA, *COMPARISON OF LIABILITY REGIMES IN MEMBER STATES IN RELATION TO THE PROSPECTUS DIRECTIVE 6-26* (2013), available at http://www.esma.europa.eu/system/files/2013-619_report_liability_regimes_under_the_prospectus_directive_published_on_website.pdf.

legally binding characteristic of the prospectus as much as possible in order to facilitate the use of the code as contract transaction model for these products. The SEC does not, however, need to do anything to facilitate the use of this model in the private offering setting as its current additions to the private offering requirements do not as of yet create additional legally binding depictions of the waterfall.

2. The SEC Should Encourage or Require the Use of the Code as Contract Model

While individual market participants might want to adopt the code as contract model for drafting indenture waterfalls, they might face a problem that could be characterized as an absence of an economy of networks.¹⁸⁹ As the first telephone invented lacks value until there is a second telephone to answer the call,¹⁹⁰ participants in the CDO and structured finance market might not adopt this Article's code as contract proposal unless several investors agree to play ball at once. Many institutional investors that purchase CDOs, however, might not want to make the leap to using the code as contract model until several issuers adopt it in order to achieve economy of scale. And neither side will want to make the initial leap to spend adoption costs unless there is a standard or standards among participants. This is a classic case for government regulatory intervention where, unless private self-regulating entities or large collectives of market participants agree among themselves to adopt, adoption might not occur. Government or self-regulatory organization (FINRA) promotion or mandate could remove this network deficiency problem.

The SEC has started the discussion about the standardization of disclosure of a programmatic representation in its proposed Regulation AB II, asking for more comments on how to

189. DAVID EASLEY & JON KLEINBERG, NETWORKS, CROWDS, AND MARKETS 509 (2010), *available at* <http://www.cs.cornell.edu/home/kleinber/networks-book/networks-book-ch17.pdf>.

190. See *id.* (discussing an analogous example oriented around fax machines).

best implement its disclosure proposal.¹⁹¹ This knowledge-gathering exercise means that the industry and regulators are engaged in a discussion about the specific form a coding standard to represent waterfalls and inputs could take. The discussion the SEC has started could by itself be sufficient to facilitate the market players coalescing around a particular standard without action by the SEC. Unfortunately, there has not been a similar discussion about this Article's proposed code as contract model of waterfall transactions, but reaching some consensus about what a coded disclosure could look like would overcome one of the largest business hurdles facing a code as contract transaction regime.

Beyond the benefit to the dealmakers of mandating a code as contract proposal, such a rule offers a positive externality to the public. If all complex structured finance waterfalls are depicted as code that has been thoroughly vetted by structurers, investors, and trustees, then the SEC will have access to accurate cash flow distribution models with which to analyze its newly gathered data. The SEC is currently considering asset-level data disclosures as part of an amendment to Regulation AB and related proposals about safe harbor criteria.¹⁹² This information will provide the agency a greater ability to stress test both individual products and markets in these products in a manner comparable to that used by investors and credit rating organizations themselves. It will also permit a broader analysis of the market in these products in order to understand the risks they actually entail, rather than what they might entail if predictive models are used.

The SEC should propose and invite comments on a rule to require that waterfalls be represented by code as contract rather than using disclosures of prospectuses and contracts. It has a few legal approaches it can take. One approach would be

191. Re-Proposal of Shelf Eligibility Conditions for Asset-Backed Securities, Securities Act Release No. 33-9244, Exchange Act Release No. 34-64968, 76 Fed. Reg. 47,948, 47971 (re-proposed Aug. 5, 2011) (to be codified at 17 C.F.R. pts. 229, 230, 239 & 249).

192. Asset-Backed Securities, Securities Act Release No. 33-9117, Exchange Act Release No. 34-61858, 75 Fed. Reg. 23,328, 23,328 (proposed May. 3, 2010) (to be codified at 17 C.F.R. pts. 200, 229, 230, 232, 239, 240, 243, & 249).

to require as a disclosure a programmatic representation that has a legally effective characteristic, and by requiring this disclosure create the new legal reality. This would require the disclosure of a legally determinative coded representation of the waterfall. Two parts to such a requirement could cause protest. First, there is the disclosure of something that does not yet exist: the disclosure of a coded representation of the waterfall. Second, this disclosure must be legally binding on the parties.

Looking at the first, the SEC has already begun to think about this in its Python proposals.¹⁹³ Legal protests from the ABA to that proposal demonstrate some of the difficulties of finding statutory authority for even that relatively modest proposal, let alone the more dramatic change proposed in this Article.¹⁹⁴ As the ABA argued in a comment to the SEC's Python proposal, the code disclosure is not a "statement" under the Securities Act of 1933, and therefore no liability can be assigned for misstatement through incorrect coded depictions.¹⁹⁵ The ABA's most interesting argument is that since a computer program cannot be a misstatement, an idea that sits at the heart of my proposal, it cannot constitute a statement.¹⁹⁶ This is not persuasive because misstatement is still possible if the disclosure is a computer programs. The wrong code, for example, could be disclosed and that would constitute a misstatement in the form of code. Furthermore, if code is not a disclosure, then neither is disclosure of tables of data, which also carry with them no facial ambiguity and can only be false in representing miscalculations of the use of the wrong data. Beyond these semantic games, section 7 of the Securities Act of 1933, amended by the Dodd–Frank Wall Street Reform and Consumer Protection Act, orders the SEC to adopt regulations requiring data disclosure "regarding the assets backing that security," and to "set standards for the format of the data provided by issuers."¹⁹⁷ This also seems to give the SEC a great deal of discre-

193. See *supra* notes 86-87 and accompanying text.

194. See Letter from Jeffrey W. Rubin, *supra* note 14, at 58-59.

195. See *id.*

196. *Id.*

197. See Dodd–Frank Wall Street Reform and Consumer Protection Act, H.R. 4173, 111th Cong. §942 (2010); see also 15 U.S.C. § 77g(c) (2012).

tion to determine how to format the data to make it useful as a disclosure, and the SEC could readily hang a code as contract requirement on this language even if it could not use the traditional sources of authority in the Securities Act.

A more difficult question is whether the SEC can require that disclosure to have certain characteristics such as being legally binding using disclosure provisions. There does not appear to be a precedent of the SEC dictating the structure of a financial product transaction directly, and almost certainly none of the agency dictating the structure of a private placement transaction. The most likely statutory hook would have to be in the provisions for deceptive practices in securities. And in particular the famous section 10(b) of the Securities Exchange Act of 1934:

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange—

....

(b) To use or employ, in connection with the purchase or sale of any security registered on a national securities exchange or any security not so registered, or any securities-based swap agreement, 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.¹⁹⁸

Rule 10b-5 further provides:

198. Securities Exchange Act of 1934 § 10(b), 15 U.S.C. 78j (2012) (footnote omitted).

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange,

(a) To employ any device, scheme, or artifice to defraud,

(b) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or

(c) To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.¹⁹⁹

While this pair does require scienter and faces other significant impediments as an enforcement mechanism,²⁰⁰ its wide reach into private and public offerings as well as into just about any form of securitized products makes it an ideal place to grab hold of for purposes of regulating the nature of a product.²⁰¹ The SEC then need “only” evaluate how past experiences with contractual and prospectus explanations of waterfalls have impeded the effective comprehension by investors in CDOs. Assuming the SEC concurs, can confirm it with additional fact-finding through research and notice and comment, the SEC could then promulgate a rule declaring per se deceptive the use of written contractual and prospectus waterfall arrangements in the contexts where they pose the greatest risk. The SEC could even argue directly from section 10(b) rather than operating through Rule 10b-5 in order to permit itself

199. 17 C.F.R. 240.10b-5 (2013).

200. *In re Parmalat Secs. Litig.*, 376 F. Supp. 2d 472, 491-93 (S.D.N.Y. 2005) (explaining the elements of implied actions under Rule 10b-5).

201. Securities Exchange Act of 1934 § 10(b), 15 U.S.C. § 78(j).

greater leeway with respect to court-created precedent surrounding that rule, among other issues.

The SEC can require the use of the code as contract model, though it might face challenges in the D.C. Circuit on the basis of whether it is arbitrary and capricious.²⁰² However, considering the potentially significant benefit in removing legal doubt and the fact that it might alleviate a market failure (a weak network) that could stand in the way of this proposal's implementation, it appears that the benefit side of such a regulation would be substantial. Furthermore, the cost side is likely relatively small in the long run, given the substantial current use of predictive models by market participants. As for whether such a regulation fits the intent of Congress, it appears clear from section 10(b) that Congress intended to give the SEC flexibility to decide what is deceptive for consumers.²⁰³ Furthermore, section 7 indicates that Congress wanted the SEC generally involved in regulating structured financial products.²⁰⁴

The CFTC's role in regulating products like CDOs remains unclear. In interpretive letters, the CFTC first announced that very limited forms of asset-backed securities and special purpose vehicles that use swaps could avoid regulation by the CFTC.²⁰⁵ A second interpretive letter established that any product regulated under SEC Regulation AB or privately issued but otherwise like a product regulated under Regulation AB would not be considered a commodity pool, a characterization that would pull CDOs into the CFTC's bailiwick.²⁰⁶ Other

202. For an extensive discussion of the D.C. Circuit's repeated decisions overturning SEC rulemaking, see James D. Cox & Benjamin J.C. Baucom, *The Emperor Has No Clothes: Confronting the D.C. Circuit's Usurpation of SEC Rulemaking Authority*, 90 TEX. L. REV. 1811 (2012).

203. Securities Exchange Act of 1934 § 10(b), 15 U.S.C. § 78(j).

204. 15 U.S.C. § 77g(c).

205. Letter from Gary Barnett, Dir., Div. of Swap Dealer & Intermediary Oversight, to Am. Securitizations Forum & SIFMA, CFTC Letter No. 12-14, at 4-6 (Oct. 11, 2012) (on file with CFTC), *available at* <http://www.cftc.gov/ucm/groups/public/@lrlettergeneral/documents/letter/12-14.pdf>.

206. Letter from Letter from Gary Barnett, Dir., Div. of Swap Dealer & Intermediary Oversight, CFTC Letter No. 12-45, at 1-4 (Dec. 7, 2012) (on file with CFTC), *available at* <http://www.cftc.gov/ucm/groups/public/@lrlettergeneral/documents/letter/12-45.pdf>.

products where there is active trading or where the swaps play a more significant role than credit enhancement might be commodity pools and thus subject to CFTC regulation, though the CFTC has expressed its willingness to operate on a case-by-case basis for the moment through no-action letters.²⁰⁷ This is a very unstable area of law, and until the CFTC and SEC sort out their jurisdictional turfs, what role the CFTC could play in requiring the implementation of the code as contract model will remain uncertain.²⁰⁸

45.pdf.

207. *Id.* at 4-6.

208. The risk of regulatory arbitrage rears its head in the case of almost any regulation that has the potential to require upfront investment. *See, e.g.*, Christian A. Johnson, *Regulatory Arbitrage, Extraterritorial Jurisdiction and Dodd-Frank: The Implications of US Global OTC Derivative Regulation*, Univ. of Utah Coll. of Law Research Paper No. 16 (Oct. 30, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2169401. In this case, the risk is that the market in these securities products could run to European markets, closing down US trade in these financial products.

There are two answers to this concern. First, as this Article has gone to lengths to demonstrate, the code as contract regime is better for participants in the market because it reduces risk and complexity in the deal-making process. A mandate to adopt this regime could be seen as welcome by market-participants if the details are handled appropriately. If executed well, the market in these complex financial products very well might prefer the deal-making structure under the code as contract model and move more of their business in these products to the US.

Second, this Article contends that ESMA should itself adopt a code as contract mandate for these goods. It looks like the EU will soon grant ESMA significant power to ban financial products it deems dangerous in emergencies, and will also be able to coordinate with member states' regulatory bodies to arrange bans on specific products. *Proposal for a Directive of the European Parliament and of the Council on Markets in Financial Instruments Repealing Directive 2004/39/EC of the European Parliament and of the Council*, at 184, COM (2011) 656 final (Oct. 20, 2011). Between this forthcoming capacity to ban certain products as well as its role in establishing the technical standards for prospectuses through the Prospectus Directive, ESMA should have the authority to implement technical disclosure standards. It would be going too far afield, however, for this Article to consider the administrative authority of ESMA, which is most lucidly explained by ESMA itself in *Frequently Asked Questions, A Guide to Understanding ESMA*, ESMA 4-5 (Jan. 3, 2011) http://www.esma.europa.eu/system/files/2011_009.pdf, and the future of which appears to be in dispute at the moment. *See* Elan Mendel, *Fight over ESMA Continues in EU*, CFTCLAW (Feb. 3, 2012), <http://www.cftclaw.com/2012/02/fight-esma-continues-eu/>.

3. The Problem of the Bankruptcy Regime

While regulatory challenges discussed above are difficult, they can likely be overcome through relatively minimal agency and self-regulatory organization action. The Bankruptcy Code, however, presents a more substantial challenge to the code as contract proposal. The waterfall cash distribution is effectively designed to specify priorities in the event of a cash shortfall or other event of default.²⁰⁹ Some events of default resemble insolvency by the CDO.²¹⁰ In those cases, the bondholders can turn to pushing the trustee to seek bankruptcy or seek a bankruptcy court to force involuntary bankruptcy on the CDO.²¹¹ Once in bankruptcy, the problems begin to mount for a waterfall, whether it is written in words or programmed in contract. First, if the waterfall flips its order in the case of insolvency, that might constitute an illegal *ipso facto* clause, which is a clause in a contract (unsuccessfully) designed to end a contract (or dramatically change a contract) upon bankruptcy of a party.²¹² Second, even apart from an *ipso facto* clause attack, credi-

209. See *In re Zais Inv. Grade Ltd. VII*, 455 B.R. 839, 842-43 (Bankr. D.N.J. 2011) (describing the structure of a CDO² waterfall including its liquidation specification in the case of a default not of payment but of indenture covenants).

210. See, e.g., *id.* (describing a covenant default that provides for trustee-managed liquidation in which assets are changed to passive management and the only activity is a paying down of the bonds to the senior tranche holders).

211. See, e.g., *id.* (explaining that senior tranche holders sought an involuntary petition for bankruptcy for the CDO).

212. 11 U.S.C. § 365(e) (2012); 11 U.S.C. § 541(c)(1)(B) (2012). The text provides as follows:

Except as provided in paragraph (2) of this subsection, an interest of the debtor in property becomes property of the estate under subsection (a)(1), (a)(2), or (a)(5) of this section notwithstanding any provision in an agreement, transfer instrument, or applicable nonbankruptcy law

....

(B) that is conditioned on the insolvency or financial condition of the debtor, on the commencement of a case under this title, or on the appointment of or taking possession by a trustee in a case under this title or a custo-

tors might seek involuntary liquidation that would restructure the waterfall without resistance from the trustee.²¹³

The fact that these “bankruptcy remote”²¹⁴ CDO SPV entities can be dragged into bankruptcy court and liquidated much like any other business entity creates a potential alternate legal reality on the bankruptcy courts’ and senior creditors’ *tabula rasa*.²¹⁵ The senior creditors and the bankruptcy court can significantly restructure the debt within the limits of the Bankruptcy Code and without regard to the indenture. What structure this new waterfall and asset structure will have, none of the creditors who purchased the CDO bond could have predicted from any functional depiction or legal depiction provided at the time of sale. Furthermore, a New Jersey bank-

dian before such commencement, and that effects or gives an option to effect a forfeiture, modification, or termination of the debtor’s interest in property.

11 U.S.C. § 541(c)(1)(B). For an example of a court characterizing a shift in waterfall as potentially an illegal *ipso facto* clause, see *In re Lehman Bros. Holdings, Inc.*, 452 B.R. 31, 37-38 (Bankr. S.D.N.Y. 2011) (denying a motion to dismiss a claim based on an *ipso facto* clause argument). Ballyrock was a CDO vehicle and a Lehman subsidiary had contracted for a swap arrangement with Ballyrock. *Id.* at 33-37. Ballyrock’s trust indenture placed repayment of this swap in third priority in the waterfall except in the event that Lehman entered bankruptcy, in which case Lehman was placed very low in the waterfall. *Id.* at 34-36. Under the swap terms, Lehman was owed money and claimed that money under its swap contract from Ballyrock. *Id.* at 34-36. Ballyrock pointed to the clause placing Lehman near the bottom of the waterfall, while Lehman argued that it was an invalid *ipso facto* clause because it was triggered by bankruptcy. *Id.* at 36-37. The court agreed with Lehman, and removed the contingency from the waterfall, and permitting the suit to go forward. *Id.* at 37. For a discussion of this case generally, see *Court Holds that a Bankruptcy Termination Provision that Subordinates an In-The-Money Debtor’s Right to a Distribution May Be an Unenforceable Ipso Facto Provision*, BANKRUPTCY ADVISORY (Alston & Bird LLP, Atlanta, Ga.), June 16, 2011, at 1, 1-2, available at <http://www.alston.com/Files/Publication/c37f767d-69b8-43dd-9e76-20c3660bdd87/Presentation/PublicationAttachment/13365ac6-2262-4097-a944-221fd2f37bfc/Lehman%20v%20Ballyrock.pdf>.

213. See, e.g., *Zais*, 455 B.R. at 843-44 (describing the trustee’s inaction).

214. Lawrence V. Gelbert et al., *Bankruptcy Court Approves Plan to Liquidate CDO*, SCHULTE ROTH & ZABEL LLP (Jan. 19, 2012), http://www.srz.com/Bankruptcy_Court_Approves_Plan_to_Liquidate_CDO/.

215. See, e.g., *Zais*, 455 B.R. at 844-45. (explaining that creditors proposed the new liquidation payment plan).

ruptcy court in a case called *Zais* held that junior creditors are not entitled to defend themselves by challenging the right of the senior creditors to propose a new payout structure.²¹⁶ The relevant parties are renegotiating the deal and redesigning the waterfalls subject to a vote of the bondholders, as many indentures permit.²¹⁷ Instead, bankruptcy is a change of the waterfall affected through the all-but fiat of the senior tranche holders. Add to this the problem of cross-jurisdictional contradiction in bankruptcy court interpretations of waterfalls, as in the recent Dante case where British and American courts reached opposite conclusions about a CDO waterfall prioritization, and problem posed by the bankruptcy regime is worsened further.²¹⁸ Bankruptcy proceedings, by creating an alternative legal reality based on late-created depictions in the forms of motions and bankruptcy proposals, create a low probability but potentially high cost risk that a coded waterfall will not always be the legal reality.

Given the real risk of bankruptcy's legal reality trumping the coded waterfall's legal and function reality, two questions arise: should dealmakers do something about this problem, and, if so, can they? Putting aside the question of whether *ipso facto* clauses should be permitted in general or not, which has been discussed at length by others,²¹⁹ the answer is probably yes, dealmakers should probably seek to find a way to make these deals more bankruptcy proof. CDO deals are inherently

216. *Id.* at 846-47.

217. *See, e.g., id.* at 843 ("Anchorage attempted, without success, to convince ZING VII to rectify the passive holding of its assets. Under the trust indenture, the only way to achieve an orderly liquidation of the assets is to obtain the consent of 66.67% of all noteholders, which Anchorage deems highly unlikely, if not impossible.").

218. Concerning the prioritization of payments from a waterfall in the event of bankruptcy, again on grounds that the relevant clause changing prioritization was an *ipso facto* clause, a U.S. bankruptcy court held that a change in prioritization of a swap was invalid. *See In re Lehman Brothers Holdings Inc.*, 422 B.R. 407, 415-20 (Bankr. S.D.N.Y. 2010). English courts addressing the same contractual language found there to be no problem with the switch. *Id.* at 423.

219. *See, e.g.,* Yeon-Koo Che & Alan Schwartz, *Section 365, Mandatory Bankruptcy Rules and Inefficient Continuance*, 15 J.L. ECON. & ORG. 441 (1999) (criticizing the *ipso facto* clause ban as inefficiently leading bankrupt creditors to continue bad, lossy contracts).

about allocating risk to meet the risk preferences of investors—something that becomes even clearer in the case of bespoke CDOs.²²⁰ The Bankruptcy Code serves a completely different purpose. The same arguments presented earlier in this paper that militate against permitting multiple legal realities in general apply equally to bankruptcy for that reason.²²¹ One of the main purposes of the Bankruptcy Code in the commercial context is to allocate collections of debt in the event of a race for assets,²²² does not apply in the context of CDOs. If the indenture is followed, and especially if the indenture is coded as proposed in this Article, then the creditors should know and understand how the liquidation process will take place. There is no race to be first at the debtors doors because the trustee will provide no relief unless it is what the indenture specifies. These creditors are not normal businesses, they are sophisticated investment vehicles typically—often SPVs in their own right with no purpose but to hold assets and designed based upon the operation of their own waterfall—and their sole *raison d'être*²²³ is to assume and allocate risk. Therefore, it does not seem appropriate that they should be freed from the bargain they made when, unlike a home contractor facing non-payment, these deals and entities have no other economic purpose, and cannot serve that purpose if bankruptcy proceedings trump the structure of their reality.

The solution, fortunately, might not, and should not, require a change of the bankruptcy laws. Instead, the change might be accomplished by requiring trustees, as representatives of the debtor CDO, to challenge the qualifications of senior tranche holders to seek involuntary bankruptcy proceedings. As for how they can fight it, one strategy would be to turn to a legal question that remains open after the New Jersey

220. *See supra* note 71 and accompanying text (discussing bespoke CDOs).

221. *See supra* Part II.B.

222. Lawrence Ponoroff & F. Stephen Knippenberg, *The Implied Good Faith Filing Requirement: Sentinel of an Evolving Bankruptcy Policy*, 85 NW. U. L. REV. 919, 948-62 (1991).

223. “[R]eason or justification for existence.” *Raison d'être*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/raison%20d%C3%AAtre> (last visited Jan. 16, 2014).

case, *Zais*, which is whether senior tranche holders should be able to escape the trust indenture structure through bankruptcy.²²⁴ Junior creditors in *Zais* argued that the senior tranche holders were not qualified to seek involuntary proceedings against the CDO under section 303(b)(1) of the Bankruptcy Code²²⁵ because their debt was “non-recourse.”²²⁶ That is to say, the senior creditors had claim only to secured assets and nothing more than the value of those assets,²²⁷ and thus did not meet § 303(b)(1)’s delimited minimum value required in order to seek an involuntary action.²²⁸ The *Zais* court did not reach this question, and it seems a plausible argument for trustees to use. This is, of course, only one legal theory among many others that might be available if only the trustee is required by the indenture to put up a fight.

Even if the trustee cannot win the day on the liquidation waterfall clause by resisting the qualifications of the attacking creditors, the trustee might also lean on § 510 of the Bankruptcy Code, which provides that “[a] subordination agreement is enforceable in a case under this title to the same extent that such agreement is enforceable under applicable nonbankruptcy law,”²²⁹ in order to preserve the waterfall in general. The case law has several warts, including the absence of a useful definition of subordination, a dependency on bankruptcy court interpretation of state contract law, and so forth, but the consensus appears to be that subordination language remains enforceable so long as other bankruptcy rights are not impeded.²³⁰ This is

224. See *Zais*, 455 B.R. at 846 (declining to decide the qualifications of senior creditors to seek involuntary bankruptcy).

225. 11 U.S.C. § 303(b)(1) (2013).

226. *Zais*, 455 B.R. at 846.

227. See *id.* (“According to Movants, since the notes are non-recourse, the claims can never be more than the value of the collateral, i.e., the petitioning creditors are secured, but not unsecured creditors.”). For an intelligible explanation of non-recourse loans in the mortgage context, see Carr McClellan, *Does Non-Recourse Liability Still Exist?*, CARR MCCLELLAN LAW BLOG (Nov. 27, 2012), <http://www.carrmcclellan.com/does-non-recourse-liability-still-exist/>.

228. *Zais*, 455 B.R. at 846.

229. 11 U.S.C. § 510(a) (2012).

230. For a thorough discussion of the subordination clause, including the “warts” discussed in the text accompanying this note, see Mark N. Berman &

not a perfect outcome, it leaves a small possibility of an additional legal reality in which the court chooses to switch to liquidation, but it means that the odds of that outcome are relatively low.

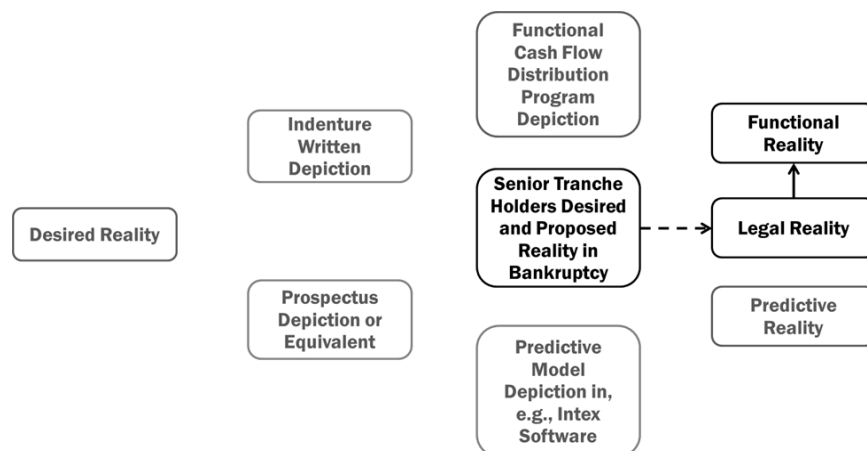


Figure 8. The Bankruptcy Problem for the Code as Contract Model

All bets are off in bankruptcy unless the trustee resists intervention and bankruptcy courts recognize that the purposes of bankruptcy are not served in the context of structured finance SPV waterfalls by removing their power.

IV. Conclusion

This Article has expanded upon Professor Hu's explanation of the challenge of multiple depictions of complex securities waterfalls by adding to the idea of depiction its counterpart of perception. Multiple legally relevant depictions make the act of perceiving the future legal reality extremely difficult, and fol-

David Lee, *The Enforceability in Bankruptcy Proceedings of Waiver and Assignment of Rights Clauses Within Intercreditor or Subordination Agreements*, 20 J. BANKR. L & PRAC. 6 Art. 1 (2011).

lowing the SEC's, England's, and Professor Hu's path, which adds yet more legally relevant depictions into the mix, will only add to that confusion. The more legally relevant depictions there are, the greater the legal risk faced by structurers, trustees, and investors.

Instead, for complex but highly procedural arrangements like CDO, MLP, and private equity fund waterfalls, a better transaction structure would be to negotiate around the actual cash flow distribution program, just like those negotiating a construction contract focus on the blueprint. By devoting business energy to perfecting the actual, functional depiction of the cash flow and its inputs, this improves the likelihood of reaching something like the desired cash distribution reality. Furthermore, it removes the slippages between depictions and allows lawyers to focus on what lawyers are good at: structuring language about warranties about other aspects of the deal. Adopting the code as contract strategy is simply good legal-business strategy.

As a corollary, the SEC should adjust its prospectus requirements in order to allow deals with sophisticated investors to avoid the prospectus liability. Furthermore, unsophisticated investors should not be involved in the market. The SEC should consider mandating the code as contract dealmaking regime in order to remove the network effects challenges facing potential innovators seeking to adopt the regime. Not only would such a regulatory move benefit the parties, but it would also facilitate regulatory stress testing of these highly risky products. There are several statutory and regulatory hooks onto which the SEC could hang such a policy change despite how different this policy would be from traditional SEC disclosure-based regulation. And requiring trustees to defend the indenture might in and of itself be an effective strategy to prevent bankruptcy from creating alternative legal realities, and how even if a trustee is not successful, bankruptcy courts tend to respect subordination clauses, despite examples to the contrary.

Additional work follows any recommendation. First, in this case, there is the question of detail. How the code as contract model is adopted and whether it is a good regime depends largely upon technical and legal implementation. Second, there

is the question of breadth. This proposal could be applicable to numerous analogous structures in securities and beyond to private equity and master limited partnership arrangements, each of which come with their own legal hurdles. Or, even within the ABS context, a collateralization model for verifying the quality of assets could be incorporated as part of the deal rather than attempting to specify the necessary collateralization in words. Outside of securities, anywhere in which complicated but procedural structures exist, deals are somewhat commoditized and repeated, and the parties to deals are sufficiently sophisticated, this code as contract model could be useful. Implementing the code as contract model in the waterfalls context as well as others yet to be considered offers the possibility to fundamentally alter the framework for dealmaking, overcoming problems of analyzing risk in a market of products too complex to perceive.