ARTICLE

STANDARDIZATION AND INNOVATION IN CORPORATE CONTRACTING (OR "THE ECONOMICS OF BOILERPLATE")

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This Article presents a theoretical, institutional, and empirical analysis of how increasing returns—specifically, learning externalities and network externalities—influence standardization, customization, and innovation in corporate contracts. In the theoretical section, we analyze how common use of a contract term can create learning and network externalities; how these externalities can influence the balance of standardization, customization, and innovation in contracts; and how such externalities can lead to suboptimal contract provisions. We also discuss how internal learning and network effects can result in switching costs. Finally, we examine how underwriters and law firms may ameliorate potential adverse effects of learning and network externalities. In the empirical section, we analyze the evolution of event risk covenants, commonly included in bond indentures in the late 1980s. We find moderate to strong support for the hypotheses that learning or network externalities as well as switching costs were present in these covenants and that underwriters significantly influenced firms' contracting choices.

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INTRODUCTION

In the modern view of the corporation, managers, shareholders, and creditors are viewed as having contractual relationships with one another, and the firm is viewed as the aggregate—the "nexus"—of their contracts. The primary elements of the "corporate contract" include the firm's charter, its bond indentures and other loan agreements, as well as applicable corporate law.¹ This contractual metaphor has helped us move beyond the neoclassical view of the firm as a profit-maximizing "black box" to examine the underlying relationships and incentives that can influence the way in which a firm is managed and hence its profitability.

Despite the pivotal role that contracts play in this view of the corporation, the institutional processes by which corporate contracts are actually produced has been accorded little study. What is particularly striking is, on the one hand, the prevalence of standard boilerplate in corporate documentation, and on the other, the relative silence in the corporate law and contracts literature regarding the reasons for and implications of standardization.² In this Article, we present a theoretical, institutional,

¹The corporate contract also includes poison pills, certificates of designation for preferred stock, other documents defining the rights and obligations of the firm's managers, shareholders, and creditors, as well as applicable default and mandatory rules provided by corporate law. We use the term "corporate contract" to refer both to the totality of terms governing the relationships among a firm's managers, shareholders, and creditors, and to any subset of those terms (e.g. a single charter or indenture term).

and empirical analysis of two independent, but conceptually related, forces that influence the balance of standardization, customization, and innovation in contracts: learning externalities and network externalities. Although both learning and network externalities contribute to the standardization of contracts, they do so in different ways, for different reasons, and with different implications for the optimality of atomistic contracting. The objective of this Article is to crack open further the black box of the corporation by enhancing the understanding of why corporate contracts look the way they look, by critically examining the extent to which atomistic corporate contracting can be expected to produce a socially optimal degree of standardization, and by investigating institutional factors that may overcome the potentially suboptimal influences of atomistic corporate contracting.

This Article draws on, and expands, the analysis that one of us presented in an earlier article published in the Virginia Law Review. That article suggested that network externalities may be present in corporate contract terms and drew implications for corporate law. In this Article, we build on the earlier article's analysis in several ways. First, we analyze "learning externalities," which a firm can confer on other firms by adopting a charter or indenture term before others do. Second, we analyze "switching costs," which create pressure to standardize documentation within a single firm. Third, we analyze the role of underwriters and law firms in the standardization process. Finally, we begin to investigate empirically the significance of learning and network externalities, switching costs, and the role of underwriters and law firms by analyzing the evolution of a particular type of bond covenant.

Part I of this Article is devoted to the theory of contract standardization. In that Part, we examine how common use of a
contract term, or a particular formulation of a term, can create "increasing returns" to users. More specifically, we analyze how common use of a term in the past can confer "learning externalities" on later users, and how contemporaneous use of a term can create "network externalities" that contemporaneous users share. The presence of these externalities raises theoretical doubts regarding the extent to which corporate contracts are socially optimal. We further discuss whether contracting agents—in particular, underwriters and law firms—may alleviate some of the problems generated by learning and network effects.

Part II investigates these issues empirically by tracing the evolution of the event risk covenant, a provision commonly included in bond indentures in the late 1980s to protect bondholders from takeover-related losses. This analysis provides empirical support for several hypotheses that emerge from the theoretical analysis of Part I. Most notably, there is evidence that learning or network externalities were present in these covenants, and that underwriters play a significant role in the diffusion of learning externalities and the internalization of network externalities.

Before moving on, we note that the dynamics of learning and network externalities examined in this Article may well be significant in contracts generally. Furthermore, they may be significant in certain non-contractual relationships where some scholars have argued that individual maximizing behavior will yield socially optimal results.

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4 We use the terms "contract term" and "formulation" interchangeably to refer to any element of the corporate contract, ranging from a multi-page section of a bond indenture, to the phrasing of a short clause within the section, to a default rule provided by state law.


I. A THEORY OF CONTRACT STANDARDIZATION, CUSTOMIZATION, AND INNOVATION

To anyone who has worked with corporate documentation, the prevalence of standard terms is evident. Bond indentures, for example, include large segments of boilerplate taken from law firm form files, published sources such as the American Bar Foundation's Commentaries,\(^7\) or the indenture of an earlier bond issuance. Parts of some charters are standardized in the same way, but charters are standardized in a different manner as well. By selecting a state of incorporation and adopting a "plain vanilla" charter which, by silence, incorporates the state's default rules, a firm in effect adopts a large set of standard terms provided by that state's corporate law. Most conspicuously, Delaware law is the source of the most commonly used "contract" terms governing the shareholder-manager relationship in publicly held firms.

As we discuss in this Article, the attractions of a standard contract term—that is, a term that is commonly used\(^8\)—stem from the fact that contract terms can offer "increasing returns" to users as more firms adopt the same term. The private benefits to a firm of adopting a standard contract term can be divided into two conceptual categories, each with different implications. One set of benefits, which we call "learning benefits," arises when a firm adopts a contract term that has been commonly used in the past, regardless of whether other firms will continue using it in the future.\(^9\) A second set of benefits, which we call "network benefits," arises when a firm adopts a term that will be part of the firm's contract at the same time that it is part of many other firms' contracts, regardless of whether it has been commonly used in the past.

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\(^7\) American Bar Foundation, Commentaries on Indentures (1971).

\(^8\) We use the term "standardized" to refer to a situation in which a particular formulation of a contract term is commonly used. We refer to such terms as "standard terms" or "commonly used terms" interchangeably. Although standardization is obviously a matter of degree, for simplicity we refer to contract terms as being either standardized or not.

\(^9\) That is, regardless of whether (a) other firms that have adopted the term will keep using the term, or (b) other firms will adopt the term for the first time in the future.
In Section A, we examine the nature of learning and network benefits. In Section B, we discuss whether atomistic contracting can be expected to yield a socially optimal balance of standardization, customization, and innovation when significant learning or network externalities are present in a contract term. In Section C, we discuss the roles of underwriters and law firms in promoting standardization, customization, and innovation.

A. The Benefits of Standardized Contract Terms

1. Learning Benefits

A firm adopting a charter, indenture, or similar document has a choice of either drafting new terms or adopting terms that other firms have used in the past. Consider, for example, a firm with an unusual set of interlocking relationships among partially owned subsidiaries. This firm could have its subsidiaries adopt special charter provisions allocating corporate opportunities and specifying procedures for resolving close cases. Alternatively, the firm could leave its charter silent with respect to the question and, by default, adopt the corporate opportunity rule of the state in which it is incorporated.

The former approach allows the firm to tailor its contract to fit its particular needs. An explicit contract term may therefore be superior to the generic corporate opportunity rule. On the other hand, because it has been commonly used in the past, the corporate opportunity rule offers alternative attractions. Experience with the rule may have generated a degree of learning that is valuable to current users of the term. The same is true of an explicit contract term that has been commonly used in the past.

Potential "learning benefits" of both commonly used explicit terms and default terms include: (a) drafting efficiency; (b) reduced uncertainty over the meaning and validity of a term due to prior judicial rulings; and (c) familiarity with a term among

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10 A firm can also choose a term that has not been widely used in the past but that it expects will become widely used in the future. For a discussion of benefits associated with that choice, see infra Section I.A.2.

11 Sinclair Oil Corp. v. Levien, 280 A.2d 717 (Del. 1971), is a case where this might have been beneficial.
lawyers, other professionals, and the investment community. The more firms that have used a particular term, the greater these benefits tend to be.

a. Drafting Efficiency

The most obvious attraction of using a term that has been used in the past is drafting efficiency. Drafting efficiency has two components: reduction in the cost associated with the mechanical task of recording the contract term, and reduction of the expected cost of errors in its formulation. Only the second component, however, results in significant increasing returns. With respect to the mechanical task of drafting, it is as easy to copy a term that has been used once before as it is to copy one that has been used hundreds of times. We therefore focus on the reduction in the cost of formulation errors.

A newly customized contract term, or a term that has not been widely used, may often entail relatively high error costs. The term may turn out to imply something different from what its drafter intended, or a contingency may occur that the drafter did not anticipate. Such errors may be the result of mundane drafting mistakes, the use of language that is ambiguous, or limited foresight on the part of the drafter. The cost of these errors once a contract is written can take any of several forms: The term may turn out to be legally invalid; it may create constraints on the firm’s operations or management that turn out to be undesirable; it may fail to create desirable constraints on the firm’s operation or management; the firm may inadvertently violate the term and suffer legal sanctions; or, to avoid these problems, the firm may have to incur the transaction costs of changing the term later.

A widely used term, by contrast, typically will have been examined by many prior users and implemented in a variety of circumstances. The fact that the term has persisted without

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12 Some of these learning benefits are analogous to what Arthur and Lane refer to as "information contagion" in the product context. Arthur, supra note 5, at 69.
13 Common use of a term may be somewhat important, however, to the extent that a more common term may be easier to locate for purposes of copying.
14 For a refinement of the concept of formulation error, see Goetz & Scott, supra note 2, at 267-73.
having caused major problems is indicative of its workability. Furthermore, prior users of the term may have noted problems in its formulation and modified the term accordingly. As a result, the present formulation of a term may reflect improvements made in the past. Thus, while the commonly used term may not be ideally suited to a given firm, the firm’s adoption of such a term may nonetheless be beneficial.

There may be a limit, however, to the learning that accrues to a commonly used term. At some point, the accumulated experience of prior users of a term may become sufficiently informative that a firm considering the term will not alter the term even if that firm perceives a potential improvement. Consequently, the firm adopts the term without analysis. From that point on, an “informational cascade” can occur. To the extent that this occurs, no further learning takes place.

15 Goetz and Scott identify three benefits of standardization: (1) “labeling,” by which they mean the development of widely agreed-upon meanings for standard terms; (2) “diversification,” which they define to mean the development of a wide range of alternative standard terms; and (3) “reliability,” which refers to the establishment of a judicially recognized interpretation of a term. Goetz & Scott, supra note 2, at 287-88. Robert Clark has made a similar point with respect to traditions. He describes traditions as “greatly reduc[ing] the very high costs of repeated discovery, learning, and rational decisionmaking.” Robert C. Clark, Contracts, Elites, and Traditions in the Making of Corporate Law, 89 Colum. L. Rev. 1703, 1731 (1989).

16 See Abhijit V. Banerjee, A Simple Model of Herd Behavior, 107 Q.J. Econ. 797, 799 (1992) (modeling “herd externalities”); Sushil Bikhchandani, David Hirshleifer & Ivo Welch, A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades, 100 J. Pol. Econ. 992, 994 (1992) (modeling “informational cascades”). The conditions that give rise to informational cascades in these models are to some extent present in the context of corporate contracting. The formulation of a charter or indenture term is an imprecise exercise that can require consideration of future contingencies that are very difficult to predict and analyze. In addition, firms have access to the terms that other firms have adopted in the past, they commonly refer to those terms, and they frequently copy “precedent” documents. Anecdotal evidence suggests that this copying is sometimes based on the drafter’s faith that prior users have eliminated formulation errors, rather than on this independent understanding and assessment of the standard term.

17 This limit exists only with respect to a firm’s independent ex ante evaluation of a term and not with respect to improvements that occur in response to actual problems that surface in the use of a term or to new judicial precedents.
b. Judicial Precedents

A related attraction of a term commonly used in the past is that such a term may have been litigated and ruled upon by courts. Judicial opinions can reduce uncertainty regarding the validity and meaning of a term and the interaction of the term with relevant legal requirements, such as those contained in corporate, securities, and bankruptcy laws. This reduction in uncertainty reduces the expected costs of corporate planning and of litigating disputes regarding a contract term.18

For example, in a series of cases, courts have clarified how an indenture clause should be worded in order to subordinate the claims of junior creditors to unsecured senior creditors' claims for interest accrued after the filing of a bankruptcy petition. (Such claims for post-petition date interest are ordinarily not "allowed claims" in a bankruptcy proceeding.)19 These cases establish that it is not sufficient for an indenture to provide that "in the case of any insolvency, receivership, conservatorship, [or] reorganization . . . all obligations of the Company to holders of Senior Indebtedness of the Company shall be entitled to be paid in full before any payment shall be made on account of the principal of or interest on" the subordinated debt;20 that it may not even be sufficient to provide that senior debt includes "all amounts owing on the [senior securities] (including post-petition date interest)";21 but that it would suffice to state that "holders of Senior Debt shall be entitled to receive payment in full of all Obligations with respect to the Senior Debt (including


20 Southeast Banking, 188 B.R. at 457-58.

21 Ionosphere, 134 B.R. at 534. The court found that the reference to post-petition date interest, without elaboration, should be interpreted to refer to post-petition date interest on oversecured senior claims, which would be "owing" from the debtor, but not to post-petition date interest on undersecured or unsecured senior claims. Id.
interest after the commencement of any [bankruptcy] proceeding . . . whether or not such interest is an allowable claim in any such proceeding)." Companies thus know what terms to use in drafting an indenture in order to achieve the desired result.

c. Familiarity to Lawyers, Other Professionals, and Investors

A term that has been commonly used in the past will tend to be familiar to certain third parties that are important to a firm. To the extent a term requires professional advice—from lawyers, accountants, investment bankers, or others—the use of a common term may reduce the costs and improve the quality of such advice because many of these professionals will be familiar with the term from past experience. Most broadly, the use of generally accepted accounting principles as a baseline convention for bond covenants and the choice of Delaware as a state of incorporation facilitate obtaining high quality accounting and legal advice, respectively.

In addition, the use of a common term reduces the expense that investors and securities analysts incur in evaluating a firm's securities and comparing them to alternative investments. This reduced cost increases the liquidity of a security, thereby reducing the issuer's cost of capital. If a term is commonly used,

\footnote{Id. at 535, n.14.}
\footnote{For example, a firm may need legal services to draft a term, to determine its obligations under a term, to create documentation required by the term, or to litigate the term. It may also need accounting services to determine how to comply with a term or to litigate the application of the term. For example, legal and accounting advice regarding existing debt agreements may be required to determine whether certain corporate actions—the payment of dividends, the taking on of additional debt, certain investments, or major asset sales—violate such agreements.}
\footnote{Efficiencies in legal, accounting, and other professional advice can stem from economies of scale and scope and from movement along a learning curve. For example, the incorporation of generally accepted accounting principles (GAAP) into a bond covenant or other contract term allows a firm to exploit an accountant's education and experience gained initially in school and refined continuously by serving other clients that use GAAP. As explained in Klausner, supra note 3, at 783-84, the cost of professional services can be expected to decline even if the volume of firms using the same contract term is spread across many accountants or lawyers.}
\footnote{The use of common terms is analogous to the use of standard weights and measures for physical products—they reduce the cost of comparison. See David Hemenway, Industrywide Voluntary Product Standards 21-26 (1975).}
\footnote{See Yakov Amihud & Haim Mendelson, Liquidity and Asset Prices: Financial
the cost and effort entailed in understanding the term and its impact on the value of a security can be spread over many investments.\textsuperscript{27} If a term is idiosyncratic and difficult to evaluate, the securities to which it applies will be relatively costly to analyze. The lower cost of capital associated with ease of investor analysis is thus an additional benefit of commonly used terms.\textsuperscript{28}

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Learning benefits constitute positive externalities that earlier users of a contract term confer on later users. We refer to them as "learning externalities." Depending on the particular term involved, the magnitudes of learning externalities presumably vary, and level off at different points as the use of a term increases. For example, a long and complex indenture provision that has been commonly used in the past presumably offers significant learning benefits compared to customizing an alternative term. These benefits include drafting efficiencies and familiarity among lawyers and securities analysts. A vague term—a "standard"—would similarly benefit from common use. For such a term, the accumulation of judicial precedent would tend to be a major source of learning benefits.\textsuperscript{29} In Section B,

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\textsuperscript{27}Familiarity with a term is important for investors who purchase a firm's securities initially and for those who trade later in the secondary market. Because the liquidity of secondary trading is important for initial purchasers, both are important to a firm issuing securities. For discussions of this effect from different perspectives, see Ronald J. Gilson & Reinier H. Kraakman, The Mechanisms of Market Efficiency, 70 Va. L. Rev. 549, 615-16 (1984); Henry T. Greely, Contracts as Commodities: The Influence of Secondary Purchasers on the Form of Contracts, 42 Vand. L. Rev. 133, 136-37 (1989).

\textsuperscript{28}This phenomenon has been recognized with respect to the documentation of derivatives contracts. See Gerald D. Gay & Joanne T. Medero, The Economics of Derivatives Documentation: Private Contracting as a Substitute for Government Regulation, 3 J. Derivatives 78, 81 (1996) (standardization has reduced costs, increased transparency, and enhanced liquidity).

\textsuperscript{29}Indeed, in the rules-versus-standards literature, the accumulation of precedent has been recognized as a benefit of vague standards compared to specific rules. See, e.g., Isaac Ehrlich & Richard A. Posner, An Economic Analysis of Legal Rulemaking, 3 J. Legal Stud. 257, 266 (1974); Kaplow, supra note 18, at 611-16. For additional discussions of rules and standards, see Colin S. Diver, The Optimal Precision of Administrative Rules, 93 Yale L.J. 65 (1983); Duncan Kennedy, Form and Substance in Private Law Adjudication, 89 Harv. L. Rev. 1685 (1976).
we explain the efficiency implications of learning externalities. Then, in Part II, we provide evidence regarding their actual existence and significance in a particular contract term.

2. Network Benefits

The learning benefits described in the preceding Section arise from the past use of a contract term. They are available regardless of whether the term remains in widespread use in the future. A related set of advantages is available to a firm that adopts a contract term that is or will become contemporaneously used by many firms for a significant period of time. (Contemporaneous use of a term may occur either because other firms have already adopted it or because other firms adopt it in the future.)

We refer to these benefits as “network benefits” to reflect an analogous phenomenon in the context of “network products,” such as compact disc (“CD”) players and computers. Network products become more valuable as their use becomes more widespread. One source of this enhanced value is the increased availability and lower cost of complementary products resulting from economies of scale in their production. (Compare, for example, the value of a CD player now with its value some years ago, when CDs offered higher quality music than records but were more expensive and less available.) The value of a network product that flows from its technical qualities alone is its “inherent benefit,” while the value attributable to the number

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31 Telephones are another typical network product. For them, the network effect stems from the increase in the number of people with whom one can communicate.
of people using the product contemporaneously is its "network benefit."  

Although the element of technical compatibility is absent in corporate contract terms, widespread use of a term can offer analogous network benefits. These network benefits mirror some of the learning benefits described above, but they stem from contemporaneous use—after the firm has adopted a particular term—rather than from past use. Contractual network benefits include higher quality and lower cost legal and professional services in the future, as lawyers and accountants gain (and retain) expertise by encountering questions or disputes regarding a particular contract term. They also include the availability of a large number of investors and securities analysts who will learn how to price a firm's securities at later public offerings and on the secondary market. Finally, network benefits include judicial interpretations that courts issue during the period in which a firm has a term in its contract. (The professional expertise, pricing knowledge, and body of precedents that are already present when a particular firm adopts a term are learning benefits to that firm; the same benefits, when developed

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32 Although network benefits materialize to some extent in the future (the first user of a network product, for example, only reaps future benefits), their present value enhances the value of a network product at the time of adoption. We define network benefits as the present value of benefits projected to arise in the future as a result of firms currently using the term and those that are expected to adopt it. The value of network benefits thus depends, in part, on the number of users that are expected to acquire the product in the future and on how soon they are expected to acquire it.

33 There is no direct network analogue to the learning benefits derived from drafting efficiency.

34 Because of these parallels between learning and network benefits, it is likely that a standardized term that offers network benefits will also have generated corresponding learning benefits.

35 Common use in the not-too-distant past—that is, recent learning benefits—may be sufficient to allow accurate pricing in a public offering and perhaps for a period of time thereafter on the secondary market. Unless the term continues to be widely used, however, familiarity among investors and analysts will fade, and liquidity and pricing accuracy will decline.

36 Professional expertise, investor familiarity, and judicial interpretations are analogous to the complementary products available for the personal computer. The more firms there are that contemporaneously use a particular term, the more professional expertise, investor familiarity, and judicial opinions there will be.
during the time the firm has the term in its contract, are network benefits.)

Despite these similarities, there are a number of important differences between learning and network benefits. Because network benefits depend on contemporaneous use, they are primarily relevant to contracts of long duration, such as charters or long-term debt instruments. Learning benefits, on the other hand, may be present for all terms in the corporate contract, regardless of duration.

In addition, learning and network benefits entail different flows of externalities. Learning externalities run in only one direction, from early to later users. Network externalities run in two directions in the sense that all users benefit from one another's contemporaneous use of the product, regardless of when they started using it. This difference is important in understanding the differences in the dynamics that can lead to suboptimal contracting.

3. Switching Costs

Just as learning and network benefits can flow from one firm to another, they can also accrue within a firm that enters into multiple contracts. When internal learning or network benefits are present, they result in "switching costs" which may induce a firm to adopt the same term repeatedly in different documents—for instance, in different indentures. To illustrate the concept of switching costs in a more familiar setting, consider a firm that has exclusively used IBM personal computers ("PCs") and is now considering whether to replace some of its older models with new IBM PCs or with Macintoshes. The firm's prior use of IBM PCs, and its continued use of some IBM PCs, will result in both learning and network benefits within the firm that reduce the attraction of Macintoshes—even if the firm be-

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37 It is possible, however, that internal dynamics within a firm create inertia in favor of continuing to use a term that the firm has used before. If so, a firm's initial adoption of a term in a short-term contract (e.g. a short-term bond indenture) will create a bias in favor of adopting the term in later short-term contracts. In such a case, the term itself may remain in effect for a long time and network externalities will be relevant. For a discussion of such inertia, see infra Section I.A.3.

38 See infra Section I.B.
lieves that the Macintosh is, technically, the superior machine. The firm’s employees may have accumulated experience with the IBM PC operating system and software, and the use of a single computer system rather than two different ones may increase the ability of employees to work together and reduce the costs of providing computer support services.\(^3\)

Analogous switching costs can be present with respect to corporate contracts. Take, for example, a firm with an outstanding issue of long-term bonds that is planning to issue new bonds. In deciding whether to adopt a covenant in a new bond indenture that differs from the covenants in the outstanding bonds, the firm will take into account the possibility of internal network benefits—for instance, its lawyers’ familiarity with the terms of its current indenture, the administrative cost of compliance, and efficiencies in litigating compliance.

Not all switching costs result from internal learning and network benefits. For example, switching costs also result from intrafirm externalities that arise from the inclusion of a stricter covenant in a subsequent indenture (e.g., a tighter restriction on dividend payments) which confers an uncompensated windfall on existing bondholders (who would benefit from the company’s compliance with the later restriction). These intrafirm externalities are unrelated to internal learning or network benefits.\(^4\)

Switching costs may create pressure for a firm to avoid adopting terms in a new contract that deviate from those in its existing contracts. This may be true even if the previous terms are inferior to ones that have since been developed and even if the more recently developed terms have become common. (As


\(^4\) See Marcel Kahan, The Qualified Case Against Mandatory Terms in Bonds, 89 Nw. U. L. Rev. 565, 596-97 (1995) (discussing infrafirm externalities). Other examples of switching costs unrelated to learning or network benefits include aggregation problems and transaction costs of amending contract terms. Aggregation problems exist if two types of contractual provisions designed to address the same problem, when used in conjunction, impose excessive restraints. Switching costs may also arise from transaction costs of changing a contract. That is, once a bond has been issued, it is costly to obtain the requisite consent of bondholders to amend the bond indenture.
shown in Part II, this occurred to a striking extent in the case of improvements made to event risk covenants once the basic covenant appeared.

As we discuss below, the presence of switching costs affects the degree to which network externalities may result in suboptimal contracting. Switching costs, however, are important in other respects as well. They provide a conceptual tool for explaining contracting behavior. Additionally, to the extent that switching costs constitute learning and network benefits that accrue within a firm, evidence of the presence of switching costs constitutes indirect evidence of the presence of learning and network externalities across firms.

4. Positive Implications of Learning and Network Benefits

The principal effect of learning and network benefits is to increase the degree of contract standardization. If learning or network benefits are present, actual contracts will be more standardized than they would be in their absence. The reason why learning or network benefits result in increased standardization lies in the positive externality conferred upon users of a term that has been widely used before (in the case of learning benefits) or that will be widely used in the future (in the case of network benefits). In the absence of learning and network benefits, standardization will occur only if all firms happen to draft an identical term that each firm independently considers to be inherently optimal.

Relatedly, both learning and network benefits result in path dependence. The accumulated experience of past contracting influences present contracting. Accumulated experience not only creates learning benefits, which influence current contracting choices, but also shapes current expectations of what terms are likely to be used in the future, thereby giving rise to network benefits, which further influence current contracting choices.

B. The Implications of Learning and Network Externalities for Socially Optimal Contracting

The presence of learning and network benefits raises the question whether atomistic contracting can be expected to produce an optimal mix of standardization, customization, and in-
novation.\textsuperscript{41} If not, the question arises whether institutions exist that help overcome these sources of potential suboptimality, how well such institutions work, and whether a change in the legal environment could enhance the contracting process.

1. The Effects of Learning Externalities

The presence of learning externalities in corporate contracts means that the early adopters of a term can confer positive externalities on later adopters. As a result, firms' contracting choices may not be socially optimal.

In particular, learning externalities can result in the following suboptimal equilibria: (a) a suboptimal term may become a widely adopted standard term; (b) there may be too much standardization—excess uniformity—in contract terms; or (c) there may be too little standardization—excess diversity—in contract terms.

To see this, consider Figure 1. The two curves represent the value to adopting firms of two alternative contract terms or formulations—\( t_1 \) and \( t_2 \)—as a function of the number of firms that adopt each term after some designated time \( i \) (which may or may not be the first time either of these terms is used).\textsuperscript{42} After time \( i \), a succession of firms adopt either \( t_1 \) or \( t_2 \).\textsuperscript{43} When a firm makes its choice, it knows how many firms have already

\textsuperscript{41} We use the term "optimal" here to refer to a situation in which no hypothetical reformulation of firms' contracts would yield an increase in social wealth by increasing the aggregate value of firms. Contracts are referred to as "suboptimal" when a hypothetical reformulation would increase social wealth. Such a hypothetical reformulation must be prospective as of the time the reformulation is made. That is, a hypothetical reformulation cannot involve going back in time to re-write contracts. Liebowitz and Margolis have categorized types of path dependence in terms of optimality implications. S.J. Liebowitz & Stephen E. Margolis, Path Dependence, Lock-In, and History, 11 J.L. Econ. & Org. 205, 206-08 (1995). Our concept of suboptimality corresponds with their concept of "third-degree path dependence" in that the inefficient outcome is "remediable." See id. at 207-08. We make no judgment regarding the feasibility of government intervention improving upon a suboptimal contract term, nor do we make a judgment regarding whether the transaction cost of an improvement (by government or otherwise) will be lower than the efficiency gains.

\textsuperscript{42} The number of firms that have used a term roughly approximates aggregate experience with the term. A more refined analysis would also take account of the amount of time a term was used in the aggregate.

\textsuperscript{43} We assume that firms do not consider any other terms.
adopted each term, and it knows the value of adopting each term. The points $V_{1}^{i,1}$ and $V_{2}^{i,1}$ reflect the value of the respective terms to the first user of each after time $i$. (These values include any learning benefits that may have accrued prior to time $i$.) Subsequent points along the curves reflect the value to successive adopters of each term after time $i$. So, for example, $V_{2}^{i,j}$ is the value of term $t_2$ to the $j$th firm that adopts that term after time $i$. The upward slope of each curve reflects the accumulation of learning benefits after time $i$ generated by experience as more firms adopt a term. Later-adopting firms thus reap more value from using a term than do early-adopting firms. As of time $i$, $t_1$ has a higher value, but term $t_2$ would generate learning benefits at a higher rate if it is adopted. Imagine, for example, that $t_2$ is open-ended and would become more useful as the courts interpret it in various contexts, while $t_1$ is cast in less open-ended language. The higher value of term $t_1$ at time $i$ ($V_{1}^{i,1}$) may, for example, be due to $t_1$ being more valuable than $t_2$ in the absence of learning benefits.

Figure 1 shows how a suboptimal term, $t_1$, can become widely adopted and remain in use even if a superior term exists. For the first firm to consider adopting one of these terms after time $i$, $t_1$ is more attractive: $V_{1}^{i,1}$ is greater than $V_{2}^{i,1}$. The first firm will

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44 The value of a term to a firm is fixed as of the time that the firm adopts it. The value of the term at any given time depends on its inherent characteristics and on past experience, from which learning benefits derive. Accordingly, with respect to learning benefits, a firm is indifferent to the possibility that a term will become widely adopted in the future. As will be seen below, a firm may well adopt a term in the expectation that it will become widely adopted and hence increase in value as a result of network externalities. In order to isolate the effect of learning externalities, however, this model does not incorporate network externalities. For a discussion of the optimality implications of network externalities, see infra Section I.B.2.

45 The likelihood that a suboptimal term will become widely adopted may be particularly high when an informational cascade occurs. See supra text accompanying notes 16-17. Bikhchandani et al. show that if each individual has a 65% chance of making a decision correctly, there is a 30% chance that, after 1,000 people have made the same decision, a cascade will have occurred in which the wrong decision is uniformly made. If individuals have an 85% chance of making the correct decision, there is still a 9% chance of an incorrect cascade. Bikhchandani et al., supra note 16, at 1008 tbl. 2. (Bikhchandani et al. assume that each individual has the same quality of information and hence the same likelihood of making an incorrect decision based on that information.)
therefore adopt $t_1$. As a result, $t_1$ will be even more attractive to the next firm to consider the alternative terms. As more firms consider the two terms, the value of term $t_1$ increases along the $t_1$ curve, while the value of term $t_2$ remains at $V_{2i}^j$ (because no firm has adopted it). In equilibrium, therefore, term $t_1$ is adopted by all firms. If the number of potential users is large, this equilibrium is socially suboptimal. Such a suboptimal equilibrium may occur at the outset or when, after an established standard term has accumulated learning benefits, an alternative innovation becomes available that would generate greater benefits if it were to become widely adopted.

**Figure 1**

Learning Externalities

![Graph](image)

Figure 1 also illustrates suboptimal uniformity: a situation in which diverse firms should ideally adopt different standard terms, but in which they instead adopt a unitary standard term. For this scenario, assume that term $t_1$ would maximize the ag-
aggregate value of Type 1 firms, and that all Type 1 firms do in fact adopt that term. Assume further that term $t_2$ would maximize the aggregate value of Type 2 firms if they all were to adopt that term. For this scenario, Figure 1 reflects the value of the term $t_2$ to Type 2 firms. For the first Type 2 firm to make a contracting decision after time $i$, $t_1$ offers higher value than does $t_2$ (e.g. because Type 1 firms have already generated learning benefits for Type 2 firms prior to time $i$). Consequently, the first Type 2 firm will adopt term $t_1$, and the rest of the Type 2 firms follow. Term $t_1$ thus becomes uniformly adopted by Type 1 and Type 2 firms, which may be suboptimal.  

A third suboptimal scenario is one in which no standard term develops, and as a result no learning occurs. Assume, for example, that firms have a choice between individually customized terms (which differ for each firm and, by hypothesis, generate no learning benefits) and a term that could potentially become widely used and thereby generate learning benefits. As long as the value of customized terms exceeds the value of the potential standard term to the initial user, firms may customize even if standardization would be socially optimal.

2. The Effects of Network Externalities

In a prior article, one of us has explained in detail how network externalities can lead to suboptimal contracting. In this Article, we therefore confine ourselves to a summary of that

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46 Whether a dual standard is in fact optimal depends on the amount of learning benefit Type 2 firms would confer on Type 1 firms by adopting term $t_1$. For a parallel model of suboptimal uniformity in the network externality context, see Klausner, supra note 3, at 805-08.

47 Jody Kraus has recently used a model of cultural evolution to argue that commercial norms will not evolve to a point of social optimality. Jody Kraus, Legal Design and the Evolution of Commercial Norms, 26 J. Legal Stud. 377 (1997). The dynamic of his model entails individuals relying on various forms of social learning, rather than individual learning, to arrive at commercial norms. In this respect, his model resembles herd behavior models. See sources cited supra note 16. In contrast, the sources of potential suboptimality in our learning model are: (a) differential rates at which learning externalities accrue to alternative terms, or (b) the introduction of alternative terms at different times.

48 Klausner, supra note 3.
analysis, highlighting and expanding on the aspects that are of particular relevance to the empirical analysis in Part II.

Like learning externalities, network externalities can cause three types of suboptimal contract terms: (a) standardization on the wrong term; (b) excess uniformity; and (c) excess diversity. The dynamics of contract adoption in the presence of network externalities, however, are more complicated than those under learning externalities. The complication arises from the fact that network externalities flow in two directions: Early adopters of a term confer network externalities on later adopters, but they also reap network externalities from later adopters that use the term contemporaneously. 49

The possibility of suboptimality arises for two reasons. First, early adopters face uncertainty regarding whether a term will in fact be adopted in the future, and as a result they may decline to adopt a term whose inherent value is relatively low but that would be value-maximizing for that firm and socially optimal if it became widely adopted. Second, for early-adopting firms, network benefits do not materialize until other firms adopt a term, whereas for later adopters (who adopt once the network has become established) network benefits can materialize immediately upon adoption because other firms are already using the term. 50

The first problem is essentially a coordination problem and can be overcome by a proper coordinating mechanism. The second problem can be overcome with a cross-subsidy for early-adopting firms to induce them to adopt socially optimal contracts. 51

For present purposes, we offer only the intuition for how network externalities can lead to suboptimal contracting. Consider a firm trying to decide whether to adopt contract term t₁ or t₂. If network externalities are present, the value of each term will depend, in part, on how many other firms adopt it in the future and when they will do so. If the firm expects t₁ to become

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49 Recall that the contracts we are addressing in this Article—primarily charters and indentures—are long-term contracts. Consequently, a firm that adopts a contract term today will still be operating under it when another firm adopts the same term in the future.

50 See supra note 32. Later-adopting firms may reap learning benefits as well but this is not relevant to the network externality analysis.

51 For more detail, see Klausner, supra note 3, at 798-805.
widely adopted, it may itself adopt $t_1$, regardless of whether that
term's inherent value is lower than that of $t_2$ and regardless of
the network benefits that $t_2$ would generate if it were to become
widely adopted. If other firms follow the same rationale, $t_1$ will
become widely adopted regardless of whether it is socially op-
timal. Similarly, if $t_1$ maximizes the aggregate value of one type
of firm, but $t_2$ maximizes the aggregate value of another type of
firm, the same dynamic could lead to excess uniformity across
the two types of firm. If other firms follow the same rationale,
$t_1$ will become widely adopted regardless of whether it is socially op-
timal. Similarly, if $t_1$ maximizes the aggregate value of one type
of firm, but $t_2$ maximizes the aggregate value of another type of
firm, the same dynamic could lead to excess uniformity across
the two types of firm. Finally, excess diversity could occur
when no single term is expected to become widely used, and
each firm therefore customizes its own term.

If network externalities are present, the factors influencing
the dynamics of contract standardization and innovation in-
clude: (a) the number of firms expected to adopt a given term,
and (b) the rapidity with which they are expected to do so. These
variables depend in part on the extent to which existing
firms (as opposed to newly formed firms) will adopt a particular
term. In this respect, the presence of switching costs is impor-
tant. Switching costs will slow down the rate at which existing
firms will adopt a new contract term. Consequently, the presence
of switching costs would reduce the value of the term's
network benefits and hence the likelihood that it will become
commonly used.

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52 See id. at 805-08.
53 Id. at 801-04.
54 The more firms that are expected to adopt a term, and the sooner they are
expected to do so, the greater the network benefits for early adopters. Consequently,
the more likely it is that firms will become early adopters of a contract term and
begin to generate network externalities.
55 Switching costs also affect how firms react to retroactive changes in default terms.
Due to switching costs, even if a new default term is not optimal, firms may fail to
amend their existing contracts, and they may not opt out of the new term in their
future contracts. Moreover, if the default term generates learning or network
externalities, even firms that contract for the first time may not opt out of it. Thus,
switching costs cast at least some doubt on the claim that the maximal social costs of a
bad default rule are the transaction costs firms incur in opting out of them. See, e.g.,
Richard Posner, Economic Analysis of Law 81 (3d ed. 1986) (role of default rules is
to reduce transaction costs of contracting).
In sum, the presence of learning and network externalities in corporate contract terms creates the possibility that firms may adopt socially suboptimal contract terms.

C. The Role of Contracting Agents: Underwriters and Law Firms

In the standard analysis of the corporation, the terms of the corporate contract are determined by the interests of the contracting parties: shareholders, creditors, and managers. The role of agents involved in the contracting process, particularly underwriters and law firms, is to help the parties identify what terms maximize their respective benefits. These agents are not expected to exert an independent influence on the content of contract terms.

The discussion of learning and network externalities, however, raises the possibility that underwriters and law firms play a broader role. One possibility is that underwriters and law firms promote the transmission of learning benefits. Secondly, underwriters or law firms might facilitate coordination and cross-subsidization, which can reduce suboptimal contracting when learning or network externalities are significant. In this Section, we examine these potential roles for underwriters and law firms from a theoretical perspective. In Part II, we examine their involvement empirically.

1. Diffusion of Learning Externalities

Both underwriters and law firms are well positioned to promote the diffusion of certain learning benefits. Each has specialized expertise in the design and drafting of contracts and is likely to keep abreast of contractual innovations and improve-


Other institutions may promote coordination as well. For instance, form books, professional conferences, and continuing legal education programs can coordinate contracting. In addition, in some cases, bar association groups explicitly form groups to develop standardized forms. See, e.g., American Bar Foundation, supra note 7.
ments through research, professional conferences, training programs, and publications. They are also likely to have more information than their clients about which terms have been judicially interpreted and which terms are familiar to other professionals and to investors. Underwriters and law firms will thus be able to advise their clients regarding the relative amount of learning benefits that have been generated with respect to alternative contract terms.

2. Coordination

Underwriters are also well situated to help firms coordinate their contracting choices when network externalities are significant. The underwriting industry is concentrated, with a small number of investment banks and commercial bank affiliates accounting for a high percentage of underwriting business. Consequently, large underwriters are involved in numerous transactions with many issuers, and they advise issuers and investors with respect to a wide range of transactions. They therefore possess a wealth of information regarding the interests of both issuing firms and investors, the suitability of particular contract

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38 Underwriters are involved in the drafting of charters in preparation for firms going public and in the drafting of indentures for publicly issued bonds. Both the issuer's lawyers and the underwriter's lawyers are involved at these points as well. Lawyers also advise firms regarding charter amendments once they are publicly held, and regarding issues involving compliance with their charters and indentures. In addition, part of a lawyer's professional responsibility is to keep abreast of developments in his or her field. Lawyers would thus be aware of case law interpreting or ruling on the legality of contract terms.

39 Underwriters and lawyers may also help avert suboptimal informational cascades. See supra text accompanying notes 16-17. Such cascades can occur as a result of two factors. First, the less firms know regarding the quality of alternative terms, the greater the likelihood that a suboptimal cascade will occur. Second, informational cascades occur only if firms know which contract terms prior firms adopted but do not know why prior firms adopted those terms. See Banerjee, supra note 16, at 798. Underwriters and lawyers reduce the likelihood that either of these conditions will obtain. They are trained to analyze the quality of terms, and they often know why firms have adopted particular terms in the past. Since underwriters and lawyers draft terms for many clients, they naturally aggregate such information with respect to their own clients' decisions to adopt a term. In addition, underwriters and lawyers can more easily exchange information among each other than can their clients.

60 For example, during 1996, the top five investment banks acted as lead underwriters for 65.1% of all corporate bonds. Institutional Dealers' Dig., Jan. 13, 1997, at 32.
terms, the extensiveness of a term’s past and current use, and the prospect for a term’s use in the future. Simply by passing this information on, underwriters may be able to promote socially desirable standardization of some contract terms.

In addition to providing information, however, underwriters may be able to engage in more active forms of coordination. Because of their contracting expertise and their responsibility for marketing securities, underwriters have substantial influence over the contract terms their clients adopt. Accordingly, an underwriter with a substantial market share can explain to early users of a new term that it will advise other clients to use the same term in the future. It might even induce firms to use the same term in order to facilitate the marketing of their securities. The underwriter’s commitment to a term may provide the assurance of future use that early-adopting firms need when network externalities are present.

A large underwriter’s consistent use of a term may also lead smaller underwriters to advise their clients to adopt the same term. The clientele of the large underwriter ensures that a certain minimum level of network benefits will be available, and the likelihood of a wider following among still other underwriters offers the possibility of even larger network benefits. Furthermore, the high degree of concentration in the underwriting sector may allow explicit coordination among underwriters.

In sum, as a theoretical matter, underwriters appear capable of responding to the coordination problem that network externalities present. If they believe that a contractual innovation is valuable or that a certain subset of firms should adopt a contract term different from a more commonly used term, they may be able to provide assurance to early-adopting firms that others will follow and thereby increase the term’s network benefits to the early adopters. Whether they actually do so is a question we investigate empirically in Part II.

Law firms representing issuers are less likely to be able to help firms coordinate their contracting choices.\(^6\) The law firm sector is far less concentrated than the underwriting sector. Law

\(^6\) In another context, Goetz and Scott have suggested that law firms may be able to facilitate coordination in contracting. Goetz & Scott, supra note 2, at 293.
firms, as a result, have fewer clients than underwriters do. Coordination by a law firm of its own clients is thus less significant, and coordination across law firms is more difficult, than in the case of underwriters. Law firms representing underwriters present a somewhat different picture. Though still less concentrated than the market for underwriters, the market for law firms representing underwriters is much more concentrated than the one for firms representing issuers. In Part II, we test empirically whether law firms contribute to coordination in firms' choices of contract terms.

3. Cross-Subsidies

As discussed above, if learning or network externalities are present, later-adopting firms may have to subsidize early-adopting firms to induce them to adopt contract terms that will become socially optimal.\(^{62}\) A direct subsidy from later- to early-adopting firms, however, is not practical. Firms and their decisions to adopt contracts are highly dispersed across geography and time. The question thus arises whether underwriters or law firms might, in effect, act as conduits for such a subsidy.

It is plausible that law firms and underwriters act as such conduits with respect to learning and network benefits related to their own professional experience and advice. In particular, law firms and underwriters may charge their early clients less than the marginal costs of providing advice regarding a newly developed contract term if they believe that they can use the experience and knowledge with respect to the term in rendering advice to future users of the term. In addition, since underwriters have some ability to coordinate their clients' actions, they may be able to induce other professionals to act as conduits for a subsidy. For example, underwriters could induce professional investors to develop expertise in valuing a novel indenture term by advising them that future indentures will contain the same term. Investors could then spread the costs of performing this evaluation over many bonds, in effect subsidizing early adopters of the term. Cross-subsidies are unlikely to arise, however, with

\(^{62}\) See supra text accompanying note 50.
respect to learning and network benefits that become part of the public domain, such as those related to judicial precedents.

D. Summary

Atomistic contracting may fail to yield an optimal degree of standardization or innovation: A suboptimal term may become (and remain) standardized; there may be excessive uniformity; or there may be excessive diversity. Underwriters and law firms may mitigate these problems by diffusing some learning benefits and by internalizing network and learning externalities. Except by coincidence, however, they will not make contracts socially optimal. The extent to which they mitigate the problems discussed above is an empirical question that we begin to examine in Part II.

II. EMPIRICAL ANALYSIS: EVENT RISK COVENANTS

In this Part, we investigate the evolution of event risk covenants as a case study in the innovation and standardization of contract terms. Our objective is to address the following questions: First, is there evidence that learning and network externalities were present in event risk covenants; and, if so, is there evidence that they led firms to adopt suboptimal covenants? Second, did switching costs affect the development of these covenants? Third, did underwriters or law firms promote the diffusion of learning benefits or coordinate firms’ choices among different formulations of these covenants?

In Section A, we briefly describe the terms of event risk covenants and the circumstances of their initial appearance. In Section B, we present our empirical findings.

A. Description of Event Risk Covenants

Event risk covenants were developed and included in many investment-grade corporate bond indentures between 1988 and 1993. They were primarily designed to protect bondholders in the event of a leveraged acquisition or similar transaction. The covenants were developed in response to an announcement by RJR Nabisco in October 1987 that the company would be ac-
quired in a leveraged buyout. That acquisition resulted in a 20% decline in the value of RJR's bonds.\(^6\)

As we discuss below, the details of event risk covenants vary. All, however, follow the same basic outline. They provide bondholders with a remedy upon the occurrence of a "designated event," which is usually takeover-related, and an accompanying decline in the credit rating of the bond.\(^7\) The most important elements of the covenants are described below.

1. **Designated Events:** One major aspect of each event risk covenant is the enumeration of takeover-related "designated events" that, if accompanied by a rating decline, trigger a bondholder remedy. The following are typical events:
   
   (a) **Third Party Share Acquisitions:** The acquisition by a third party of company stock giving that party more than a specified percentage (e.g. 20%) of voting power in the company.
   
   (b) **Change in Board Composition:** A specified change in membership of the company's board of directors.
   
   (c) **Merger:** A merger or consolidation of the company with another entity.
   
   (d) **Asset Sale:** A sale by the company of all or substantially all of its assets.
   
   (e) **Share Repurchase:** The acquisition by the company in any one-year period of its own shares representing a specified percentage (e.g. 20%) of the total shares outstanding.
   
   (f) **Dividend/Share Repurchase Combination:** Dividends or share repurchases, within any one-year period, in an amount exceeding a specified percentage (e.g., 20%) of the value of the company's equity.

2. **Rating Decline:** To trigger a remedy for bondholders, a "designated event" must be accompanied by a specified credit

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\(^7\) The credit rating of a bond measures the risk of default, with a lower rating signifying a higher default risk. Credit ratings are provided by Standard and Poor's (S&P) and Moody's. Bonds rated in the four highest categories are "investment grade"; lower rated bonds are commonly referred to as "junk bonds."
rating decline. There are substantial differences among bond issues regarding the definition of this rating decline.65

3. Form of Bondholder Compensation: Once triggered, event risk covenants provide bondholders with any of three remedies. Under the most common form of the covenant, a holder is given a put option, typically at par. Other covenants provide for an increase in the interest rate payable on the bonds according to an interest-rate schedule designed to match rates with credit risk. A third type provides for an underwriter to "reset" the interest rate to a rate that would have the bonds trade at par.

4. Holding Company: Some covenants are triggered if a "designated event" occurs with respect to the issuer's parent or holding company. Others apply only to the issuer itself.

B. Empirical Findings

To study the evolution of event risk covenants, we collected a sample of 101 investment-grade bond issues with event risk covenants. These bonds were issued between November 1988, the date the first covenant appeared, and August 1993, the date the covenants essentially fell out of use.66 We identified twenty-seven substantive terms of the covenants, and observed how they evolved. For example, one such provision is the nature of the remedy provided to bondholders once the covenant is triggered. Another is the nature of the credit rating decline needed to trigger compensation. A full list of the 27 provisions is included in the Appendix.

We investigate the following hypotheses below: (1) learning and network externalities exist in corporate contracts; (2) these

A more detailed description of the variations in the requisite rating decline is provided below. See infra text accompanying notes 92-96.

We believe our sample includes essentially all investment-grade bonds issued in the United States with event risk covenants during this period. We began with a preliminary sample from four sources: bonds that had received an "event risk" rating by Standard and Poor's; a study by First Boston of bonds containing super-poison put covenants; computer word searches in databases containing financial publications; and Moody's summary of bond terms for all bonds issued by companies discovered through the preceding sources. We then excluded from the preliminary sample all bonds that did not contain event risk covenants. Where several bonds were issued under a single prospectus, we treated them as one bond issue. Such bonds always contained identical event risk covenant provisions.
externalities lead to suboptimal contracts; (3) switching costs are present in corporate contracts; (4) underwriters and law firms promote the diffusion of learning benefits; (5) underwriters and law firms coordinate firms' contract selections. Our data provide support, in varying degrees, for each of these hypotheses except that we do not find support for the hypotheses that law firms either promote the diffusion of learning benefits or coordinate firms' contract selections. Obviously, the generality of our conclusions is limited by the fact that we are studying a single type of contract term.

1. The Presence of Learning and Network Externalities

Our data provide moderate support for the hypothesis that learning or network externalities, or both, are present in contract terms. The support lies in three sources: the bandwagon pattern by which these covenants were adopted; the extent to which they became standardized; and the extent to which quality improvements diffused over time. While some of these patterns have alternative explanations, together they provide evidence consistent with the proposition that learning or network externalities influenced the content of the covenants that firms adopted. Although the data suggest that learning as well as network externalities were present, we cannot rule out the possibility that learning alone was responsible for our results.

a. Pattern of adoption

The pattern of event risk covenants' adoption—their non-adoption prior to November 1988 coupled with their rapid adoption once they appeared—is consistent with the presence of either learning or network externalities. As shown in Figure 2, once the covenants were introduced in late 1988, they quickly gained popularity. Figure 2 shows the total number of bonds with event risk covenants from the first quarter of 1989 to the second quarter of 1993, at which time the covenants essentially stopped appearing. Use of the covenants peaked in the fourth quarter of 1989, then declined until the beginning of 1991 when
they all but vanished. This bandwagon pattern of adoption and abandonment reflected in Figure 2 is not accounted for by changes in the total number of bonds issued. During the fourth quarter of 1989, approximately 56% of investment-grade, industrial bonds contained event risk covenants, and by the first quarter of 1991, this figure had dropped to 2%.

Figure 2
Adoption and Abandonment of Event Risk Covenants

Many leveraged buyouts occurred well before the appearance of these covenants in 1988. Accordingly, bondholder protection

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67 The decline is even more precipitous if one looks only at firms adopting the covenant for the first time.
68 These percentage figures are limited to investment grade bonds that meet the following criteria: (a) the issuer was a U.S. company with an industrial SIC code; (b) the issue had a stated maturity of seven years or longer; (c) the issue was rated BAA or higher by Moody's Investors Service and BBB or higher by S&P; and (d) the issue had a face value of $25 million or more. The source of these data was the Federal Reserve Micro Data Base of Corporate Security Offerings. We thank Leland Crabbe, Economist, Federal Reserve Board of Governors, for providing us with these data. For further specifications, see Crabbe, infra note 71, at 691-92. Although most of the bonds that we studied met these criteria, we included in our sample all investment grade bonds that contained event risk covenants.
from takeover-related losses was valuable for some time before the development of event risk covenants.\textsuperscript{69} The dual question therefore arises why the covenants examined here did not appear earlier, and why, once they appeared, they were quickly incorporated in a substantial portion of investment-grade bonds.

As for the timing, the watershed event of the RJR buyout may have increased the perceived risk of takeover-related losses and thereby enhanced the inherent value of the covenant. As we have argued in an earlier article, learning benefits may then have contributed to its rapid rise in popularity. The initial development of the covenant reduced the drafting costs and the risk of formulation error for later adopters, and reduced the cost of analyzing and pricing the covenant in the securities market.\textsuperscript{70} (As described below, learning did result in the correction of several formulation errors.)

Network benefits may also have contributed to the timing and rapid acceptance of the covenant. Press reports suggest that the RJR buyout served as a catalyst in crystallizing a widely held perception that bondholder protection was valuable and would therefore be incorporated into many bonds.\textsuperscript{71} Consequently, the expectation of widespread adoption created network externalities that made the development and use of the covenant more

\textsuperscript{69} As explained in Kahan & Klausner, assuming the covenants are accurately priced, both shareholders and bondholders are better off with the covenant than without. Kahan & Klausner, supra note 63, at 939-40.

\textsuperscript{70} See id. at 973-74.

\textsuperscript{71} In the aftermath of the RJR buyout, public discussion of bondholder losses in LBOs and public calls for bondholder protection multiplied. According to press reports, institutional buyers of bonds at the time began to demand protective covenants in their indentures and they were willing to pay for them. See, e.g., Christopher Farrell, Frederic A. Miller & David Zigar, Bond Holders Are Mad as Hell—And No Wonder, Bus. Wk., Dec. 5, 1988, at 28; Matthew Winkler, Wall Street Is Devising The Takeover-Proof Bond, Wall St. J., Nov. 3, 1988, at C1. Interestingly, even before the issuance of the first bond with an event risk covenant, there were reports in the financial press regarding the likely value of event risk protection (25 basis points). Mathew Winkler & Randall Smith, Sore Junk-Bond Holders Form Rights Group But Say They Aren't Looking for a Free Ride, Wall. St. J., June 30, 1988, at G1. In fact, a study covering the period November 1988 to December 1989 found that the value of the covenant ranged from 23 to 54 basis points. Leland Crabbe, Event Risk: An Analysis of Losses to Bondholders and “Super Poison Put” Bond Covenants, 46 J. Fin. 689, 702 (1991).
attractive. In particular, an expectation of widespread use may have increased confidence among early-adopting firms, and early bond purchasers, that the covenant would be priced in the secondary market if bonds with the covenant were sold several years later. This would have made the covenant more valuable to early purchasers and thus raised the price they were willing to pay for covenant protection (i.e., lowered the interest rate at which the firm could issue bonds with the covenant).

b. Standardization

The pattern of standardization provides more direct evidence of learning or network externalities. To track the process of standardization, we identified twelve important elements in these covenants. To determine the degree and speed of standardization, we examined the evolution of these elements beginning at the time immediately following the issuance of the four earliest covenants, which were adopted between November 1988 and January 1989, and we compared the terms of later covenants to those of the first four.

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72 Other network benefits may have been present as well. The covenant is fairly complex and differs significantly from other covenants. Thus, familiarity among lawyers may have been important. Although the language of this covenant is relatively specific, network benefits stemming from the prospect of judicial precedents may have been significant as well. Issues could have arisen, for example, related to the calculation of the threshold shareholding or the measure of substantiality in an asset sale under the designated event provision. In addition, issues could have arisen regarding how the covenant should have been disclosed for securities law purposes.

73 In fact, once these covenants began appearing in significant numbers, Standard & Poor's began issuing ratings of their protective quality, and Moody's began considering the covenants in assigning an overall credit risk rating to a bond. These ratings facilitated the pricing of these bonds. The rating agencies could presumably justify doing this only if a critical mass of bonds with these covenants were issued.

74 For a list of these elements, see the Appendix. Both learning and network externalities should be greatest with respect to these elements of the covenant. They affect the value of the covenant most, and are therefore the most likely to be affected by network externalities related to investor pricing. In addition, they are most susceptible to formulation error. The more firms there were that had used the covenant, the more scrutiny their formulation received and the lower the risk of formulation error.

75 As we explain below, switching costs had a dominating effect on the formulation of covenants if the same or an affiliated company had previously issued a bond with an event risk covenant. Thus, our analysis of learning and network benefits considers
As shown in Table 1, for ten of the twelve major elements, a provision used in the first four covenants became a standard term later. On average, over 90% of all subsequent issues employed these ten standard provisions. Moreover, this high degree of standardization occurred quickly. As of the first twenty issues following the initial four, 90% of the provisions conformed to the standard. This high degree and rapid pace of standardization provides support for the presence of learning or network benefits.\footnote{The fact that uniformity occurred early in the evolution of the covenant, rather than following a longer period of experimentation and selection, suggests that the future benefits of standardization—that is, network benefits—were a motivation.}

The rapid pace of standardization could also be explained by a high inherent value of the terms that were to become standard. According to such an “inherent value thesis,” structural elements are identical in different bonds because such identical provisions have, for most companies, a higher value than alternative provisions regardless of whether they have been, or will be, commonly adopted. Even apart from the deficiencies in the standard that emerged, which we discuss infra Section II.B.2, the standard is characterized by a level of arbitrariness that renders the “inherent value thesis” implausible as a full explanation. For example, 98% of the covenants restrain dividends paid and/or share repurchases made within a one-year period, but only 2% restrain such actions over different time periods. In 76% of the covenants, there are separate provisions covering the share repurchases and the sum of dividends and amounts spent in share repurchases; but only 4% restrain dividend payments by themselves, only 6% restrain asset acquisitions, and none restrain the taking on of additional debt. It seems highly unlikely that these standard provisions were adopted in most covenants because their inherent value is higher than alternative provisions, and not because of learning or network externalities.
### Table 1

<table>
<thead>
<tr>
<th>3rd Party Share Acquisition</th>
<th>Change in Board</th>
<th>Merger</th>
<th>Asset Sale</th>
<th>Share Repurchase</th>
<th>Dividend/Share Repurchase Combination</th>
<th>Other</th>
<th>Multiple Triggers</th>
<th>Duration</th>
<th>Holding Co.</th>
<th>Remedy</th>
<th>Rating Decline if Both Moody's and S&amp;P Rating Is</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Investment Grade</td>
</tr>
<tr>
<td>Harris</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
<td>Limited</td>
<td>No</td>
<td>Put at par</td>
<td>Either declines below I-Grade</td>
</tr>
<tr>
<td>Northwest</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
<td>Limited</td>
<td>Yes</td>
<td>Company has to call or reset</td>
<td>Either declines below I-Grade</td>
</tr>
<tr>
<td>Grumman</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
<td>Yes</td>
<td>Full</td>
<td>No</td>
<td>Put at par</td>
<td>Both decline below I-Grade</td>
</tr>
<tr>
<td>Xtra</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
<td>Full</td>
<td>No</td>
<td>Company has to call or reset</td>
<td>Either declines below I-Grade</td>
</tr>
<tr>
<td>Subsequent Issues</td>
<td>Yes 100%</td>
<td>Yes 90%</td>
<td>Yes 92%</td>
<td>Yes 96%</td>
<td>Yes 78%</td>
<td>Yes 88%</td>
<td>Yes 96%</td>
<td>Full 86%</td>
<td>Pre '90: No 86%</td>
<td>Put at par 84%</td>
<td>Mixed Either declines: 54% Both decline: 46%</td>
</tr>
</tbody>
</table>

1. Includes combination of share repurchases and dividends only if dividends follow share repurchases, but not if repurchases follow dividends.
2. Standard feature created instantaneously.
4. No standard feature emerges.
c. Quality improvements

The data suggest the presence of learning benefits consisting of a reduction in formulation errors.\textsuperscript{77} Such learning benefits should result in gradual improvements in the formulation of a term.\textsuperscript{78} To track whether such improvements occurred, we identified seven provisions of the covenants that exhibited substantial variations which, in our judgment, differed in quality.\textsuperscript{79} These seven improvements involved added terms, technical clarification of a required calculation, and closure of loopholes. We then used a probit regression to determine whether the appearance of the superior formulations increased over time. As Table 2 shows, we found that it did with respect to all seven improvements. In five of the seven cases, the rate of increase was significant at the 90\% level or higher.\textsuperscript{80} These findings indicate that learning across firms, in the form of quality improvements, did occur with respect to the formulation of the covenants.

\textsuperscript{77} Recall that this is not the only formulation-related learning benefit. Mere survival of a term, without any improvement along the way, is evidence that it has no major defects.

\textsuperscript{78} Note, however, that the presence of other types of learning benefits and network benefits that have accumulated on a defective formulation of a term and that are not transferable to an improved formulation may discourage improvements. Thus, the absence of gradual improvements in formulations would not have provided clear evidence for the presence or absence of learning or network benefits, as it could have been attributable to either: (i) the absence of drafting-efficiency type learning benefits; or (ii) the presence of drafting-efficiency type learning benefits coupled with the presence of other types of learning or network benefits.

\textsuperscript{79} For purposes of this test, we consider only first issues after the early development phase. To exclude cases where the superior variants were almost universally or almost never used, we limited our study to instances where the superior variant was used in at least 10\% and at most 85\% of the bonds. A list of the seven provisions that exhibited superior variants and an explanation of these provisions is included in the Appendix.

\textsuperscript{80} We do not report the parameter estimates themselves since these estimates have no clear meaning in probit regressions. Instead we report, in columns five and six, the estimates of the likelihood that the superior term was included in the first and last of the bonds issued after the initial development phase.


Table 2

Type and Spread of Improvements
Dependent Variable: Presence of Superior Term
Independent Variable: Number of First Issue Bonds Preceding

<table>
<thead>
<tr>
<th>Imp.</th>
<th>Type</th>
<th>Party Favored</th>
<th>T-Stat.</th>
<th>Prob. in 1st Bond</th>
<th>Prob. in Last Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>closes loophole</td>
<td>investor</td>
<td>1.57*</td>
<td>22%</td>
<td>58%</td>
</tr>
<tr>
<td>2b</td>
<td>clarification</td>
<td>neutral</td>
<td>1.82**</td>
<td>26%</td>
<td>74%</td>
</tr>
<tr>
<td>3c</td>
<td>closes loophole</td>
<td>investor</td>
<td>3.03***</td>
<td>28%</td>
<td>95%</td>
</tr>
<tr>
<td>7d</td>
<td>added term</td>
<td>investor</td>
<td>3.66***</td>
<td>2%</td>
<td>81%</td>
</tr>
<tr>
<td>4e</td>
<td>added term</td>
<td>investor</td>
<td>.79</td>
<td>22%</td>
<td>40%</td>
</tr>
<tr>
<td>5f</td>
<td>added term</td>
<td>investor</td>
<td>1.64*</td>
<td>22%</td>
<td>59%</td>
</tr>
<tr>
<td>6g</td>
<td>added term</td>
<td>issuer</td>
<td>.89</td>
<td>27%</td>
<td>48%</td>
</tr>
</tbody>
</table>

* Provision 7: No requirement that stock of company is exchanged for other property in asset sale trigger.
* Provision 11: Specification of denominator in share repurchase trigger.
* Provision 14: Inclusion of subsidiary share repurchases in dividend/share repurchase trigger.
* Provision 18: Event triggers apply to holding companies.
* Provision 15: Inclusion of ordinary dividends in dividend/share repurchase trigger.
* Provision 23: Rating withdrawal equivalent to rating decline.
* Provision 27: Company option to redeem untendered bonds at par if sufficient bonds tendered. See Appendix for more information.

2. Suboptimal Standardization

Our data provide some support for the hypothesis that learning or network externalities led to suboptimal standardization. Modesty demands that we preface this claim with a caveat. We have no choice but to rely on our own judgment in arguing that a particular formulation of the event risk covenant is suboptimal, and that judgment will appear by its nature to be inconsistent with the judgment of those who adopted the covenants.81 Moreover, as we consider only one major provision to

81 Of course, our thesis is that the widespread adoption of a term does not necessarily
be substantially suboptimal, we consider the evidence that learning and network externalities led to suboptimal standardization in these covenants to be weak.

As described above, the remedy provided to bondholders in most covenants is a put at par. This, however, is a faulty remedy. If, after bonds are issued, market interest rates fall or credit risk declines, the bonds’ market value would increase and the right to sell the bonds back to the company at par would provide less than full protection. Conversely, if market interest rates rise, or credit risk increases, the value of the bonds would drop, and the put would overcompensate bondholders and possibly deter efficient transactions. An appropriate remedy would be either a pre-formulated adjustment in the bond’s interest rate or a put at a price that excludes the effect of changes in market interest rates. Indeed, some firms presumably realized this and adopted more effective remedies. One covenant in our sample provided for an interest-sensitive put, and a few covenants provided for an interest rate adjustment. Even after these alternative remedies first appeared, however, 83% of the covenants continued to provide for a put at par.

The common use of an inferior provision in the covenant is consistent with the hypothesis that learning or network externalities were present and that they led to the standardization of a suboptimal contract term.

3. The Presence of Switching Costs

Our data strongly support the hypothesis that switching costs were present in event risk covenants. Our sample contains 44 bonds issued by companies that had previously issued bonds with event risk covenants. An analysis of these bonds shows a striking degree of intra-company consistency. Of the 44 covenants, 43 were identical to the issuer’s preceding covenant with respect to each of 27 provisions that we tracked. In the single covenant that differed from its predecessor, only 2 of the 27 provisions differed from the issuer’s preceding covenant—25 were identical.
Moreover, this consistency occurred while other firms were adopting quality improvements in their covenants. Thus, once a company adopted an event risk covenant, in essentially all cases it declined to adopt any subsequent improvements.

A similar degree of consistency exists among covenants adopted by affiliated companies. Our sample contains three pairs of parent-subsidiary affiliates. In each pairing, the covenant adopted by the parent was identical to that adopted by the subsidiary with respect to all 27 provisions.

This degree of consistency is extremely high and far exceeds the degree of consistency that appeared across the entire sample of covenants. This provides strong support for the hypothesis that switching costs were present. The strong evidence of switching costs also constitutes indirect evidence for the presence of learning or network benefits. Although factors other than internal learning and network benefits may result in switching costs, these other factors by themselves cannot explain the virtually complete consistency of event risk covenants in bonds issued by the same company or by affiliated companies. Internal learning and network benefits are therefore likely to be

82 For bonds issued by different companies, the consistency factor is 68.5%, i.e., there is on average a 68.5% chance that any one of the 27 provisions that we tracked is the same from one covenant to another. For bonds issued by the same company or by affiliated companies, the respective consistency factors are greater than 99%. The differences in consistency factors are statistically significant at a 99% level.

83 Because of this dominating effect of switching costs, the remainder of our analysis, unless otherwise noted, considers only the first bond issue with an event risk covenant for each company or group of affiliated companies.

The high degree of intra-company consistency could also be due to a more conventional reason: Each company may have developed its own optimal formulation and retained it over time. This, however, does not seem to be an adequate explanation. As we discuss infra text accompanying notes 85-100, the choice of underwriter and the time of issue are significant factors in determining the content of covenants in “first issues” (i.e., the first bond issue with an event risk covenant by a company or group of companies) but not in subsequent issues; and innovations and improvements are made and adopted by companies that issue bonds with event risk covenants for the first time. These findings are inconsistent with the notion that each company included uniquely ideal terms in its event risk covenant each time it issued bonds.

84 Some of the variations in the 27 provisions that we tracked could arguably result in aggregation problems or intrafirm externalities, see supra note 40 and accompanying text, but many other variations could not—yet virtually no variations at all are employed in subsequent bond issues by the same or by affiliated companies.
a significant factor contributing to the high level of consistency. The presence of such internal learning and network benefits may in turn be suggestive of similar (albeit lower) external learning and network benefits.

4. The Role of Underwriters and Law Firms in the Diffusion of Learning Benefits

Our data support the hypothesis that underwriters assist in the diffusion of learning benefits. The data provide no evidence, however, for the hypothesis that law firms diffuse learning benefits.

As discussed above, there were quality improvements in seven provisions. The pattern of the improvements is consistent with the hypothesis that underwriters serve as a channel by which information regarding improvements are transmitted. Two underwriters—Goldman Sachs and First Boston—underwrote large numbers of bonds with event risk covenants. (We therefore refer to Goldman Sachs and First Boston as "large" underwriters.) Goldman Sachs was clearly an important force in promoting the diffusion of improvements. Beginning in November 1989, issues that Goldman Sachs underwrote consistently adopted all seven improvements. None of the Goldman Sachs bonds issued prior to October 1989 contained the improvements. A close analysis reveals that, during October 1989, Goldman Sachs also changed (and from then on retained) other provisions of its event risk covenant. Thus, it appears that Goldman Sachs, in October 1989, engaged in a wholesale review of event risk covenants, canvassing improvements that had been made by other firms, and from then on induced its clients (those that had not previously adopted a covenant) to use the improved version of the covenant.

The picture for First Boston is less clear. First Boston ultimately used six of the seven improvements in at least one of its bonds. These adoptions, however, occurred over a longer period,

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85 Five were significant at a level of 90% or higher.
86 Each of the seven improvements was included in at least three of the four Goldman Sachs bonds issued in October 1989.
from July 1989 to April 1990, and only three of the superior terms consistently appeared in subsequent First Boston issues.

These findings are consistent with the hypothesis that underwriters are an important factor in the learning process. In addition, the fact that Goldman Sachs adopted these improvements at once and continued to include them in their issuers' bonds may indicate a recognition that consistency is important in creating network externalities around the improvements.

As we expected, the issuers' law firms were too dispersed to run meaningful tests. As to underwriters' law firms, which were more concentrated, no pattern of diffusion of learning benefits was noticeable.

5. The Role of Underwriters and Law Firms in Coordination of Firms' Contracting

With respect to the role of underwriters and law firms in coordinating issuers' contracting choices, our data are similar to the data on the diffusion of learning benefits. Underwriters that underwrote a large number of bonds with event risk covenants—namely, Goldman Sachs and First Boston—seem to have performed a coordinating function. Small underwriters and law firms did not.

a. Consistency Factors

To test whether underwriters or law firms promoted standardization by maintaining consistency in the covenants of bonds with which they were involved, we calculated "consistency factors" for investment banks and law firms. The consistency factor represents the average likelihood that any of the 27 provisions we tracked differs from one covenant to the next.

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87 We were able to obtain information about the identity of the issuer's counsel for 29 of the 54 bonds issued by unaffiliated companies that were the first bond issue of such companies to contain event risk covenants. For these 29 bonds, 28 different law firms advised the issuer.

88 We calculated "consistency factors" for each lead underwriter that issued at least four bonds with event risk covenants and for each law firm that acted as underwriter's counsel with respect to at least four such bonds. We considered only the first bond issue by each company and only bonds issued after the early development phase.
chronologically. For example, for an underwriter to have a consistency factor of 100%, the covenants for all bonds it underwrote would be the same with respect to each of the 27 provisions. A consistency factor of 75% means that three-fourths of the provisions are the same as the underwriter's last covenant. If, say, underwriters promote standardization of the bonds that they underwrite, we would expect higher consistency factors for bonds underwritten by the same investment bank than for the bonds underwritten by different banks.

As Table 3 shows, Goldman Sachs and First Boston—the two investment banks that underwrote the largest number of bonds with event risk covenants—have consistency factors of approximately 92% and 77%, respectively, which significantly exceed the factor for the sample as a whole; the consistency factors for the "smaller" investment banks involved in fewer covenants do not. Thus, as far as large underwriters are concerned, there is strong evidence that underwriters substantially influence covenant content.

Table 3
Consistency Factors

<table>
<thead>
<tr>
<th>Lead Underwriter (number of first issues)</th>
<th>Consistency Factor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldman Sachs (11)</td>
<td>92.22*</td>
</tr>
<tr>
<td>First Boston (9)</td>
<td>77.57*</td>
</tr>
<tr>
<td>Merrill Lynch (6)</td>
<td>65.12</td>
</tr>
<tr>
<td>Shearson Lehman Hutton (5)</td>
<td>68.37</td>
</tr>
<tr>
<td>Morgan Stanley (4)</td>
<td>68.35</td>
</tr>
<tr>
<td>Salomon Brothers (4)</td>
<td>67.50</td>
</tr>
</tbody>
</table>

* Statistically significant at 99% level from factor for randomly ordered issues (68.45%).

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89 For this test, we compared the consistency factor for bonds issued by one underwriter ordered by date of issuance with the consistency factor for the whole sample ordered randomly. The consistency factor for the whole sample ordered by date of issuance (70.69%) is both statistically and quantitatively not significantly different from the factor for the whole sample ordered randomly.
As mentioned above, the issuers’ law firms were too dispersed to run meaningful tests.\textsuperscript{90} As to underwriters’ law firms, we were able to run tests, but we did not find any evidence that their identity affected covenant content.\textsuperscript{91}

\textit{b. The Rating Decline Trigger}

An in-depth study of the rating-decline trigger provides further evidence of the coordinating function of large underwriters. (Recall that a rating decline must accompany a change of control in order to trigger a remedy.) The rating decline variable is the only major structural feature for which no standard formulation evolved. Throughout the period of this study, there were various formulations of this provision, the most common of which accounted for only 34\% of the bonds issued after the early development stage.

Again, the identity of the lead underwriter was an important factor in determining the variant used. Both Goldman Sachs and First Boston had a propensity to use a different variant of the rating decline trigger.\textsuperscript{92} In Fisher's exact tests, this proclivity is statistically significant at a 99\% level for each.\textsuperscript{93}

\textsuperscript{90}See supra text accompanying note 87.

\textsuperscript{91}Only the law firm most frequently acting as underwriter’s counsel, Sullivan & Cromwell, had a significantly above-average consistency factor. But that was mainly attributable to the fact that Sullivan & Cromwell frequently acted as counsel for Goldman Sachs. The consistency factor for bonds with Sullivan & Cromwell as underwriter’s counsel and Goldman Sachs as underwriter was 90.12\%, substantially above the consistency factor for all Sullivan & Cromwell bonds (81.65\%) and roughly the same as the consistency factor for all Goldman Sachs bonds (92.22\%). Thus, it appears that Goldman Sachs contributed to the high consistency of Sullivan & Cromwell bonds, but Sullivan & Cromwell did not contribute to the high consistency of Goldman Sachs bonds. Omitting the Goldman Sachs bonds, the consistency factor for Sullivan & Cromwell’s bonds was not significantly above average.

\textsuperscript{92}Goldman Sachs used the same variant in 10 of its 11 bonds. Under that variant, a remedy is triggered in two circumstances: If the bonds are rated by either Standard & Poor’s or Moody’s as investment-grade prior to the triggering event, both agencies must rate the bonds below investment grade after the event; if both rated the bonds as “junk,” both must lower their rating by one full rating category. First Boston used its variant in six of its nine bonds. Under that variant, a remedy is triggered if either Standard & Poor’s or Moody’s downgrades the bonds in the manner described above.

\textsuperscript{93}If the use of triggers is unrelated to underwriters, the probability that 10 or more Goldman Sachs issues would use the respective variant was 0.00175\%; the probability
This evidence is particularly interesting because there are both theoretical and empirical reasons to believe that, but for the existence of learning or network benefits derived from using a standard trigger, different rating decline triggers would be optimal for different issuers. One important factor in structuring the rating decline trigger is whether a remedy can be triggered only by a downgrade from investment grade to below investment grade, or whether it can also be triggered by a downgrade from one level of junk (say, BB) to a lower level of junk (say, B or C). About 20% of the covenants provided that the remedy would be triggered only by a downgrade from investment-grade to junk. As a result, if a bond were downgraded to junk before a takeover-related event occurred, the covenant could not be triggered and the bond would lose its protection.

The likelihood that a bond is downgraded to junk prior to a takeover-related event is highest for bonds that carry a relatively low investment-grade rating when they are issued. One would thus expect that bonds with relatively low investment-grade ratings would permit a remedy to be triggered by downgrades from one level of junk to a lower level of junk. Indeed, for the sample as a whole, the initial bond rating at the time of issuance was a significant factor (at a 99% level) in determining whether only a downgrade from investment grade to junk could trigger protection. But none of the bonds underwritten by Goldman Sachs confined protection in this manner—despite the

that six or more First Boston issues would use the respective variant was 0.5797%. We would like to thank Bruce Tuckman for his assistance in conducting these tests.

At first glance, one may think that all bonds should offer the wider protection. Confining protection to downgrades from investment grade to junk, however, may well have been suitable for highly rated bonds given that the remedy was a put at par. If a bond were highly rated initially but was then downgraded to junk, the value of the bond would have declined substantially. If a takeover-related event then occurred and bondholders had a right to put the bond back to the company at par, they would be substantially overcompensated and efficient control changes may have been deterred. Thus, given the remedy, the limitation on the protection available to highly rated bonds may have been a reasonable second best. For lower-rated bonds, full protection would not have been as bad.

In a probit regression with the average initial bond rating by Moody's and Standard and Poor's as independent variable and, as dependent variable, a dummy variable taking zero if only a decline from investment grade to junk can satisfy the trigger, and one otherwise, the parameter for the average initial bond rating was negative with a t-statistic of -2.51.
fact that Goldman Sachs bonds had an above average initial bond rating.  

One interpretation of Goldman Sachs' apparent efforts to coordinate its clients on a single rating-decline trigger—despite the heterogeneity in the initial rating of their bonds—is that Goldman Sachs was trying to overcome the excessive diversity that can result where parties engage in atomistic contracting in the presence of network and learning externalities. That is, uniformity in this provision may have been more valuable in the aggregate than diversity even though diverse terms would be inherently optimal for different issuers.

c. The Interaction of Switching Costs and Underwriters' Influence

As discussed above, switching costs appear to have been significant. Despite Goldman Sachs' consistency, issuers that had issued bonds previously with an event risk covenant used their old formulation rather than Goldman Sachs' formulation. This was true even when Goldman Sachs had incorporated quality improvements into its form covenant since the company last issued bonds.

This finding is important in that it implies that quality improvements are more likely to occur, and to spread, if they are introduced relatively early in the evolution of a contract term, before many potential users are constrained by switching costs.

6. Do Underwriters Represent Bond Purchasers Poorly? An Aside

Some corporate law commentators have argued that underwriters do not adequately represent the interests of investors.

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96 Using the data from the regression described supra note 95, the hypothesis that Goldman Sachs bonds contain this feature with equal probability (given the initial rating) as bonds in general can be rejected at a 95% level.

97 In two instances, Goldman Sachs acted as underwriter for a bond issue prior to October 1989 and for an issue by the same company after October 1989; neither of these two issues contains any of the superior terms. In another instance, Goldman Sachs acted as underwriter for a bond issued in October 1989 and for a subsequent issue by the same company. The subsequent issue contains only two of the seven superior terms, the same two as contained in the October 1989 issue.

Though not directly related to the topic of this paper, our data allow us to examine this question empirically. (So why not?)

Our findings on quality improvements do not support the unrepresented investor claim. Of the seven quality improvements identified in Table 2, five favor investors, one is neutral, and only one favors issuers. The rate of increased use for four of the five pro-investor improvements is statistically positive. The rate of increased use for the one pro-issuer improvement is not. Finally, the two most widely adopted improvements (Improvements 3 and 4) are pro-investor. These data show that the terms of event risk covenants over time became more pro-investor. They are thus inconsistent with the unrepresented investor claim.99

Additional evidence inconsistent with the unrepresented investor claim lies in the dividend/share repurchase trigger. Under that provision, dividends and share repurchases that exceed a specified percentage of the company's equity in any one year constitute an event trigger. The higher the percentage threshold, the harder it is to trigger an event. In a regression analysis, we found that thresholds decreased over time at a statistically significant rate.100

7. Summary of Findings

Our findings support, to varying degrees, most of the hypotheses that emerged from the theoretical analysis of Part I. The support is strongest for the hypotheses that underwriters coordinated firms' contract selections and that switching costs are present in these contracts. We also find support for the hypotheses that learning or network externalities were present in event risk covenants, that underwriters promote the diffusion of learning benefits, and, to a lesser degree, that learning or net-

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99 Of course, a term that we identify as "pro-issuer" would be anti-investor only if it is not priced. If the provision is priced, shareholders benefit from a pro-issuer term. See Kahan & Klausner, supra note 63, at 938-43.

100 In the regression, we used the percentage threshold as the dependent variable and the initial bond rating and a time proxy variable as independent variables. The variable for bond rating was positive at a 99% level (t-statistic of 2.79). The time variable was negative at a 99% level (t-statistic of -3.47). The $R^2$ of the regression was 0.32.
work externalities led to suboptimal contracts. We find no support for the hypotheses that law firms play a meaningful role in the diffusion of learning benefits or in the coordination of firms’ contract selections.

III. IMPLICATIONS AND CONCLUSION

The objective of this Article has been to analyze the economics of contract standardization, and its implications for contractual innovation and customization, in the context of corporate contracts. Our theoretical conclusions are threefold. First, there is reason to believe that increasing returns—learning and network externalities, as well as switching costs—arise from some contract terms. Second, where this is the case, there is no reason to expect, as a theoretical matter, that atomistic contracting will yield a socially optimal balance among standardization, customization, and innovation. Third, contracting agents, in particular underwriters, may coordinate firms’ contracting decisions in a manner that ameliorates suboptimal contracting, but there is no reason to expect that they eliminate the problem entirely. Our empirical analysis of event risk covenants provides moderate to strong support for the presence of learning externalities, network externalities, and switching costs, and for the proposition that underwriters significantly influence firms’ contracting choices.

This analysis has implications for the academic debate regarding the tendency of contracting to yield socially optimal contracts. It also has practical implications for standard-setting in the context of contracts and for contract interpretation. Finally, this work suggests an agenda for future research.

A. The Optimality of Corporate Contracts

An important strand in the economics-oriented corporate law literature maintains that the terms of corporate contracts tend to be socially optimal. The basic argument is that the maximizing behavior of corporate managers, operating in an environment of efficient securities markets, tends to produce contract terms that maximize firm values. Contract terms are then understood to undergo a Darwinian struggle for survival among
competing terms, where those that survive are expected to be the best. Consequently, the contracts that we observe are presumptively optimal, especially if they are widely used over a substantial period of time.\footnote{For the classic statement of this position, see Frank H. Easterbrook & Daniel R. Fischel, The Economic Structure of Corporate Law 1-39 (1991).}

This literature has not taken into account the phenomenon and the implications of increasing returns in corporate contracts. Where increasing returns are present, atomistic contracting may lead to the adoption of suboptimal corporate contracts in the following ways: (a) a suboptimal term may become widely adopted and may inhibit innovation; (b) contract terms may be too standardized; or (c) contract terms may be insufficiently standardized. To be sure, the problems resulting from atomistic contracting can, in theory, be overcome through proper coordination and cross-subsidy. There is, however, no reason to believe that market forces will produce an optimal system of coordination and cross-subsidies. In short, when increasing returns are present, survival over time does not imply optimality.\footnote{Charles Goetz and Robert Scott, in the context of commercial contracts, have raised doubts regarding the optimality of contracts for different but related reasons. They suggest, however, that lawyers can coordinate with one another to promote optimal contracting. See Goetz & Scott, supra note 2, at 293, 304-05 (focusing on the reduction of formulation error as contract terms are used and refined over time and on disincentives to innovate contract terms). Our analysis suggests that lawyers cannot be counted on to perform this role.}

B. Contract Standard-Setting

Where network externalities are present in product markets, standard-setting is commonly an important function of industry associations and sometimes government agencies.\footnote{Hemenway, supra note 25, at 81-82.} Product standards, which promote compatibility among products made by different firms, may be mandatory or voluntary. Even where voluntary, however, the value of the network externalities associated with maintaining compatibility with other products gives these standards a compelling attractive force. As one expert in
this area has stated, voluntary product standards "ought to be considered as something a little stronger than 'voluntary.'"104

In the context of corporate contracts, the presence of learning and network externalities makes voluntary standard-setting potentially important as well.105 In this context, standard-setting would mean the development of model contract terms, which firms could adopt at their option. The objective of contract standard-setting would be to promote the optimal balance between uniformity among homogeneous firms and diversity among heterogeneous firms, and to avoid locked-in obsolescence. Standards, of course, provide no assurance of optimal contracting. The point is simply that standard-setting institutions can potentially respond to the coordination problem. In addition, to the extent that a standard-setting institution bears the cost of developing a standard contract term,106 its efforts to avoid formulation error and to educate lawyers, other professionals, and the investment community provide a subsidy to early-adopting firms. In theory, it can compensate those firms for the creation of learning and network externalities that later-adopting firms will reap.107 Moreover, a term promulgated by a standard-setting organization may compensate for the absence of learning benefits with the promise of network benefits if many firms are expected to adopt the standard term in the future.

Because corporate and contract law scholars have not fully recognized the conceptual value of contract standard-setting, efforts at standard-setting have been largely ignored in the legal academy. Contract standard-setting institutions, however, do exist—though sometimes in disguised form. An early attempt explicitly to standardize corporate contracts was the Corporate Trust Indenture Project of the American Bar Foundation.108

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105 For discussions of why learning and network externalities generally do not justify mandatory terms, see Klausner, supra note 3, at 834-47, and Kahan, supra note 40, at 598-600, 609-612.
106 Depending on how the standard-setting institution is financed, this may amount to a subsidy or cost-spreading among firms. In either case, adoption of a standard term will be less costly for a firm than developing its own formulation.
107 Similarly, the standard term may be more attractive than a simpler term that a firm may draft itself. See supra Section I.A.
108 American Bar Foundation, supra note 7; Churchill Rodgers, The Corporate
The product of this Project was a model bond indenture designed to replace what was described at the time as “needless variation” in bond documentation. More recently, the American Bar Association has produced a model simplified indenture. In addition, in the area of financial derivative products, model contracts abound. For instance, the International Swap and Derivative Dealers Association (“ISDDA”) has drafted a model swap agreement. The existence of these explicit attempts to standardize suggests that firms, lawyers, and investors at least implicitly recognize the presence of learning and network externalities and the potential to improve contracts through standard-setting.

Another institution that promotes standardization in corporate contracts, though in an indirect way, is the Financial Accounting Standards Board (“FASB”), which created and maintains generally accepted accounting principles (“GAAP”). The FASB’s mission is to promote accuracy and uniformity in financial reporting. To the extent that accounting concepts appear in corporate documentation, GAAP concepts are embedded as contract terms in such documentation, and the standardizing efforts of FASB serve the coordinating and subsidizing functions described in Part I. Accordingly, the existence of GAAP reduces both suboptimal diversity and standardization of suboptimal terms in corporate contracts. Moreover, the ongoing efforts of FASB to keep GAAP current promote coordinated adoption of valuable innovations.

A final, more subtle example of standard-setting is corporate law itself. When a firm incorporates in a particular state, it adopts that state’s mandatory corporate law rules, and it adopts any or all of that state’s default terms by choosing not to customize an alternative term. In effect, these rules operate as standard contract terms: they are the same for all firms that adopt them, and many firms do in fact adopt them. State legislatures and judiciaries thus implicitly perform the function of

109 Rodgers, supra note 108, at 552.
110 Committee on Devs. in Bus. Fin., American Bar Ass’n, Model Simplified Indenture, 38 Bus. Law. 741 (1983) [hereinafter American Bar Ass’n].
111 See Gay & Medero, supra note 28.
standard-setting organizations. In the case of Delaware law, the state bar association’s Corporate Law Section, consisting of experienced lawyers, acts as an important adjunct to the legislature. It drafts or reviews essentially all corporate law legislation before the legislature acts. In practice, therefore, Delaware’s corporate law drafting process constitutes a standard-setting process similar to the processes followed by the private sector organizations described above.

Our analysis of learning and network externalities offers insights into how contract standard-setting institutions should operate. Recall that the objective of contractual standards is to strike an optimal balance between standardization and customization in contracts and to prevent locked-in obsolescence. This task requires detailed information regarding the needs and circumstances of different firms and transactions. Accordingly, a standard-setting institution should consist of individuals with experience with a wide range of firms and transactions that a standard term could potentially implicate. Furthermore, a contract standard-setting institution should continually review its standards in light of changes in business practices and changes in the business environment, and where appropriate, it should update its standards. Interestingly, some of the contract standard-setting institutions described above meet these criteria—namely, FASB, the ISDDA, and the Delaware legislature (through the Corporate Law Section of the state bar). The standards set by these organizations are generally considered successful. In contrast, the group that produced the model bond indenture disbanded when its model indenture and commentaries were completed, and as a result the model bond indenture is now considered out of date.

C. Interpretation of Corporate Contracts

The analysis of learning and network externalities also yields insights regarding the rules courts should apply in interpreting corporate contract terms. When standard terms exist, the role

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of judicial interpretation should be to promote the functions of standard terms (namely, the accrual of learning and network benefits), while allowing firms to opt out of those standards and customize their own terms. This requires consistent interpretation of standard terms and recognition of individual efforts to depart from standard terms. Accordingly, there should be no inquiry into the subjective intent of a firm that has adopted a standard term. Interpretation of standard terms should be treated like the interpretation of laws: Judges, not juries, should interpret them, and their interpretations should have precedential value. Where a standard term is the product of an explicit standard-setting process such as the model bond indenture or the model simplified indenture, commentaries of the standard-setting organization should be accorded authoritative weight. In contrast, courts should interpret customized terms in a particularized fashion with specific reference to the circumstances of the parties that have customized a term, including a presumptive intent to depart from the standard term. Ambiguity in the customized term should be resolved to give the term a meaning distinct from that of its standard counterpart.

D. Contract Terms Incorporated from External Sources

In many cases, firms incorporate terms into a corporate contract by reference to external sources. The adoption of default terms (by silence) is the most obvious example of this. Other examples include the incorporation of GAAP and statutory definitions into bond indentures. Whenever a contract incorporates a term by reference to such an external source, the issue

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113 Professors Goetz and Scott have made a related point. Goetz & Scott, supra note 2, at 305-11.
114 See, e.g., American Bar Ass’n, supra note 110 (official Notes to Model Simplified Indenture); American Bar Foundation, supra note 7.
115 The Second Circuit interpreted covenants in this fashion in Sharon Steel Corp. v. Chase Manhattan Bank, 691 F.2d 1039, 1048 (2d Cir. 1982) (holding that meaning of boilerplate indenture provisions must be determined by judges, not juries), but failed to do so in Jamie Securities Co. v. The Limited, Inc., 880 F.2d 1572, 1575-76 (2d Cir. 1989) (using parol evidence rule to exclude official comments on Model Simplified Indenture, which served as model for and contained same clause as indenture at bar).
116 For instance, an indenture might incorporate the term “beneficial ownership” from the Securities Exchange Act.
arises whether the term is to be incorporated as defined at the
time the contract is entered into, or whether the definition of
the term for purposes of the contract should change as it
changes in the external source. Sometimes, contracts explicitly
specify what is to be done, but often they are silent, thus giving
rise to an interpretive issue.

The approach of prior scholars to default rules casts these
terms in the role of reducing drafting costs: By adopting a de-
fault rule, a firm saves itself the trouble of explicitly drafting
whatever that rule provides. If this were the only role of default
rules and other contract terms adopted from external sources,
the definition of such a term should remain frozen at the time of
adoption—just as it would if the term were explicitly drafted
into the contract.

Our analysis implies that this is not necessarily the correct
approach to the interpretation of these terms and provides a
framework for analyzing this interpretive issue. A term incor-
porated from an external source can serve two purposes. First,
the quality of the term may be value-maximizing independent of
learning and network benefits. In addition, however, the term
may have accumulated learning benefits and may be expected to
provide network benefits. For example, with respect to GAAP,
network benefits include improvements promulgated after a
contract is adopted as well as continuing consistency with
other firms' contracts, which may be valuable in itself. Our

For terms incorporated from legal sources, such as statutes or case law, a
definition may change as a result of new cases, new regulations, or statutory
amendments. For terms incorporated from private, extra-legal sources, such as
GAAP, the organization charged with keeping the standards up to date (FASB in the
case of GAAP) may change the definition of a term in order to have it keep pace
with relevant changes in business practices or in the business environment.

These are network benefits because the existence of GAAP and FASB is
attributable to the fact that many firms follow the same accounting conventions.

This consistency will be affected, of course, by how many firms adopt an evolving
GAAP and how many adopt a frozen GAAP. Future changes in statutory or
regulatory definitions offer similar benefits. They are not strictly network benefits,
however, because they do not arise as a result of a large number of firms having
adopted the same term.

In addition, the incorporation of terms that evolve, rather than remain static,
allows a firm to reap the benefit of what we have termed internal learning and
network benefits—continued compatibility among contracts that a single firm adopts
analysis thus suggests that a court in any specific case should consider both of these rationales before interpreting a term incorporated from an external source, and if the latter seems to have been important, it should interpret the term to evolve in meaning as it evolves in the external source.  

E. A Research Agenda: Further Study of Actual Contracts

Corporate law academics rarely study actual contracts. The few who do study them focus on how particular contractual mechanisms respond to a business problem facing the parties involved in a particular contract or type of contract. This Article provides new reasons to study actual contracts and new questions to ask. There is much more empirical work to be done before we can conclude that learning or network externalities exist, and matter, to a significant degree. If they are insignificant, no harm is done by modeling contracting as atomistic. But until we know more we should take seriously the possibility that the types of suboptimality we have found in event risk covenants are prevalent in other corporate contract terms and contracts generally.

over a period of time (for instance, several bond indentures). See supra Section I.A.3. The commentary to the Model Simplified Indenture recognizes these benefits for GAAP, stating that a static definition "would impose upon the issuer the increasingly onerous obligation to restate subsequent years' financial statements, solely for indenture covenant purposes, on the basis of accounting principles no longer otherwise applied." American Bar Ass'n, supra note 110, at 784 (Note to Section 1.04).

120 In the absence of any guidance from the contract itself, the distinction between incremental changes and changes that represent a clear break from the past might often be useful. It would often, but not always, be reasonable for a firm to incorporate the former type of change into its own contract, while excluding the latter. In addition, if incremental changes are not applied retroactively, each time such a change is made a new contractual network would have to form, and the growth of the old one would stop. Depending on how often incremental changes are made, this could substantially hamper the creation of network benefits. Indeed, if changes in case law were not applied to existing contracts, a major source of network benefits would be gone. The common law practice of retroactively applying judicial interpretations of default rules is thus consistent with the implications of the network externality analysis.
APPENDIX: LIST OF PROVISIONS

The following is a list of the 27 provisions of event risk covenants that we tracked. Provisions that constitute major structural elements are marked with a "∗". Provisions that exhibited improvements are marked with a "†".

1. Whether a third party share acquisition is included as an event trigger.∗
   2. If so, the numerical threshold applicable to the third party share acquisition trigger.
   3. Whether a higher threshold is applicable to third party share acquisitions by the company's employee stock ownership plan ("ESOP").
   4. Whether a change in board composition is included as an event trigger.∗
   5. If so, whether the change in board composition is measured relative to the board composition when the bonds were issued or over any two-year period.
   6. Whether a sale of substantially all assets is included as an event trigger.∗
   7. If so, whether a sale of substantially all assets only counts as an event trigger only if the company's stock is exchanged for other property.†
   8. Whether a merger or consolidation is included as an event trigger.∗
   9. If so, whether there is an exception for a merger with a subsidiary or for a merger for the purpose of changing the state of incorporation.
  10. Whether a share repurchase is included as an event trigger.∗
  11. If so, whether the covenant specifies the number to be used as the denominator to be used in calculating the percentage of shares repurchased (e.g., the number of shares outstanding prior to the first purchase or prior to the last one).†
  12. Whether a dividend/share repurchase combination is included as an event trigger.∗
13. If so, whether the covenant specifies how the percentage of the amount expended is to be calculated (e.g., as a percentage of the equity value at the beginning or at the end of the period).

14. Whether repurchases of company stock by subsidiaries are included for purposes of that calculation.

15. Whether ordinary dividends are included for purposes of that calculation.

16. The percentage threshold for the share repurchase or dividend/share repurchase combination trigger (which were identical in all covenants that contained both triggers).

17. Whether, and if so, what kind of additional event triggers are included.

18. Whether event triggers apply to holding companies as well.

19. The requisite rating decline trigger.

20. The date against which a potential rating decline is measured.

21. The time by which a rating decline must ordinarily occur.

22. Whether that time period is extended if the rating of the bonds is under review on the last day of the period.

23. Whether a rating withdrawal is equivalent to the requisite rating decline.

24. Whether the covenant can be triggered more than once.

25. Whether the covenant terminates prior to maturity.

26. The form of bondholder compensation.

27. Whether the company has the option to repurchase all bonds if at least 80% (sometimes 90%) of the outstanding bonds are “put” to the company.

Our judgments regarding improvements are as follows:

- For provision 7, we regard a covenant as superior if a sale of all or substantially all assets constitutes an event trigger even if no stock is exchanged (because an asset sale does not, by itself, result in an exchange of stock).

- For provision 11, we regard a covenant as superior if it specifies the denominator to be used in calculating the percent-
age of shares repurchased (since any specification avoids later disputes).

- For provision 14, we regard a covenant as superior if it includes a subsidiary’s purchase of a company’s shares (since such purchases have identical effects on the company’s creditors as share repurchases by the company itself).
- For provision 15, we regard a covenant as superior if ordinary dividends are included (since “ordinary” is an ambiguous and manipulable term and since such dividends also harm creditors).
- For provision 18, we regard a covenant as superior if the event triggers apply to holding companies (since this impedes avoidance of several of the event triggers).
- For provision 23, we regard a covenant as superior if rating withdrawals are treated as equivalent to the requisite rating decline (because rating agencies sometimes withdraw a bond rating instead of downgrading a bond).
- For provision 27, we regard a covenant as superior if the company has the option to redeem bonds that are not put (as this enables companies to retire a whole issue in circumstances where it is unlikely that bondholders would be harmed by such a retirement and when the transaction costs of leaving the bonds outstanding outweigh the benefits).