

12-2012

# Set in Stone? Change and Innovation in Consumer Standard-Form Contracts

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## Recommended Citation

Marotta-Wurgler, Florencia and Taylor, Robert, "Set in Stone? Change and Innovation in Consumer Standard-Form Contracts" (2012). *New York University Law and Economics Working Papers*. Paper 323.  
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# SET IN STONE? CHANGE AND INNOVATION IN CONSUMER STANDARD-FORM CONTRACTS

FLORENCIA MAROTTA-WURGLER<sup>†</sup> & ROBERT TAYLOR<sup>‡</sup>

*Standard-form contracting is the engine of the mass-market economy, yet we know little about what drives it and what factors are associated with its evolution. Understanding change and innovation of the substance, length, and complexity of fine print in the consumer context can help regulators identify sources of potential intervention as well as help them evaluate the effectiveness of mandatory disclosure regimes, which are commonly used as consumer protection tools. This Article studies the rate, direction, and determinants of change in consumer standard-form contracting. We examine what changed between 2003 and 2010 in the terms of 264 mass-market consumer software license agreements. Thirty-nine percent of contracts materially changed at least one term, and some changed as many as fourteen terms. The average contract became more pro-seller as well as several hundred words longer. The increase in length is not due to the use of simpler language. Contract readability has been constant: The average contract is as readable as an article in a scientific journal. The variance of contract length has grown, as has the variance in overall pro-seller bias, resulting in reduced contract standardization over time. Firms that were younger, larger, or growing, as well as firms with in-house counsel, were more likely to change existing terms and to introduce new terms to take advantage of technological and market developments. Contracts appear to respond to litigation outcomes: Terms that were increasingly enforced by courts were more frequently used in contracts, and vice-versa. The results indicate that software license agreements are relatively dynamic and shaped by multiple factors over time. We discuss potential consumer protection implications as a result of the increased length and complexity of contracts over time.*

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## INTRODUCTION

The majority of consumer and business transactions involve standard forms. Transactions from buying a car or even a home to signing up for an online dating service involve signing (or negotiating) a standard-form document or clicking “I agree.” Standard-form contracting is the engine of the mass-market economy, yet we know little about what drives it and what factors are associated with its evolution. This Article examines the rate, direction, and determinants of change in consumer standard-form contracts.

A common characteristic of fine print is a high degree of standardization. Consumer products are generally sold with limited warranties, disclaimers of implied warranties, limitations of damages, and dispute resolution clauses, among other terms.<sup>1</sup> Standardization is pervasive because it confers many benefits. For instance, terms that become well known are easy for contracting parties and courts alike to interpret. However, these very benefits can make change difficult and hamper incentives to innovate.<sup>2</sup> Terms that have become customary among users might become “sticky,” and thus hard to change, even if alternative arrangements enhance the value of the transaction.<sup>3</sup> Other characteristics of the standard-form contracting environment—such as

<sup>1</sup> See generally Florencia Marotta-Wurgler, *What’s in a Standard Form Contract? An Empirical Analysis of Software License Agreements*, 4 J. EMPIRICAL LEGAL STUD. 677 (2007); George Priest, *A Theory of the Consumer Product Warranty*, 90 YALE L.J. 1297 (1981).

<sup>2</sup> See *infra* Part I.

<sup>3</sup> See MITU GULATI & ROBERT E. SCOTT, *THE THREE AND A HALF MINUTE TRANSACTION: BOILERPLATE AND THE LIMITS OF CONTRACT DESIGN* 33–44 (2013) (exploring theories of what makes contract terms “sticky”); Marcel Kahan & Michael Klausner, *Standardization and Innovation in Corporate Contracting (or “The Economics of Boilerplate”)*, 83 VA. L. REV. 713 (1997) (examining how learning benefits and network effects may slow changes in terms); Michael Klausner, *Corporations, Corporate Law, and Networks of Contracts*, 81 VA. L. REV. 757 (1995) (examining how network effects may slow changes in terms).

weak property rights in contract terms and the hierarchical nature of law firms, where copying from pre-existing templates is the norm—further reduce incentives to invest in innovation.<sup>4</sup>

Despite these hurdles, we still observe change in standard-form contracts. Several studies found that corporate- and sovereign-bond contracts slowly adapted their language after a surprising and negative “interpretative shock” by courts.<sup>5</sup> But beyond a few specific settings, we know little about actual change and innovation in standard terms, especially in non-negotiated agreements.<sup>6</sup> We also know little about the determinants of innovation and the role of players other than law firms, such as in-house counsel, in fostering change.

Understanding change and innovation in standard-form contracts is an important task. To the extent terms are sticky, identifying sources of friction could help design institutional arrangements to better encourage the supply and revision of terms. Even if innovation takes place, change and innovation may not be beneficial to society if one of the parties unilaterally drafts clauses that only redistribute value and do not increase welfare.<sup>7</sup> This concern might be particularly relevant

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<sup>4</sup> See Clayton P. Gillette, *Standard Form Contracts* (N.Y. Univ. Ctr. for Law, Econ. & Org., Working Paper No. 09-18, 2009), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1374990](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1374990) (exploring theories of stickiness). Recent scholarship has identified innovation in the absence of strong property rights. See *infra* note 19 and accompanying text (discussing such scholarship).

<sup>5</sup> See, e.g., Stephen J. Choi & G. Mitu Gulati, *An Empirical Study of Securities Disclosure Practice*, 80 TUL. L. REV. 1023 (2006) [hereinafter Choi & Gulati, *Securities Disclosure*] (comparing attorneys’ disclosure of changes as a result of reinterpretation as opposed to modification of actual contract language); Stephen J. Choi & G. Mitu Gulati, *Innovation in Boilerplate Contracts: An Empirical Examination of Sovereign Bonds*, 53 EMORY L.J. 929 (2004) [hereinafter Choi & Gulati, *Innovation in Boilerplate Contracts*] (examining boilerplate innovation in the context of reinterpretation of terms); Stephen J. Choi, Mitu Gulati & Eric A. Posner, *The Dynamics of Contract Evolution*, 88 N.Y.U. L. REV. 1 (2013) [hereinafter Choi et al., *Contract Evolution*] (finding that innovation in business-to-business boilerplate occurs in three stages roughly similar to product innovation); Stephen J. Choi, G. Mitu Gulati & Eric A. Posner, *Pricing Terms in Sovereign Debt Contracts: A Greek Case Study with Implications for the European Crisis Resolution Mechanism* (Univ. of Chi. Law Sch., John M. Olin Law & Econ. Working Paper No. 541, 2011) [hereinafter Choi et al., *Pricing Terms*], available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1713914](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1713914) (discussing how sovereign bond terms change in reaction to changes in the political risk of sovereigns).

<sup>6</sup> Frame & White review the existing empirical literature on financial innovation and find only twenty-three studies since 1998. Just a handful of these involve contract terms. See W. Scott Frame & Lawrence J. White, *Empirical Studies of Financial Innovation: Lots of Talk, Little Action?*, 42 J. ECON. LITERATURE 116, 135 (2004); see also Zev J. Eigen, *Empirical Studies of Contract*, 8 ANN. REV. L. & SOC. SCI. 291, 293 (2012) (discussing how little is known about contract change and innovation). But see Daniel Schwarcz, *Reevaluating Standardized Insurance Policies*, 78 U. CHI. L. REV. 1263 (2011) (presenting an empirical study on standard-form contracts in homeowners insurance policies that shows significant differences in contracts across different insurance carriers).

<sup>7</sup> Kevin E. Davis, *Contracts as Technology*, 88 N.Y.U. L. REV. 83, 97 (2013).

in the mass-market consumer context, as contracts are offered on a take-it-or-leave-it basis and are rarely read by consumers.<sup>8</sup> Understanding change in the length and complexity of fine print over time might also help evaluate the effectiveness of mandatory disclosure regimes, which are commonly used as consumer protection tools.

In this Article, we examine the innovation and evolution of a common type of mass-market consumer standard, End User License Agreements (EULAs). EULAs are an important type of online standard-form contract and have been at the forefront of various regulatory debates.<sup>9</sup> Recently, the American Law Institute approved the *Principles of the Law of Software Contracts (Law of Software Contracts)*, which focuses in large part on mass-market transactions involving EULAs.<sup>10</sup> We use a sample of EULAs from 264 mass-market software firms between 2003 and 2010 to track changes to thirty-two common contractual terms. Our methodology measures the relative buyer-friendliness of each term relative to the default rules of Article 2 of the Uniform Commercial Code (U.C.C.) to examine how the pro-seller bias of EULAs changes over time. Since buyers need to become informed about terms to “shop” around effectively, we measure changes in contract length and readability. We begin exploring the firm, product, and market characteristics that are associated with contract changes. Finally, we record relevant court decisions around the sample period to evaluate whether the sample contracts are sensitive to changes in the enforceability of terms.

There are a number of interesting results. Thirty-nine percent of the sample firms made material changes to their contracts during the seven-year period, despite the fact that the product being licensed was

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<sup>8</sup> See, e.g., Yannis Bakos, Florencia Marotta-Wurgler & David R. Trossen, *Does Anyone Read the Fine Print? Testing a Law and Economics Approach to Standard Form Contracts* 3 (NET Institute, Working Paper No. 09-04, 2009), available at <http://ideas.repec.org/p/net/wpaper/0904.html> (surveying the actual shopping behavior of over 45,000 Internet users and finding that only about 0.01% read standard terms).

<sup>9</sup> ÷ e.g., Clayton P. Gillette, *Rolling Contracts as an Agency Problem*, 2004 WIS. L. REV. 679 (noting that those who read form contracts can act as agents for those who do not); Robert A. Hillman & Maureen O'Rourke, *Defending Disclosure in Software Licensing*, 78 U. CHI. L. REV. 95 (2011) (arguing that disclosure promotes efficiency, autonomy, corrective justice, fairness, and the legitimacy of the contract process); Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239 (1995) (evaluating the conflict between the policies of intellectual property law and the right of freedom of contract); Florencia Marotta-Wurgler, *Will Increased Disclosure Help? Evaluating the Recommendations of the ALI's "Principles of the Law of Software Contracts,"* 78 U. CHI. L. REV. 165 (2011) (finding that mandating disclosure will not by itself change readership or contracting practices to a meaningful degree).

<sup>10</sup> AM. LAW INST., PRINCIPLES OF THE LAW OF SOFTWARE CONTRACTS (2010).

held as constant as possible.<sup>11</sup> While there is no absolute baseline against which to measure contract stickiness, our results contrast with the high degree of standardization and stickiness that has generally been observed in sovereign-bond contracting.<sup>12</sup> In our study, a material change occurs when a EULA changes at least one of the thirty-two terms that we track. The list of terms is fairly comprehensive, as explained in Part II. Contracts have also gotten considerably longer on average but no easier to read; despite being ostensibly written for the consumer, the average license agreement remains, by standard textual analysis criteria, as hard to read as an article in a scientific journal.<sup>13</sup> Increased contract complexity over time is problematic in this context because it increases the cost of becoming informed, which, in the absence of intermediaries who can simplify information, might weaken a market disciplining mechanism.<sup>14</sup>

We find that most of the terms that changed have become more pro-seller relative to the original contract. Most of these changes are driven by firms opting out of U.C.C. Article 2 default rules in favor of relatively more pro-seller terms. Clauses that changed the most (in that they have become relatively more pervasive) are forum-selection and arbitration clauses, restrictions on reverse engineering, and restrictions on transfer. While most terms are likely to change away from the default rules, terms that are more pro-seller relative to the default rules are almost twice as likely to change away from those defaults as terms that benefit buyers, all else being equal. That is, pro-buyer defaults are relatively less sticky than pro-seller defaults. We also document innovations, as new and largely pro-seller terms have been introduced even in the absence of strong property rights. In particular, seven terms that were virtually absent in 2003 emerged by 2010. These relate to remote disablement of software, firms' ability to collect user information, and terms related to the rights and software of third parties. Most of these new terms allow sellers to increase control over users, which is possible because of technological innovation.

What parties are associated with change? We find that younger, growing, and large firms, as well as firms with legal departments, are more likely to innovate. We hypothesize that young and growing firms

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<sup>11</sup> One of the reasons behind contractual change in firms is that the development of new products calls for a new bundle of license terms to govern product use. While products might evolve naturally over time, we control for this by collecting the contracts of the same products over time—albeit a current version of said product in some instances.

<sup>12</sup> See *infra* notes 30–33 and accompanying text (discussing standardization and stickiness in sovereign-bond contracting).

<sup>13</sup> See *infra* note 42 and accompanying text.

<sup>14</sup> But see Bakos et al., *supra* note 8, at 25–26 (finding that Internet consumers do not read fine print of EULAs).

might be more sophisticated and ambitious, and thus more willing to experiment. We test the hypothesis that contract changes might have been shaped by increased legal certainty on the enforceability of such terms. We find that the terms that have become more enforceable during the sample period were more likely to be used in a pro-seller sense, consistent with this hypothesis.

The paper proceeds as follows. Part I summarizes the theoretical and empirical literature on change and innovation of standard terms. Part II introduces the sample and explains our methodology. Parts III and IV present our main results. Part V concludes and notes some implications of the results.

## I

### INNOVATION IN STANDARD FORMS: AN OVERVIEW

Standardization is a defining characteristic of standard-form contracts. The use of a “one-size-fits-all” agreement allows sellers to mass-market their products and save on drafting costs. Law firms that draft boilerplate agreements also benefit from standardization because it allows them to spread drafting costs among many clients. Indeed, as Marcel Kahan, Michael Klausner, and others have explained, the use of similar terms confers various spillover effects, such as lower reading costs, increased certainty of legal interpretation, and reduced litigation risk, which might reduce parties’ incentives to innovate or diverge from the norm.<sup>15</sup> In this Part, we review the literature that suggests why standard terms might be hard to change but why innovation may still be possible.

In theory, contracting parties should revise their agreements when doing so enhances the value of their transaction. Parties might

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<sup>15</sup> Avery Wiener Katz, *Standard Form Contracts*, in 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 502 (Peter Newman ed., 1998) (discussing network effects); Choi & Gulati, *Innovation in Boilerplate Contracts*, *supra* note 5, at 935–37 (reviewing literature on innovation in contract terms); Kevin E. Davis, *The Role of Nonprofits in the Production of Boilerplate*, 104 MICH. L. REV. 1075, 1086 (2006) (discussing network effects and innovation); Clayton P. Gillette, *Lock-In Effects in Law and Norms*, 78 B.U. L. REV. 813, 819 (1998) (noting lock-in effects generated through extensive interpretation of a term); Charles J. Goetz & Robert E. Scott, *The Limits of Expanded Choice: An Analysis of the Interactions Between Express and Implied Contract Terms*, 73 CALIF. L. REV. 261, 289–305 (1985) (discussing how state regulation of contract terms creates barriers to innovation); Henry T. Greely, *Contracts as Commodities: The Influence of Secondary Purchasers on the Form of Contracts*, 42 VAND. L. REV. 133, 167–68 (1989) (examining in part how standardization affects innovation); Jason Scott Johnston, *Strategic Bargaining and the Economic Theory of Contract Default Rules*, 100 YALE L.J. 615 (1990) (suggesting that it will be easier for parties to bargain around expansive default rules than around restrictive or penalty default rules); Kahan & Klausner, *supra* note 3 (discussing learning benefits and innovation); Klausner, *supra* note 3 (discussing network effects and innovation).

want to revise their agreement to adapt to changing market conditions or to take advantage of new technologies.<sup>16</sup> Several factors present challenges to this process, however. First, a number of benefits created by standardization, such as learning and network benefits, reduce contracting parties' incentives to revise familiar terms.<sup>17</sup> Markets that experience higher network benefits might also encounter stronger resistance to change and higher degrees of stickiness. Second, law firms, which are usually responsible for drafting and creating new terms, experience switching costs that further dilute their incentives to deviate from current terms.<sup>18</sup> Third, weak property rights in contractual innovations are likely to reduce incentives to innovate, also affecting the incentives of other producers of boilerplate, such as for-profit firms, and users of boilerplate.<sup>19</sup> Reluctance to change is problematic because it might result in parties selecting suboptimal terms.<sup>20</sup>

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<sup>16</sup> See generally Omri Ben-Shahar & John A.E. Pottow, *On the Stickiness of Default Rules*, 33 FLA. ST. U. L. REV. 651, 655–60 (2006) (reviewing literature). See also Robert Brendan Taylor, *Consumer-Driven Changes to Online Form Contracts*, 67 N.Y.U. ANN. SURV. AM. L. 371, 394–98 (2011) (finding that negative press may lead firms to change contractual terms).

<sup>17</sup> Kahan & Klausner, *supra* note 3, at 723–29 (finding that learning benefits may discourage switching).

<sup>18</sup> See GULATI & SCOTT, *supra* note 3, at 139–40 (positing that law firm structure and existing agency costs within firms further dilute incentives to innovate); Goetz & Scott, *supra* note 15, at 278 (“Since the legal system retains ultimate power over interpretation and enforcement, parties cannot be certain what effect will be given to any formulation until it is tested.”); Claire A. Hill, *Why Contracts Are Written in “Legalese,”* 77 CHI.-KENT L. REV. 59, 60, 80–81 (2001) (arguing that fear of mistakes may discourage attorneys from changing terms).

<sup>19</sup> See Davis, *supra* note 7, at 84 (arguing that “contractual innovations are forms of technological progress that can generate economic growth” and examining the process of contractual innovation more generally); Goetz & Scott, *supra* note 15, at 286 (noting public goods aspect of standard terms); Katz, *supra* note 15, at 503 (arguing that because innovations in standard terms are public goods, the absence of intellectual property rights diminishes the incentive to innovate). *But see* KAL RAUSTIALA & CHRISTOPHER SPRIGMAN, *THE KNOCKOFF ECONOMY: HOW IMITATION SPARKS INNOVATION* 5–17 (2012) (presenting case studies where innovation occurred without property rights, such as recipes, football plays, and standup comedians’ jokes); Yochai Benkler, *Coase’s Penguin, or, Linux and The Nature of the Firm*, 112 YALE L.J. 369, 371–81 (2002) (explaining how open source software was developed as a collaborative process without many property rights in innovations); Brett M. Frischmann, Michael J. Madison & Katherine J. Strandburg, *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. 657 (2010) (examining creativity and innovation in various “cultural commons”).

<sup>20</sup> Others have identified additional sources of stickiness. See, e.g., Ben-Shahar & Pottow, *supra* note 16, at 652–53 (arguing that deviations from known terms might raise suspicions and scare away potential counterparties); Lisa Bernstein, *Social Norms and Default Rules Analysis*, 3 S. CAL. INTERDISC. L.J. 59 (1993) (explaining how social norms and negotiation strategy might lead parties to stick to default rules); Johnston, *supra* note 15 (suggesting that it will be easier for parties to bargain around expansive default rules than around restrictive or penalty default rules); Russell Korobkin, *The Status Quo Bias and Contract Default Rules*, 83 CORNELL L. REV. 608 (1998) (identifying various

Standardization might also result in increased contract complexity; boilerplate is modular and accretive, and thus particularly susceptible to overlaying of legal jargon that can make contracts harder to understand for transacting parties and courts alike.<sup>21</sup>

Despite the obstacles, a number of actors might have sufficient incentives to innovate. For example, trade associations supply and revise default rules for members of their industries, who pay membership fees.<sup>22</sup> Large repeat players, such as law firms and investment banks, might also find it profitable to invest in innovation—even in the absence of strong property rights—through their ability to spread costs among clients. Users of boilerplate who learn from experience and keep current with changes in markets and technologies are also well positioned to innovate and adapt.

Consider in-house counsel in legal departments of firms engaged in mass-market commerce.<sup>23</sup> Unlike law firms, which tend to become involved on unique occasions such as debt restructuring or mergers, in-house counsel develop expertise in the regulations and case law pertinent to their particular market and, thus, might be better able to revise agreements to adapt to new legal environments. In addition, in-house counsel work closely with management and are thus particularly well suited to revise agreements in response to changes in their industry, including changing consumer preferences. Much like user-generated innovation, in-house counsel can revise and customize commercial boilerplate as needed.<sup>24</sup> In the mass-market context, they can also adopt and revise the agreements of other firms, as these agreements are easily available. Indeed, George Triantis has argued that the inherent modularity of standard terms helps foster innovation through

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behavioral biases that might deter parties from moving away from default rules or established terms).

<sup>21</sup> See Hill, *supra* note 18, at 80–81 (noting, for example, that amendments to established terms can introduce new mistakes).

<sup>22</sup> See Gillette, *supra* note 4, at 1; Goetz & Scott, *supra* note 15, at 303–04 (noting role of trade organizations in contractual innovation). See generally Davis, *supra* note 15 (noting the role of nonprofits more generally in shaping contractual terms).

<sup>23</sup> Stewart Macaulay observed in 1966 that in-house counsel drafted the fine print of contracts used by large corporations, while the fine print in small firms' contracts had come from trade associations or by copying the terms used by other firms. See Stewart Macaulay, *Private Legislation and the Duty to Read—Business by IBM Machine, the Law of Contracts and Credit Cards*, 19 VAND. L. REV. 1051 (1966).

<sup>24</sup> User-generated innovation resulting from collaborative processes has become increasingly prominent. See YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 1–2 (2006) (noting the “greater scope for individual and cooperative nonmarket production” in the modern information economy); see also Katherine J. Strandburg, *Evolving Paradigms and the Global Intellectual Property Regime*, 41 CONN. L. REV. 861 (2009) (arguing for the need for broader-based innovation policy regimes to accommodate new modes of innovation).

collaborative contract design, much in the spirit of open-source software.<sup>25</sup>

Market structure can also facilitate innovation. Sellers with market power can invest in innovation because their profits are insulated from competitive pressures.<sup>26</sup> Alternatively, small firms in competitive markets might invest in innovation because it may increase their chances of survival.<sup>27</sup>

Regardless of the identity of the innovators, scholars have pointed out that innovation can be spurred by “shocks,” such as new laws, changes in legal interpretations of terms, or technological advances.<sup>28</sup> We next briefly review existing empirical work on how contracts adapt to such shocks. Even absent exogenous change, parties might consider revising terms if their original contracts include suboptimal, state-supplied default rules that later become entrenched once they become customary.<sup>29</sup>

Most of the empirical evidence on contract change and innovation comes from studies of bond covenants and financial products. Marcel Kahan and Michael Klausner, among others, found evidence of switching and learning costs in the corporate bond covenant context.<sup>30</sup> Stephen Choi, Mitu Gulati, and Eric Posner studied the evolution of sovereign debt covenants and found an S-shaped innovation pattern, where parties slowly move from the old standard to a new one in response to various exogenous shocks.<sup>31</sup> There is also evidence

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<sup>25</sup> George G. Triantis, Collaborative Contract Innovation (Apr. 30, 2010) (unpublished manuscript) (on file with the *New York University Law Review*). For a discussion of modular integration more generally, see Benkler, *supra* note 19, at 436–39. Open-source software is a notable example of how innovation can be generated despite the absence of property rights. In this context, users innovate for their own use rather than for financial gain or protection. *See, e.g.*, Strandburg, *supra* note 24, at 875 (describing the motivations that can drive user-generated innovation).

<sup>26</sup> *See* Frame & White, *supra* note 6, at 125 (noting “the positive effects of the size of an enterprise . . . on its likelihood of innovating or of adopting innovations or of adopting them earlier”).

<sup>27</sup> *See* Josh Lerner, *The New Financial Thing: The Origin of Financial Innovation*, 79 J. FIN. ECON. 223, 235–36 (2006) (observing that smaller financial services firms are more likely to innovate than their larger counterparts).

<sup>28</sup> *See supra* note 5 and accompanying text (noting some literature on such “shocks”).

<sup>29</sup> *See* Goetz & Scott, *supra* note 15, at 305 (describing the effects of entrenched terms).

<sup>30</sup> *See* Kahan & Klausner, *supra* note 3, 743–53 (finding evidence of switching and learning costs in a study of the emergence and adoption of event risk covenants—terms designed to protect bondholders in the event of a leveraged acquisition); *see also* Choi & Gulati, *Securities Disclosure*, *supra* note 5, at 1062–66 (finding that terms were slow to change after courts interpreted a term in a new and unfavorable way, and that when change occurred, high-volume issuers’ counsel spurred it).

<sup>31</sup> Choi et al., *Contract Evolution*, *supra* note 5; Choi et al., *Pricing Terms*, *supra* note 5. Stickiness has also been found in other contexts. *See, e.g.*, Oren Bar-Gill & Ryan Bubb, *Credit Card Pricing: The CARD Act and Beyond*, 97 CORNELL L. REV. 967 (2012) (finding

of switching costs in law firms. Mitu Gulati and Robert Scott found that lawyers in law firms failed to revise terms even after those terms had acquired ambiguous meanings that increased litigation risk. In the handful of cases where terms were revised, this was often achieved by including additional terms and not by correcting the perceived errors in existing ones.<sup>32</sup>

In summary, relative to the extraordinary importance of standard-form contracts in modern commerce, there has been surprisingly little study of the evolution of contract terms and complexity over time—especially outside the sovereign debt and financial product contexts.<sup>33</sup> To the best of our knowledge, our study of EULAs is among the first to focus and explore *systematic* change in non-negotiated mass-market agreements. Software represents a continuously growing and evolving product market in which contract terms may be more fluid than in long-established financial settings. The different dynamics between contract parties in the software market (e.g., consumers generally do not read contracts) might produce relatively lower degrees of contract standardization. We document the extent to which contracts and individual terms change over time, and we relate them to firm, product, and market characteristics, as well as to changes in the legal environment. Some of the results are consistent with prior studies, while others are new and suggest additional directions for further research and policy.

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that after the CARD Act of 2009, credit card issuers revised only those terms that were mandated by the Act but not other terms, evidence of stickiness in this particular market); Taylor, *supra* note 16, at 388 (finding that smaller firms are less likely to revise their terms after receiving negative media coverage about a particular term); Doron Teichman, *Old Habits Are Hard to Change*, 44 *LAW & SOC'Y REV.* 299 (2010) (finding that contracting parties in the Israeli real estate market were reluctant to deviate from a dollarization norm despite significant changes in the structure of the Israeli currency market that severed the connection between dollar and local inflation). *But see* Daniel Schwarcz, *supra* note 6, at 1314–17 (explaining significant differences among the standard-form contracts of different homeowners insurance carriers and noting the likely reason for the variations was some degree of exploitation by some large insurance carriers combined with better-than-market terms offered by some high-end insurance carriers).

<sup>32</sup> GULATI & SCOTT, *supra* note 3, at 10–11; *see also* Hill, *supra* note 18, at 80–81 (arguing that fear of mistakes may discourage attorneys from changing terms).

<sup>33</sup> *See, e.g.*, Eigen, *supra* note 6 (reviewing the empirical contract literature and concluding that insufficient attention has been given to the question of how terms change over time).

## II SAMPLE OF SOFTWARE LICENSE AGREEMENTS: 2003 AND 2010

In our study, we focused on EULAs found with typical “prepackaged” (i.e., non-customized) software products and compare their content in 2003 and 2010. These contracts present a rich set of standard terms that have been the subject of recent regulatory efforts, including the Uniform Computer Information Transactions Act (UCITA) and the *Law of Software Contracts*.<sup>34</sup> The EULAs used in this study are a subsample of those used in a previous study of contracts as they stood in 2003.<sup>35</sup> That study examined 647 EULAs from 598 companies that sell their software on their corporate Internet sites. These included well-known software publishers as well as smaller companies. For each of the companies, we collected the EULA of a representative product along with data on various market, product, and company characteristics.

We repeated the data collection effort in 2010. Of the original 598 companies, 22 went out of business during the sample period and 45 were acquired. These dropped out of the sample because we could not collect contracts from firms that were no longer in existence and because acquired firms all adopted the terms of the acquirer. The sixty-eight firms that remained in operation but changed their line of business or discontinued the product associated with the 2003 EULA were also dropped in order to keep the product as constant as possible. We made an exception for firms that discontinued the sample product but always used the same EULA for all products, some of which were still being offered in 2010.<sup>36</sup> While we easily collected the EULAs that were posted on the websites of the sample companies, it took more effort to obtain those that were available only after purchase (“pay now, terms later” contracts). For a handful of

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<sup>34</sup> NAT'L CONFERENCE OF COMM'RS ON UNIF. STATE LAWS, UNIFORM COMPUTER INFORMATION TRANSACTIONS ACT (Proposed Official Draft 2002), available at [http://www.uniformlaws.org/shared/docs/computer\\_information\\_transactions/ucita\\_final\\_02.pdf](http://www.uniformlaws.org/shared/docs/computer_information_transactions/ucita_final_02.pdf); AM. LAW INST., *supra* note 10.

<sup>35</sup> Florencia Marotta-Wurgler, *Are “Pay Now, Terms Later” Contracts Worse for Buyers? Evidence from Software License Agreements*, 38 J. LEGAL STUD. 309, 311 (2009) [hereinafter Marotta-Wurgler, *Pay Now, Terms Later*]; Marotta-Wurgler, *supra* note 1. As the current sample overlaps heavily with that used in the aforementioned papers, we refer the reader to those papers for further details on the data collection procedure.

<sup>36</sup> We understand that the sample of firms we study might be biased because it only includes firms that were not acquired, remained in business, and continued their signature products. We kept the data of the firms that went out of business and collected and scored the EULAs of the acquired firms. Almost all acquired firms adopted the EULA of the acquirer. We excluded these because we wanted to document revisions to existing documents.

companies, we were unable to obtain their EULAs, and for others we were unable to collect detailed company, product, and market characteristics. This led to a final sample of 264 firms with comparable data from both 2003 and 2010.

For each EULA in each cohort, we tabulate the presence of various standard terms, noting the extent to which the terms are biased, relative to the appropriate default rules, in favor of the seller or the buyer. This methodology is discussed further below. To measure change over time, we perform this scoring for both the 2003 EULA and the 2010 EULA. We also note whether new terms have emerged. Finally, we collect data on all cases involving software EULAs litigated before 2010 to examine litigation as a possible driver of change and innovation.

#### A. Summary Statistics

Panel A of Table 1 summarizes company characteristics for the sample firms. Average revenue in 2003 was \$287.5 million, but median revenue was only \$1.7 million. Thus, very large companies drive the mean. Average and median revenue in 2010 were \$539.1 million and \$2.2 million, respectively. Note that this is a sample of surviving companies, so it is not entirely surprising that firms grew on average. The percentage of public companies grew moderately during the sample period, from 11% in 2003 to 14% in 2010. The average age (years since incorporation) of companies in 2010 was twenty years.

We gathered data on legal sophistication in 2010. Based in part on direct communication with the sample companies, we determined whether they have in-house counsel, at least one internal lawyer, or routinely hire outside counsel. We assumed that public companies received sophisticated legal advice. In total, 74% of firms for which we could gather these data received relatively intensive legal advice. This does not imply that other firms did not receive legal advice; many firms did not respond to our requests. Thirty percent of sample firms are headquartered in states generally identified as being relatively pro-consumer, such as California, Illinois, Iowa, Massachusetts, and North Carolina.<sup>37</sup> Firms in more seller-friendly states (and with choice-of-law clauses applying the law of such states) might be more inclined to revise their terms in a self-serving manner due to a higher expectation of enforcement.

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<sup>37</sup> For a description of the taxonomy, see Florencia Marotta-Wurgler, “Unfair” *Dispute Resolution Clauses: Much Ado About Nothing?*, in *BOILERPLATE: FOUNDATIONS OF MARKET CONTRACTS* 45 (Omri Ben-Shahar ed., 2007).

Panel B lists product and market characteristics in 2003 and 2010. The average price of the products in the sample was \$812 in 2003 and \$841 in 2010, the median prices somewhat lower. Thirty-six percent of the products are oriented toward consumers or small home businesses, rather than large businesses. One percent of the products in the sample were discontinued, but the company used the same EULA for all their products in 2003 and 2010. The last row reports the Herfindahl-Hirschman Index (HHI) of the market level for sample firms. The HHI is the sum of the squares of the individual market shares of the firms in a given market. Higher concentrations result in higher HHIs.<sup>38</sup> We classify firms into 114 distinct software markets, ranging from anti-virus to word processing, as classified by Amazon.com, the largest Internet software retailer.<sup>39</sup> This allows us to test whether differences in market concentration are associated with innovation. The average HHI is 0.37, indicating that software markets tend to be concentrated. The least concentrated software market has an HHI of 0.064, indicating a high degree of competition.

Panel C reports contract characteristics. We first record whether at least one of the thirty-two terms we track was revised in any way during the sample period. Of the entire sample, 40% of contracts changed at least one substantive term. While we do not have an absolute benchmark against which to measure the relative stickiness of software terms, our results appear to reject the common belief that these contracts are rarely revised boilerplate.<sup>40</sup> Figure 1 shows how many terms changed. The left figure uses the entire sample and shows that 60%, or 159 contracts out of 264, left their terms substantively unchanged. The right figure focuses on the 103 contracts that had at least one change. For 40% of these, change was limited to one or two terms, but a few firms changed more than ten terms.

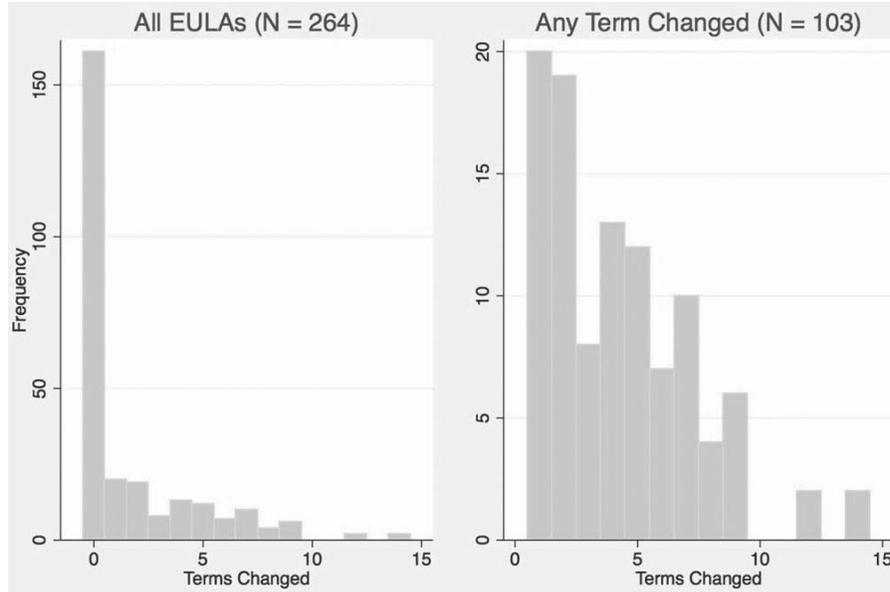
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<sup>38</sup> To put these figures in context, FTC merger guidelines suggest that an “unconcentrated” industry is one with a Herfindahl-Hirschman Index (HHI) of less than 0.15. Markets with an HHI between 0.15 and 0.25 are defined as “moderately concentrated,” while markets with an HHI above 0.25 are deemed “highly concentrated.” U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES 18–19 (2010), *available at* <http://www.ftc.gov/os/2010/08/100819hmg.pdf>.

<sup>39</sup> For a detailed account of these variables and the methodology used, see Florencia Marotta-Wurgler, *Competition and the Quality of Standard Form Contracts*, 5 J. EMPIRICAL LEGAL STUD. 447, 457–67 (2008).

<sup>40</sup> This is because these software contracts generally govern low-priced products and the probability that many of these terms will ever be invoked is small.

FIGURE 1. NUMBER OF TERMS CHANGED, 2003 vs. 2010



Panel C also reports the length of EULAs in 2003 and 2010. The average EULA grew by 27%, from 1517 words in 2003 to 1938 in 2010. (A typical page of the *New York University Law Review* is roughly 421 words long.)<sup>41</sup> The Flesch-Kincaid readability score, a common measure of the difficulty of comprehending text, was unchanged, averaging 33.3 in 2003 and 33.4 in 2010. Flesch-Kincaid scores range from zero to one hundred, with higher scores indicating easier texts. To put this in context, texts with scores of sixty to seventy can be understood with an eighth-grade education, whereas texts with scores of zero to thirty can be comprehended by individuals with college degrees. EULAs are comparable to articles in scientific journals, which typically have Flesch-Kincaid scores of around thirty.<sup>42</sup> Thus, Panel C indicates that contracts are not only getting longer but also remain difficult to read.

To further understand changes in the length and readability of EULAs generally, we explored change in length and readability in those EULAs that did not experience any material change of terms. Flesch-Kincaid scores remained at an unchanged average of around thirty-three for all EULAs. The median word increase in contracts

<sup>41</sup> We obtained this estimate by taking the average number of words of ten pages randomly selected from Volume 86 of the *New York University Law Review*.

<sup>42</sup> See WILLIAM H. DUBAY, *THE PRINCIPLES OF READABILITY* 23 (2004), available at <http://www.impact-information.com/impactinfo/readability02.pdf>.

with no material changes was one word, whereas the median word increase in the EULAs with material changes was 435 words. This is not to say that EULAs with no material changes were left untouched. Many were revised for spelling errors, rewordings, or minor re-formatting. The average change was eighty-eight words. The difference in change of length between the two groups of EULAs suggests that changes in the thirty-two terms that we track might help explain a significant portion of changes in length of the contract.

### B. *Measuring Contract Bias, Change, and Innovation*

We now explore the nature of the changes in EULAs during the sample period. We used the methodology of Marotta-Wurgler to measure the relative buyer-friendliness of contract terms against the relevant default rules in Article 2 of the U.C.C.<sup>43</sup> The twenty-three terms followed in Marotta-Wurgler's 2003 sample fall into seven relatively familiar categories: *acceptance of the license*, *scope*, *restrictions on transfer*, *warranties and disclaimers of warranties*, *limitations of liability*, *maintenance and support*, and *conflict resolution*.<sup>44</sup> While this list was fairly comprehensive as of 2003, we decided to add an additional term to the *scope of license* category, a term that dictates whether the software restricts the user's ability to reverse engineer the product. We also created a *consumer protection* category that measures whether the EULA includes a term informing consumers of any additional state or federal legal rights they may have.

We also tracked seven terms that were rare at the beginning of the sample period but became somewhat more common by 2010; we classify these terms as contractual innovations. They involve three new categories: *modification and termination of the license*, *information collection*, and *third-party access to users' computers*. We went back to the 2003 contracts to look for these terms, so that both the 2003 and 2010 contracts were ultimately examined on a total of thirty-two terms. One of the terms in the *modification and termination* category gives the drafter unilateral power to modify the agreement. Commonly referred to as "change of terms" clauses, these terms have become increasingly pervasive over the past decade, and mass-market

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<sup>43</sup> See Marotta-Wurgler, *supra* note 1, at 679–80 (explaining the methodology for measuring the buyer-friendliness of contract terms); see also Robert A. Hillman & Ibrahim Barakat, *Warranties and Disclaimers in the Electronic Age*, 11 YALE J.L. & TECH. 1 (2009) (discussing warranties and disclaimers of warranties in electronic standard-form contracts).

<sup>44</sup> See Marotta-Wurgler, *supra* note 1, for an extensive discussion of these categories and terms.

software agreements have been no exception.<sup>45</sup> The second term in this category involves termination of the contract and allows the licensor to disable the software remotely if the licensor believes the user has breached the EULA. Technological development and changes in the way companies offer software to users, most notably the rise of electronic licensing, has made remote disablement of software possible. These changes have given companies more control over the use of their products.<sup>46</sup>

The next category, *information collection*, includes two terms that allow companies to collect personally identifiable information from the user. Again, changes in technology have resulted in most software being delivered electronically, thus increasing opportunities for vendors to monitor users more closely.<sup>47</sup> The final category, *third parties*, includes three terms mandating that the user agree to the EULAs of third-party software that might be integrated with the licensed product,<sup>48</sup> disclaiming liability for losses caused by third-party software, and allowing third-party providers to install software on users' computers. Note that with the exception of the "change of terms" clause, all other new terms reflect changes in the technology of delivering software to users. Part III explains in further detail how we define "innovation" and how these terms fit within existing definitions of the term.

Finally, each contract was given a "bias index" score based on its overall buyer-friendliness across these thirty-two terms. Specifically, a term is given a score of 0 if it matches the default rules or is absent from the contract; a score of -1 if the term deviates from the default rule in a way that benefits sellers, all else equal; and a score of 1 if the term is more pro-buyer relative to the default rule. For example, a

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<sup>45</sup> For a thorough analysis of this clause, its enforceability, and a review of the literature, see Oren Bar-Gill & Kevin Davis, *Empty Promises*, 84 S. CAL. L. REV. 1 (2010), and Peter A. Alces & Michael M. Greenfield, *They Can Do What!? Limitations on the Use of Change-of-Terms Clauses*, 26 GA. ST. U. L. REV. 1099 (2010).

<sup>46</sup> See, e.g., SOFTWARE & INFO. INDUS. ASS'N, THE SIIA GUIDE TO LICENSING SOFTWARE AS A SERVICE 5, <http://www.sii.net/estore/pubs/GLS-01.pdf> (last visited Feb. 16, 2013) (describing the increasing prevalence of online licensing or "software as a service"). While remote disablement is a form of self-help that lowers enforcement costs to publishers, the drafters of ALI's *Principles of the Law of Software Contracts* have recommended that courts void remote-disablement terms in mass-market consumer agreements due to the danger that automatic disablement might disrupt the business of the licensee or corrupt other files. See AM. LAW INST., *supra* note 10, § 4.03.

<sup>47</sup> See, e.g., SOFTWARE & INFO. INDUS. ASS'N, *supra* note 46, at 6 (explaining software vendors' ability to monitor or block buyers' use of their products).

<sup>48</sup> For a more detailed explanation of third-party software bundling, see EDWARD DESAUTELS, U.S. COMPUTER EMERGENCY READINESS TEAM, SOFTWARE LICENSE AGREEMENTS: IGNORE AT YOUR OWN RISK 5 (2008), [http://www.us-cert.gov/reading\\_room/EULA.pdf](http://www.us-cert.gov/reading_room/EULA.pdf).

term disclaiming implied warranties would be scored -1 because, all else equal, a disclaimer of warranties is more pro-seller relative to the default rules, which include implied warranties of merchantability and fitness for particular purpose. The overall contract bias was obtained by summing the scores of the individual terms. While rough, this methodology allows us to measure the general tone of the contract relative to relevant default rules. We also relax the assumption that all terms matter equally to buyers by examining groups of related terms.

### III

#### RESULTS

We now examine contract change. Table 2 presents the thirty-two terms of the EULA Bias Index as well as the scores in 2003 and 2010 for each of the eleven categories of related terms. The first three columns number, define, and explain the scoring system for each term. For example, the first term regards the “acceptance” of the license, which measures whether the contract notifies the consumer that the product can be returned if the user declines the terms. The possible scores for each term are explained in the next column.

The right columns report the mean and standard deviation for each term in 2010 and 2003. We also report the mean change, its standard error, and an indication of the statistical significance of the change. Going back to our example of “acceptance” of license, Table 2 shows that in 2003, 47% of EULAs notified users that the license could be returned if the user disagreed with the terms. In 2010, the percentage of EULAs including that notification changed very little, to 46%, a statistically insignificant difference. Most changes favor the seller. The end of Table 2 shows the net change. The mean bias of contracts in 2003 was -5.26, meaning that on average EULAs had a little more than five pro-seller terms than pro-buyer terms. The mean bias of terms in 2010 was -5.85, indicating that EULAs have become on average a little over half a term more pro-seller during the period from 2003 to 2010. Note also that the standard deviation of the index, a measure of spread, has increased from 2003 to 2010, indicating that variation in contract bias has gotten somewhat larger over time, which suggests that these contracts tend to become less standardized over time. (However, as we document below, extremely biased contracts converge toward the norm somewhat upon controlling for the overall trend and other factors.)

As the overall direction of change suggests, most individual terms have become more pro-seller over time relative to the default rules.<sup>49</sup> The last column shows that twenty-five of the thirty-two terms became relatively more pro-seller. Of these, nineteen changes are common enough to be statistically significant. The two categories where terms have changed the most relate to *scope of the license* and *limitations on liability*. EULAs have increased restrictions in users' ability to modify the program, create derivative works, and reverse engineer the software. They also increasingly restrict the particular uses of the software. Another term that has become increasingly restrictive is users' ability to transfer the program. All these terms are substantive inasmuch as they limit the possible uses as well as the interoperability of the product.

It is noteworthy that the terms that have changed the most are those seeking to extend the rights awarded by federal intellectual property laws. In particular, these terms seek to override fair use exceptions, such as particular instances of reverse engineering.<sup>50</sup> This practice has increased over time, and later in this Article we explore whether this may be partly due to favorable court decisions enforcing such clauses. New terms also appeared, such as those relating to the ability of sellers to change terms unilaterally and allowing sellers to disable the software remotely where the seller considers the user as having violated the agreement.

Of the six terms that became relatively more pro-buyer over time (one was unchanged), three are statistically significant. Two are not

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<sup>49</sup> These results are consistent with Schwarcz, *supra* note 6, who analyzes a sample of homeowners insurance policies and finds that deviations from the ISO, or industry model contract, generally benefit sellers.

<sup>50</sup> There has been heated debate among intellectual property scholars as to whether producers of information goods, such as software, should be entitled to circumvent these laws through mass-market, standard-form contracts. *See, e.g.*, Christina Bohannon, *Copyright Preemption of Contracts*, 67 MD. L. REV. 616 (2008) (arguing that copyright law should not categorically preempt contracts); Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing*, 87 CALIF. L. REV. 111 (1999) (arguing that other law, such as intellectual property law, will limit U.C.C. Article 2B); Michael J. Madison, *Legal-Ware: Contract and Copyright in the Digital Age*, 67 FORDHAM L. REV. 1025 (1998) (arguing for greater enforcement of copyright and other laws in the wake of judicial enforcement of "shrinkwrap" licenses); Viva R. Moffat, *Super-Copyright: Contracts, Preemption, and the Structure of Copyright Policymaking*, 41 U.C. DAVIS L. REV. 45 (2007) (arguing that courts should not permit parties to contract around fair use); Maureen A. O'Rourke, *Drawing the Boundary Between Copyright and Contract: Copyright Preemption of Software License Terms*, 45 DUKE L.J. 479 (1995) (arguing for flexibility as to when contracts may be preempted); Margaret Jane Radin, *Regime Change in Intellectual Property: Superseding the Law of the State with the "Law" of the Firm*, 1 U. OTTAWA L. & TECH. J. 173 (2004) (arguing that states should legislatively prevent some contractual rights from being waived).

substantive but help users become better informed about the transaction: One notifies users of any state and federal legal rights they might have in addition to those awarded by the license; the other disclaims warranties conspicuously. The only substantive pro-buyer term is one that states that the user is entitled to regular updates of the software.

While each term has independent legal significance, it is easier to see broader trends if we group terms by category.<sup>51</sup> Table 2 reports summary statistics for each category and shows that seven out of the eleven categories became more pro-seller at a statistically significant level. Only one category, *consumer protection*, has become more pro-buyer to a statistically significant degree. The probability that a EULA informs consumers of their state and federal law rights rose by 5.7%. While the overall bias index is only a relative measure of contract bias (i.e., relative to the default rules) and cannot speak to the absolute buyer- or seller-friendliness of the given contract, it is striking that almost all terms have become on average more pro-seller over time. (We can reasonably assume that consumer preferences for terms have not changed much, but we would still need information about price changes to make any precise inferences about the consumer-welfare effects.)

Figure 2 shows the distribution of the net change in overall bias for those contracts that had at least one change. The x-axis measures the change in net bias for each contract during the sample period. Contracts that had a net change of zero had offsetting pro-seller and pro-buyer changes. As can be seen, the majority of contracts that changed did so in a pro-seller direction. Of these, the most common change was a net of one pro-seller term, followed by a net of two and a net of three pro-seller terms. A handful of contracts had revisions resulting in more than six—and up to thirteen—terms that were more pro-seller than their 2003 agreements. Fewer contracts changed in a net pro-buyer direction; of these, most changed by only one or two terms.

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<sup>51</sup> A concern with the methodology that we use is that the presence or absence of some terms might affect the legal significance of other terms, thus obscuring the interpretation of the result. Marotta-Wurgler addresses this in detail and explains that software attorneys and industry associations consider each term to have independent legal significance. See Marotta-Wurgler, *supra* note 1, at 689–93. We also group individual terms into categories of related terms to account for the possibility that individuals might be indifferent to any one particular term.

FIGURE 2. NET CHANGE IN OVERALL BIAS, 2003 vs. 2010

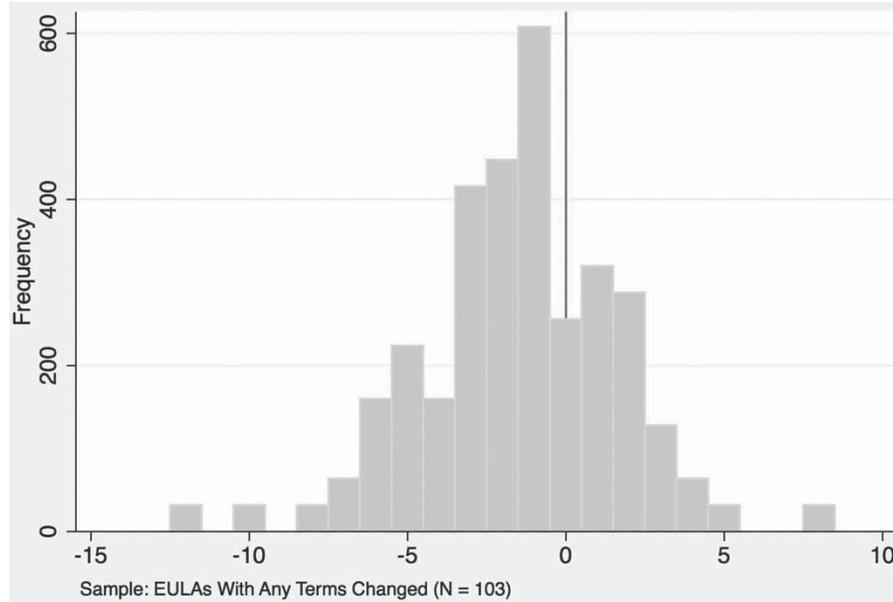
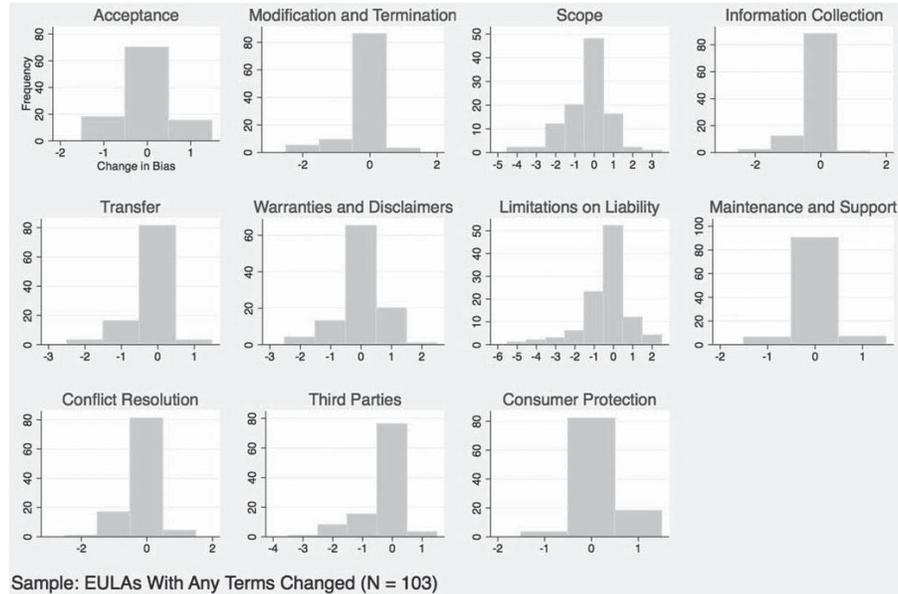


Figure 3 breaks down these changes by category of terms and shows that each category of related terms experienced some change for those contracts that had at least one change. For example, about 50% of these contracts changed some of their terms related to *limitations on liability*. About 35% included up to five terms increasing *limitations on liability*, and roughly 13% decreased such limitations. With the exception of terms related to *consumer protection* (and perhaps *maintenance and support*), this figure shows that individual sets of related terms tended to become relatively more pro-seller over the sample period.

FIGURE 3. NET CHANGE IN BIAS BY CATEGORY, 2003 vs. 2010



One way for a contract to become more pro-seller is to change the language of terms already included in the contract. Another way is to add new, pro-seller terms where none existed before. Opting out of an Article 2 default rule generally introduces a pro-seller term—when contracts “scale up” and become longer and more complex, the relative number of pro-seller terms tends to increase.<sup>52</sup>

To shed light on how the change in overall bias arises, we can decompose the average change,  $-0.58$ , into the change due to a worsening of all potentially pro-seller terms (such as restrictions on transfer), which is  $-0.69$ , and the change due to the general improvement of all pro-buyer terms (maintenance and support), which is  $0.11$ . The *average* contribution of a potentially pro-seller term to the overall change is  $-0.028$  ( $-0.69/25$ ), and the *average* contribution of a potentially pro-buyer term is  $0.016$  ( $0.11/7$ ). Firms are therefore about 68% more likely to opt out of a default if doing so tilts the issue in their favor; the overall change in bias cannot be fully understood as an increased propensity to opt out of default rules of whatever type.

#### A. Determinants of Change, Growth, and Convergence

While most terms and contracts changed in a pro-seller direction, Figure 2 shows that there is substantial variation in the amount of

<sup>52</sup> We thank Ryan Bubb for this point.

change. Before examining the determinants of changes in contract bias, however, we start by understanding the determinants of the overall level of bias. Regressions (1a) and (1b) in Table 3 model overall contract bias as a function of firm, product, and market characteristics.

Specifically, the independent variables in these ordinary least-squares specifications are product price, dummy variables for whether the license is directed to general public consumers (as opposed to businesses), and whether the license is for multiple users and for developers. We also include firm characteristics such as the natural log of revenue and the natural log of company age (as measured by years since incorporation). To examine whether firms headquartered in relatively more seller-friendly states (which are more likely to enforce their terms) are more likely to offer and revise terms in a way that benefits sellers, we include a dummy variable for state friendliness.<sup>53</sup> Finally, we include the HHI as a measure of competitive conditions; we hypothesized that competition compels companies to offer more pro-buyer terms. Note that in (1a), all variables are measured as of 2003, and in (1b) all variables are measured as of 2010.<sup>54</sup>

Broadly speaking, the determinants of contract bias remained similar from 2003 to 2010. In both periods, larger and younger companies impose relatively more pro-seller terms. The presence of in-house lawyers also has a negative effect on contract bias, but we leave the effect of lawyers on bias, change, and innovation for Table 4. These are the only statistically significant factors associated with contract bias, all else equal. There is no robust relationship between EULA bias and state consumer-friendliness, perhaps because these firms operate in national markets and are likely to be sued anywhere.<sup>55</sup> Also, as noted in earlier work, there is no relationship between competitive conditions and contract bias. This result is consistent with economic theory predicting that sellers with market power will use their influence over price, not terms.<sup>56</sup>

Turning to changes in contract bias, the dependent variable in regression (2) is *Any Terms Changed*, a dummy variable indicating

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<sup>53</sup> Several studies have identified states with relatively more seller-friendly attitudes, including Delaware, Maryland, New York, and Virginia. For a detailed analysis of the methodology and review of the literature, see Marotta-Wurgler, *supra* note 37.

<sup>54</sup> The exception is the HHI, which is measured as of 2003 in both columns.

<sup>55</sup> See Marotta-Wurgler, *supra* note 37, at 48 (finding that firms that used choice-of-law and forum selection clauses chose the laws of the states where the companies were headquartered).

<sup>56</sup> *Id.* Our competitive conditions measures are from 2003, so they might not accurately reflect current market characteristics, in which case the measures would be too noisy to capture any relationship in a meaningful way.

whether a given EULA changed at least one term during the sample period. The independent variables are the same as before, with the addition of two variables measuring changes in price and revenue. Inclusion of these variables allows us to examine whether changes in company or product characteristics are associated with term changes. We report the marginal effects from a logit specification. The results indicate that larger and growing companies are more likely to revise their contracts, other factors equal. Size is the single most important driver of change; a one-standard-deviation increase in log revenue increases the probability of changing terms by 11% ( $2.28 \times 0.047$ ). Growth is also very important; a one-standard-deviation increase in log growth is associated with a 9% increase in the probability of change ( $1.04 \times 0.086$ ). One possibility is that large firms, and firms that are becoming large, face a special need to tune their contracts to the current market environment, as more is at stake in dollar terms.

What factors are associated with change toward more pro-seller bias? Regression (3) explores the determinants of net changes in bias. The dependent variable is *Net Change Overall Bias*, which as Figure 2 shows has a range from -12 to +8. The results show that, all else equal, growing and younger companies revised their terms in a more self-serving way. It is difficult to know exactly why these patterns emerge, but growing companies might be increasing their degree of sophistication and thus better protecting their interests by revising their contracts accordingly. Younger companies might also be less constrained by reputation and thus more willing to make revisions that help them control the use of their products better. As mentioned earlier, younger firms might be more ambitious and willing to take risks with contract drafting. As we will see, in-house counsel also contribute to change in bias.

In addition to the independent variables from before, this model includes the overall bias level in 2003 to test for mean reversion. The coefficient is -0.157 and is statistically significant. This suggests a degree of convergence for the extremely biased contracts in 2003. For example, a hypothetical contract that was ten terms more pro-seller in 2003 would have moved 1.57 terms toward the buyer by 2010, all else equal. In particular, this “improvement” is relative to the trend toward increased bias (which is captured in the constant term), the company characteristics, and other market and product characteristics. Roughly speaking, since the average contract became more pro-seller by 0.58 terms (Table 2), the highly pro-seller contract would—after this secular change was taken into account—improve by an average of roughly one term. Similarly, contracts that were ten terms more pro-buyer in 2003 would on average have become more than

two terms pro-seller once the mean reversion was added to the pro-seller trend. It is again not possible to be sure, but this sort of mean reversion might reflect reputational constraints that began to weigh on the most egregious contracts.<sup>57</sup> Because buyers might not care about all terms equally, we looked at net changes for individual categories of related terms and found similar results.

### B. Innovative Terms

Next, we explore the appearance and adoption of innovative terms. First, however, we should explain what we mean by innovation. One way to define it is as an investment that can be redeployed and used by others, and is capable of increasing value.<sup>58</sup> As noted earlier, some innovations might not create value but, instead, simply redistribute value. While this is a fundamental question, limitations in our methodology prevent us from being able to address whether the innovations we observe create, reduce, or redistribute value. Alternatively, innovation could be seen as a reconfiguration of existing elements.<sup>59</sup> A suitable example for this type of notion is the iPhone, a novel device that combines existing technologies—such as a phone, a camera, a computer, and others—into one.<sup>60</sup> For our analysis, we use the latter, more expansive definition of innovation that includes both investments and reconfigurations of terms.

We identified seven terms that were rare or absent at the beginning of the period and fell into the three categories of *modification and termination*, *information collection*, and *third parties*. Terms allowing the drafter to unilaterally modify the agreement are examples of changes borrowed from other areas, such as credit card agreements and online Terms of Use. Terms that define the relationship between the user and third parties are innovations in the narrower sense of the term, as these terms allow software providers to contract out some of the functionalities of their products, arguably to parties who can provide them in a better way at a lower cost.<sup>61</sup> Most of these terms take advantage of technological changes (such as electronic

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<sup>57</sup> We thank Oren Bar-Gill for this point.

<sup>58</sup> See Triantis, *supra* note 25, at 4 (using this definition of innovation).

<sup>59</sup> See Davis, *supra* note 7, at 88; see also Walter W. Powell & Kurt W. Sandholtz, *Amphibious Entrepreneurs and the Emergence of Organizational Forms*, 6 STRATEGIC ENTREPRENEURSHIP J. 94–96 (2012).

<sup>60</sup> See generally Powell & Sandholtz, *supra* note 59, at 95–96 (distinguishing between different types of recombinations).

<sup>61</sup> Cf., e.g., Nicolas Geoffray et al., *A Lazy Developer Approach: Building a JVM with Third Party Software*, 2008 PROC. INT'L CONF. ON PRINCIPLES & PRAC. PROGRAMMING JAVA (building a Java Virtual Machine almost entirely out of third-party software), available at <http://lvm.org/pubs/2008-09-LadyVM.pdf>.

licensing) that allow sellers to exercise more control over buyers' use of the product. As explained above, we do not mean to imply that the terms that we designate "innovative" are economically efficient or good in any welfare sense. All we can say for sure is that they are novel.

Who are the innovators and who are those who adopt the terms later on? The dependent variable in regression (4) is *Number of Innovative Terms 2003*, which ranges from zero to seven and measures the number of innovative terms in the EULA in 2003. The independent variables include company, product, state, and market concentration controls, in addition to *Number of Common Terms*—a variable measuring the number of non-innovative terms in a particular EULA. This variable allows us to control for the somewhat uninteresting fact that a contract that has more terms in general is also more likely to have "innovative" terms regardless of other factors.

Controlling for contract length, the results show that young and larger companies are more likely to adopt innovative terms. A possible explanation for this finding is that larger firms have more resources and are thus more likely to be aware of technological changes that present opportunities to revise EULAs, or that these firms receive more cutting-edge legal advice. Younger firms might be more sophisticated and also more attuned to technological innovations.

Regression (5) explores the factors associated with the take-up of innovative terms. The dependent variable is *Change in Innovative Terms 2010*, which measures the change in the number of innovative terms in the EULA between 2003 and 2010.<sup>62</sup> The independent variables are the same as before, including a control for changes in the number of non-innovative terms. Again, we want to control for sweeping changes that might include innovative terms. Who adopts the innovative terms? Growing firms, large firms, and younger firms. Firms located in states with relatively more consumer-friendly laws are also more likely to adopt innovative terms. This result may be driven by the number of firms headquartered in Santa Clara County, California, a hub for technological innovation.

While previous literature has focused on the role of competitive conditions in innovation, we find no such relation in this setting. Market structure appears to be unrelated to the introduction or subsequent adoption of innovative standard-form terms.

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<sup>62</sup> We report least-squares regression results. Tobit models that explicitly account for the limited dependent variables in (4) and (5) are available upon request; they lead to similar inferences.

We now explore the role of in-house counsel in the evolution of fine print. Table 4 uses identical specifications and controls as those found in Table 3 but adds a dummy variable that equals one if the sample company has a legal department or at least one lawyer (doing legal work) employed.<sup>63</sup> We study the effect of lawyers on contract bias and innovation separately because we have only been able to collect information for the presence of lawyers in one-third of the sample, spanning all types of firms. As in Table 3, regressions (1a) and (1b) model overall contract bias as a function of company, product, and market characteristics, and include the lawyer dummy variable. In both 2003 and 2010, the presence of lawyers is associated with more pro-seller bias at the 1% level of significance. Regressions (2) and (3) examine the relationship of change in terms and bias and the presence of lawyers, controlling for firm and product market characteristics. Again, lawyers are associated not with change in terms per se, but with a negative change in bias over the sample period. All else equal, the presence of company lawyers is associated with a -2.16 change in bias (or a little over two terms that favor sellers) over the sample period. Of course, firm size and the presence of legal counsel are highly correlated, so it might be hard to identify the contribution of legal counsel to change in terms. We assume that firms with legal departments are likely to assign the job of revising and drafting terms to lawyers.

Regression (4) shows that lawyers are also associated with innovation, as firms with lawyers are more likely to adopt innovative terms at the beginning of the sample period. Regression (5) shows no effect between the presence of lawyers and adoption of the innovative terms at the end of the period. This might be because such firms adopted them earlier. Firms without legal departments might look at the contracts of other firms and copy the innovative terms. This possibility is consistent with accounts of various firms in the sample with whom we communicated. In contrast to previous studies,<sup>64</sup> we find that lawyers (at least those who work in-house) appear to be involved in revising and innovating in mass-market agreements.

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<sup>63</sup> We ran separate regressions when we included lawyers due to limited data on this variable.

<sup>64</sup> See GULATI & SCOTT, *supra* note 3 (arguing that attorneys rarely engage in wholesale revision of contract boilerplate); Hill, *supra* note 18 (finding imperfections in the “form” production process by which contracts are drafted and negotiated in large law firms).

#### IV LITIGATION AND CONTRACTUAL EVOLUTION

Next, we explore how the external legal environment shapes standard-form contracts. Previous studies of bond terms showed resistance to adapt to new legal interpretations.<sup>65</sup> However, consumer contracts might be different. A recent article found a high frequency of change in the dispute-resolution provisions of several consumer contracts, such as AT&T's, and argued that these revisions are reactions to changes in the legal interpretations of such terms.<sup>66</sup> Here we explore the relationship between changes in contractual enforcement of specific terms by courts and companies' propensity to revise EULAs to reflect such changes.

##### A. Key Cases and Trends in Enforcement

We begin by surveying the legal landscape and how it changed over the sample period. We reasoned that parties writing their EULAs prior to and including 2003 might have relied on court decisions, among other sources, when deciding what to include in their contracts. Similarly, we assumed that parties revising their EULAs in the sample period would pay attention to relevant case law development during the sample period. We attempted to measure changes in the enforceability of each of the terms that we follow as well as of mass-market software EULAs in general.

We measure legal change by estimating the probability of enforcement, which we measure by noting the number of times a particular clause was enforced over the total number of times it was disputed. This is done for two relevant periods: 1993 to 2002 (the decade before the original sample was collected) and 2003 to 2010 (the period from the original collection to the latest collection of contracts). We measure change in probability of enforcement for each litigated sample clause across the two intervals. Inferring probability of enforcement from a sample of litigated cases has limitations, however. Priest and Klein proposed that the selection of cases that go to trial is likely not a random sample of all disputes.<sup>67</sup> Rather, clear cases for

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<sup>65</sup> See, e.g., Choi & Gulati, *Securities Disclosure*, *supra* note 5.

<sup>66</sup> See David Horton, *The Shadow Terms: Contract Procedure and Unilateral Amendments*, 57 UCLA L. REV. 605, 651–52 (2010).

<sup>67</sup> George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984); see also Daniel Klerman, *The Selection of Thirteenth Century Disputes for Litigation*, 9 J. EMPIRICAL LEGAL STUD. 320, 322–23, 334–36 (2012) (finding results consistent with the predictions of Priest and Klein in the context of thirteenth century English cases); Peter H. Schuck, *Mapping the Debate on Jury Reform*, in VERDICT: ASSESSING THE CIVIL JURY SYSTEM 307–08 (Robert E. Litan ed., 1993) (noting that

either the plaintiff or the defendant are likely to be settled, leaving only the close cases for trial. The “selection effect” hypothesis posits that it is hard to make inferences about legal rules from looking at tried cases because they are not representative of all disputes. Another reason to be cautious about measuring legal change based on decided cases is that changes in legal rules are likely to affect the nature of the cases that get litigated.<sup>68</sup> Those litigated under novel legal standards likely are not comparable to cases litigated under the old standard. These and related problems might lead us to find little or no relationship between how we measure “change” and contractual revisions.<sup>69</sup>

Still, we present this approach because although only a minuscule percentage of cases fail to settle and ultimately result in written published opinions, these cases sometimes exert tremendous influence. Heise writes:

One important function served by written published judicial opinions is to shape future litigants’ expectations and predictions about what might happen to their case should it proceed to trial. Moreover, these expectations and predictions in turn influence the nuanced decisional analyses used to determine whether to even initiate, let alone litigate, potential legal claims.<sup>70</sup>

To address the problems outlined above, we present two approaches to measure legal change. The first, as explained earlier, measures changes in enforceability of terms by looking at all cases between 1993 and 2010. The second approach only focuses on change

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predictions regarding the likely outcome at trial not only affect settlement but also the initiation of cases in the first place, and asserting that “cases that do reach jury trial are the closest ones”). *But see* Theodore Eisenberg, *Testing the Selection Effect: A New Theoretical Framework with Empirical Tests*, 19 J. LEGAL STUD. 337 (1990) (questioning whether existing statistical methods can test Priest and Klein’s hypothesis); Steven Shavell, *Any Frequency of Plaintiff Victory at Trial Is Possible*, 25 J. LEGAL STUD. 493 (1996) (rebutting Priest and Klein’s hypothesis); Peter Siegelman & Joel Waldfogel, *Toward a Taxonomy of Disputes: New Evidence Through the Prism of the Priest/Klein Model*, 28 J. LEGAL STUD. 101, 130 (1999) (concluding that “litigation outcomes . . . vary substantially across case types”).

<sup>68</sup> George Priest, *Measuring Legal Change*, 3 J.L. ECON. & ORG. 193, 203 (1987) (“[A] change in a legal rule will lead to a shift in the nature of the cases that parties find problematic and, thus, litigable.”).

<sup>69</sup> Under some scenarios, our methodology could introduce bias toward finding a relationship where none exists. Specifically, we consider the case where trends in enforcement in a given period might not be captured by our methodology. For example, consider a scenario where the majority of cases in a given period uphold a particular clause, but enforcement occurs early in the period and non-enforcement occurs later in the same period. We checked for such trends and did not find any. We thank William Hubbard for this point.

<sup>70</sup> Michael Heise, *The Past, Present and Future of Empirical Legal Scholarship: Judicial Decision Making and the New Empiricism*, 2002 U. ILL. L. REV. 819, 844.

after a landmark decision. The case we focus on is *Bowers v. Baystate Technologies, Inc.*,<sup>71</sup> a case enforcing a prohibition on reverse engineering in mass-market EULAs that was decided during our sample period. *Bowers* has been extremely influential among practitioners, courts, academics, and trade publications.<sup>72</sup> The case is thus more likely to have affected drafters' expectations, as explained in further detail below.

We begin with the first approach. We relied on several sources to obtain the cases. First, we ran Westlaw searches on all federal and state law cases using general terms, such as "End User License Agreement," "License Agreement," "EULA," "software," "terms of use," "clickwrap," and "browsewrap." We also ran searches for particular terms such as "reverse engineering" and "forum-selection clause." These searches generated approximately 350 cases. We narrowed this down by examining each case individually and determining whether the litigation was relevant to EULA terms. To make sure we did not miss any important cases, we examined the cases cited in various software licensing handbooks, software licensing law textbooks, and the *Law of Software Contracts*.<sup>73</sup> This resulted in the consideration of sixty cases for the period 1993 to 2002 and eighty cases for the period 2003 to 2009. We stopped searching for cases after the end of 2009, as we began collecting our 2010 sample at the beginning of 2010.<sup>74</sup>

For each case, we recorded the court level, circuit, state, and year, as well as which of the EULA bias index terms were litigated to use as controls. Some cases involved only one term, such as restrictions on reverse engineering. Others involved multiple terms—such as challenges to the forum-selection or arbitration clause—as well as a limitation on damages. Others challenged the enforceability of the contract based on the presentation of the contract. We recorded whether the particular term involved was upheld. We also categorized the reasoning behind each decision, such as whether the court considered

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<sup>71</sup> 320 F.3d 1317 (Fed. Cir. 2003).

<sup>72</sup> The case has been widely cited in court documents, discussed at length in law school textbooks and legal scholarship, and noted in various trade publications. See, e.g., Robert W. Gomulkiewicz, *Fostering the Business of Innovation: The Untold Story of Bowers v. Baystate Technologies*, 7 WASH. J.L. TECH. & ARTS 445, 446 (2012) (citing various references and noting that "[p]erhaps the law review literature does not need another article on the Federal Circuit's *Bowers v. Baystate Technologies, Inc.* case").

<sup>73</sup> E.g., MARK A. LEMLEY ET AL., *SOFTWARE AND INTERNET LAW* (3d ed. 2006); RONALD J. MANN & JANE K. WINN, *Electronic Commerce* (1st ed. 2002); AM. LAW INST., *supra* note 10.

<sup>74</sup> See Kimberly D. Krawiec & Kathryn Zeiler, *Common Law Disclosure Duties and the Sin of Omission: Testing Meta-Theories*, 91 VA. L. REV. 1795 (2005) (using a similar methodology to study what factors affect court enforcement of common law disclosure duties).

whether the defendant had provided sufficient notice of the terms or whether the forum-selection clause was not unconscionable. To estimate the relative importance of a case, we recorded the amount of times a case had been followed as well as the number of times it had been cited in secondary sources such as legal periodicals. These are admittedly imperfect measures of influence, especially because controversial cases of weak legal precedent could be cited frequently.

The case law is summarized in Table 5. The table breaks down cases by individual terms, per the first four columns. Fifteen of the thirty-two terms that we track were litigated at least once between 1993 and 2009. Some terms, such as forum-selection clauses, were litigated much more frequently than others; these clauses were litigated in twenty-four cases in the pre-2003 period and in forty-one cases in the later period. This is not surprising, as parties would want to litigate only those terms that might prevent recovery or result in larger economic damages. Dispute resolution clauses usually make litigation prohibitively expensive, so it is common to see plaintiffs challenging their validity.

We calculated the probability that a given term was upheld in the two periods. We obtain this by dividing the number of times this particular term was upheld over the total number of cases where it was disputed. While crude, this probability gives a reasonable sense of a term's enforceability. We also calculate the *change* in the probability of a term being upheld across the two time intervals.<sup>75</sup> Going back to the *forum-selection clause* example, the probability of a court enforcing this term increased from 0.63 in 1993–2002 to 0.85 in 2003–2010. If firms are paying attention, they may have increased the use of forum-selection clauses.

The probability of being upheld has in fact increased for a number of terms during the sample period. This is consistent with various accounts of legal trends in the software industry.<sup>76</sup> The “highlight” cases at the rightmost column are examples of influential cases that appear in the leading textbooks on software law, trade publications, or the *Law of Software Contracts*. Courts are now more willing to enforce restrictions on reverse engineering, use, and transfer. On the other hand, courts have been stricter in policing nonsubstantive terms that might improve notice to users. For example, courts have

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<sup>75</sup> Note that we cannot do this for term 14 in Table 4, as it is only litigated in the first period and not the next. We are unable to make any inferences about changes in the enforceability over time for this term. We thus drop it from the analysis.

<sup>76</sup> See, e.g., Madison, *supra* note 50, at 1026 & n.3, 1028–29, 1142–43 (predicting a future of increased enforceability of software terms that bypass federal intellectual property laws and urging caution if such a trend indeed develops).

become less likely to enforce disclaimers that are not in capital letters or conspicuously placed.

There are further limitations to this approach. While we have attempted to record all litigated cases from 1993 until 2009, the number of litigated cases per term is in many instances small. Moreover, each case is unique and complex, and it can be hard to predict how a court would rule in each particular circumstance. Our methodology is an effort to capture general trends in enforceability of particular terms.<sup>77</sup> The selection hypothesis, imperfections in the methodology, and noise in our measures of changes in enforceability make it less likely that we will detect a statistical association between litigation outcomes and contract terms.

### B. Enforcement and the Adoption of Terms

Table 6 explores changes in individual terms over the sample period as a function of changes in enforceability as measured using changes in enforcement in all sample cases. Change can occur by adding a new term to the agreement or by removing an existing term. We consider these two cases separately. In the first regression, we analyze a dummy dependent variable that equals 1 if a term that was neutral or pro-buyer—as U.C.C. defaults tend to benefit buyers, all else equal—in 2003 (noted as 0) changed to pro-seller (-1) in 2010. In the second regression, we analyze the reverse case: We construct a dummy dependent variable that equals 1 if a term that was previously pro-seller went back to neutral. To be clear, the only terms we consider in these regressions are those that have been litigated at least once and have a theoretical range from -1 to 0.

The independent variables include company, product, market, and state characteristics as controls. We focus on *Uphold Probability*, the probability that a term was upheld given that it was litigated, and *Change in Uphold Probability*, which is the change between the probabilities that a term was enforced in 2003–2009 cases versus in 1993–2002 cases. We report marginal effects of logit specifications,

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<sup>77</sup> We also focus only on published opinions. Other legal developments aside from court decisions might have had an effect on EULA terms, but their impact is more attenuated. In 2000, Maryland and Virginia became the only two states to adopt the Uniform Computer Information Transactions Act (UCITA), a body of law designed to govern transactions in information goods such as software. MD. CODE ANN., COM. LAW § 22–101 (LexisNexis 2000); VA. CODE ANN. § 59.1–501.1 (2001). Only two cases in our sample cite UCITA as an authoritative source. As noted earlier, the ALI enacted its *Software Principles*, but courts do not appear to have relied on them yet.

with standard errors clustered by company. We ran fixed-effects models in unreported regressions and found similar results.<sup>78</sup>

The results suggest that contracts respond significantly to trends in enforcement. When terms are enforced frequently, and when the trend in enforcement is positive, companies are more likely to revise their contracts and adopt new restrictive terms. In particular, if the probability in the first column that a pro-seller term is enforced is 0.50 across all periods, then the probability that a firm that does not have the term in 2003 will add it by 2010 increases by 0.045 ( $0.50 \times 0.0899$ ). If the probability that a pro-seller term is enforced *rises* by 0.50 over the two periods, the probability that the firm will add the term increases by 0.045 ( $0.50 \times 0.0899$ ).

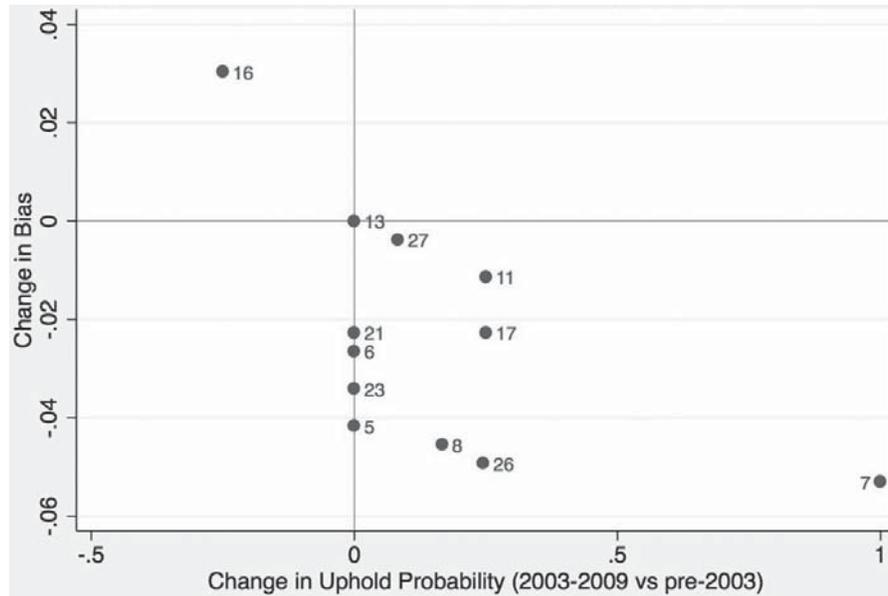
Firms also notice decreasing trends in enforcement. They are more likely to drop a term that has a lower probability of enforcement in general or if enforcement of the term is declining. Comparing the magnitude of the coefficients in the second column with those in the first, it appears that firms are less sensitive to litigation trends when they have already adopted a term than when they are newly considering it. In other words, terms are sensitive to litigation, but once they are adopted, they become somewhat less sensitive.

Figure 4 illustrates the results graphically. The x-axis measures changes in the probability that a term is upheld over the two periods. The y-axis measures the average change in the bias score of a particular term. All terms under consideration take the value 0 or -1, so positive changes indicate the probability that a term disappeared, while negative changes indicate the probability that a term appeared. The figure demonstrates the sensitivity of term usage to changes in enforcement. This is particularly apparent in the terms related to intellectual property, such as restrictions on reverse engineering, or license-grant restrictions. Forum-selection and arbitration clauses have also become more enforceable. It is striking that all terms plot in either the second or fourth quadrants; there is no case in which a term became less common while enforcement became more likely or vice versa.

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<sup>78</sup> These regressions are available upon request from the *New York University Law Review*.

FIGURE 4. RESPONSE TO CHANGING LITIGATION OUTCOMES



We now focus on changes in terms related to restrictions on reverse engineering after *Bowers*. Fortunately, the case was decided at the beginning of our sample period and at a time when enforcement of clauses prohibiting reverse engineering was hotly debated.<sup>79</sup> Intellectual property law doctrine generally supports reverse engineering, and courts have ruled that certain types of reverse engineering constitute “fair use” under the Copyright Act.<sup>80</sup> At the same time, software manufacturers have sought to protect their valuable source code as

<sup>79</sup> See Gomulkiewicz, *supra* note 72, at 449 (“Yet attention moved from [EULAs]’ general enforceability to the enforceability of certain terms, such as prohibitions on reverse engineering . . .”).

<sup>80</sup> See, e.g., *Sony Computer Entm’t, Inc. v. Connectix Corp.*, 203 F.3d 596 (9th Cir. 2000) (holding that use of copyrighted computer work to gain understanding of unprotected functional elements was fair use); *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832 (Fed. Cir. 1992) (holding that reverse engineering to get to the object code was fair use); *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992) (holding that the disassembly of code was fair use under the Copyright Act). Such issues have also been subject to debate in the patent context. See, e.g., Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1, 16–37 (2001) (outlining the debate on whether software should be patentable). In addition, as trade secrecy law on its own would permit reverse engineering of software, *see id.* at 17, there remains a question as to whether contract law ought to allow bargaining around such allowances in the trade secrecy context.

trade secrets by inserting prohibitions on reverse engineering in their EULAs.<sup>81</sup>

As further background, until *ProCD, Inc. v. Zeidenberg*,<sup>82</sup> courts generally refused to enforce provisions in software EULAs because they found that shrinkwrap licenses did not satisfy the requirements of mutual assent. In 1996, *ProCD* changed this by holding that mass-market shrinkwrap licenses were enforceable as long as such licenses do not violate general contract law principles.<sup>83</sup> The case also enforced the clause at issue: a restriction of use of the software for noncommercial purposes.<sup>84</sup> Judge Easterbrook reasoned that the Copyright Act did not preempt the prohibition in the EULA because the contract claim required proof of an extra element beyond what was necessary for a copyright claim.<sup>85</sup> After *ProCD*, courts began to enforce shrinkwrap and clickwrap contracts routinely.<sup>86</sup> Despite this, the enforceability of prohibitions on reverse engineering in mass-market EULAs remained an open question.<sup>87</sup> While the enforceability of these clauses is still debated, the *Bowers* decision marked a change in the perception of enforcement probabilities. Law firms, trade associations, and academics discussed the case, the merits, and the possibility of having enforceable reverse-engineering clauses.<sup>88</sup> A subsequent decision, *Davidson & Associates v. Internet Gateway*,<sup>89</sup> followed the reasoning in *Bowers* and enforced a similar clause. We

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<sup>81</sup> Whether prohibitions on reverse engineering are desirable has been the subject of debate and is beyond the scope of this Article. See, e.g., Lemley, *supra* note 50, at 145 (arguing that preemption of contract terms by federal copyright law is necessary, but not sufficient, to protect the interests of intellectual property law); David A. Rice, *Copyright and Contract: Preemption After Bowers v. Baystate*, 9 ROGER WILLIAMS U. L. REV. 595, 623 (2004) (favoring preemption of reverse engineering prohibitions); Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575 (2002) (analyzing reverse engineering in three information-based industries).

<sup>82</sup> 86 F.3d 1447 (7th Cir. 1996).

<sup>83</sup> *Id.* at 1449.

<sup>84</sup> *Id.* at 1450, 1455.

<sup>85</sup> *Id.* at 1453–55.

<sup>86</sup> See Mark A. Lemley, *Terms of Use*, 91 MINN. L. REV. 459, 468 (2006) (noting that until *ProCD*, every court considering the validity of shrinkwrap licenses held them unenforceable).

<sup>87</sup> See, e.g., *Vault v. Quaid*, 847 F.2d 255 (5th Cir. 1988) (refusing on preemption grounds to enforce a restriction on reverse engineering in a shrinkwrap EULA).

<sup>88</sup> The leading textbook on software law discusses the case, as do the websites of many specialized law firms, the LAW OF SOFTWARE PRINCIPLES, and various trade publications. See LEMLEY ET AL., *supra* note 73; Rice, *supra* note 81; Donald D. Min, *Federal Copyright Law Does Not Preempt Software Shrink-Wrap License*, LAST MONTH AT THE FED. CIR. (Finnegan Henderson, Washington, D.C.), Feb. 2003, at 3, available at <http://www.finnegan.com/files/Publication/628a0ed4-5743-43c7-adde-0624b0460c70/Presentation/PublicationAttachment/797231cd-e818-471e-aa89-1060565f2935/February%202003.pdf>.

<sup>89</sup> 334 F. Supp. 2d 1164 (E.D. Mo. 2004), *aff'd sub nom.* *Davidson & Assocs. v. Jung*, 422 F.3d 630 (8th Cir. 2005).

focus on *Bowers* to see if we observe change in reverse-engineering restrictions as a possible reaction to the decision.

The third row in Table 5, focusing on reverse-engineering clauses, and point number 7 in Figure 4 support the general findings discussed earlier. Our pre-*Bowers* contracts were obtained in 2003, so it could have been the case that some firms changed their EULAs to include a reverse-engineering restriction. This works against our findings, yet we still find change in the percentage of EULAs with reverse-engineering clauses at the end of the sample period.

What explains this relationship? One possibility is that in-house counsel and specialized legal advisors closely follow case law in the mass-market software industry and revise terms accordingly. A perhaps more plausible mechanism is that changes in the enforceability of some terms, such as forum-selection clauses and restrictions on modification or reverse-engineering clauses, generate commentary in specialized periodicals that is noticed by drafters.<sup>90</sup>

We cannot infer causation from these regressions, as factors that we do not control and that are also associated with increased probability of enforcement might be driving the change. Still, while other studies witness stickiness, our results are consistent with litigation affecting contracts.<sup>91</sup>

## CONCLUSION

Conventional wisdom suggests that standard-form contracts are essentially static given that they are rarely invoked, govern relatively low-price items that are unlikely to be the source of litigation, and are not protected by property rights. This study finds change and innovation in several aspects of common consumer standard-form contracts. Contrary to studies of innovation in law firms, it finds that in-house lawyers are associated with new terms. Almost forty percent of the contracts we examined saw at least one standard term change over the

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<sup>90</sup> For example, *Davidson & Associates*, 422 F.3d 630, a case where users of a popular game violated the EULA's prohibition on reverse-engineering clause by creating their own free servers to enjoy the game without many of the interferences of the original software (among other issues), attracted the attention of legal and technology blogs, especially after the court enforced the restriction against the users. See, e.g., Kenneth Hwang, Note, *Blizzard Versus Bnetd: A Looming Ice Age for Free Software Development?*, 92 CORNELL L. REV. 1043 (2007) (arguing that the case was wrongly decided); Ross Dannenberg, *Case: Davidson Assoc. v. Internet Gateway* (8th Cir. 2006), PATENT ARCADE (July 3, 2006, 1:35 PM), <http://www.patentarcade.com/2006/07/case-davidson-assoc-v-internet-gateway.html> (summarizing the case); Kevin A. Thompson, *Case Summary: Davidson v. Internet Gateway*, CYBERLAW CENTRAL (Sept. 17, 2005), <http://www.cyberlawcentral.com/2005/09/17/case-summary-davidson-v-internet-gateway> (same).

<sup>91</sup> See, e.g., Choi & Gulati, *Securities Disclosure*, *supra* note 5 (finding that many contracts' boilerplate language often changes rapidly after a long period of no change).

period between 2003 and 2010; some changed more than ten terms. While this number could be perceived as low, especially in an industry as dynamic as software, the results challenge conventional views that a large fraction of consumer fine print is set in stone. We find that contracts have become longer but no simpler to read. On average, EULAs accumulate more terms over time, a process consistent with the observation that the process of contract creation involves the overlaying of terms without much revision. Drafters might be thinking myopically about the effect of the particular term being added as opposed to the meaning of the contract as a whole. The implication of this trend is that, to the extent consumers read terms to comparison shop, the cost of becoming informed about terms has increased. The cost is also higher for would-be intermediaries such as ratings websites and consumer nonprofits. An important implication of this is that proposals for increased contract disclosure are less likely to be effective because what is increasingly costly for consumers is not gaining access to the contract but reading it. Any type of disclosure reform might be more effective if it included directives for plainer and more succinct language.<sup>92</sup> Consumer advocates, who have been lobbying for plain-language laws in consumer agreements for some time, may have picked up this trend.<sup>93</sup>

Terms themselves have changed in a variety of ways, even in the absence of strong property rights. Some companies revised only a handful of terms, while others altered their EULAs fairly comprehensively. One consistent pattern is that terms have become somewhat more pro-seller over time. This is especially true for terms that restrict scope and uses of the product, limitations on liability, and conflict resolution. Because our methodology measures *relative* contract bias, we cannot offer any conclusions as to the welfare implications of these changes. All else equal, however, the direction of change tends to benefit sellers over consumers. Even if we cannot determine whether

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<sup>92</sup> See Florencia Marotta-Wurgler, *Does Contract Disclosure Matter?*, 168 J. INSTITUTIONAL & THEORETICAL ECON. 94 (2012); cf. Oren Bar-Gill, *The Behavioral Economics of Consumer Contracts*, 92 MINN. L. REV. 749 (2008) (advocating disclosure regimes that provide information that corrects consumers' misperceptions).

<sup>93</sup> See, e.g., FLA. STAT. § 627.4145 (LexisNexis 2003) (mandating a minimum Flesch-Kincaid score of forty-five for insurance policies in this plain-language statute); 20 ILL. COMP. STAT. ANN. 4090/5 (LexisNexis 2009) (providing for a "plain language task force"); see also Daniel Schwarcz, *Preventing Capture Through Consumer Empowerment Programs: Some Evidence from Insurance Regulation*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT (Daniel Carpenter & David Moss eds., forthcoming 2013), available at [http://www.tobinproject.org/sites/tobinproject.org/files/assets/Schwarcz\\_Consumer\\_Empowerment\\_Programs\\_01.16.13.pdf](http://www.tobinproject.org/sites/tobinproject.org/files/assets/Schwarcz_Consumer_Empowerment_Programs_01.16.13.pdf) (explaining consumer empowerment programs that promote the influence and interests of consumer groups).

terms are changing “optimally,” we do see evidence of change and innovation. This contrasts somewhat with studies of standard terms in other settings.

While EULAs are becoming more pro-seller on average, there is a degree of mean reversion in the extremes. Contracts that were highly pro-seller or highly pro-buyer in 2003 tended to shift back toward the 2010 norm. Reputational forces might constrain sellers presenting the most egregious terms, while other sellers may have come to realize they were giving buyers a comparatively free lunch. On the whole, however, there is no obvious evidence of increased standardization over time. The variance of contract length has grown, as has the variance in overall pro-seller bias. To the extent that the terms we track capture large fractions of terms in the sample contracts, the results suggest that the number of words per term has increased. This does not provide support for the standard prediction that terms will tend to become more similar to one another over time to benefit from various network effects. A possible reason for this is that network benefits might not be very significant in this market. Increased variance increases choice for consumers but also, to the extent that contract terms are part of consumers’ decisionmaking process, makes it harder for them to ascertain contract quality and make optimal purchase decisions. We also document the effect of in-house counsel in revising agreements and innovating. This finding suggests that lawyers outside law firms might be the ones responsible for innovation. This is consistent with other accounts of user-generated innovation.

We also document the emergence of seven new terms that we subjectively classify as innovations and find that the very early 2003 adopters are young and large firms that sophisticated counsel are perhaps more likely to advise. (We did not have the data to design a compelling test of this hypothesis.) Young, large, and growing firms are also relatively more likely to have adopted the innovative terms by 2010. Firms are paying attention to technological change and revising their contracts accordingly, including in particular terms that allow them to control the other party’s performance through technological means, as opposed to threats of litigation. Finally, we find that changes in enforceability may help to explain some of the changes in terms that we observe. Increases in the probability of a term becoming enforced are associated with increases in the probability of including such terms in EULAs. Similarly, decreases in the probability of enforcement of a term are associated with decreases in the incidence of a term. That said, most EULA terms have become increasingly enforceable over time. This includes arbitration clauses and

restrictions on reverse engineering, which used to be controversial but are increasingly enforced. The same can be said about EULAs themselves, as courts have become more comfortable with clickwraps and online contracting. These changes may also partially explain why EULAs have become more pro-seller over time in general. Thus, changes in the law, technology, and the characteristics of firms, products, and markets all appear to play roles in the evolution of boilerplate.

## APPENDIX

TABLE 1: COMPANY, PRODUCT, MARKET, AND CONTRACT CHARACTERISTICS

	<b>Observations</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>
<b>Panel A. Company Characteristics</b>						
Revenue 2003 (\$000)	259	287,499	2,490,751	30	1700	36,800,000
Revenue 2010 (\$000)	259	539,091	4,225,384	90	2200	60,400,000
Change Revenue (\$)	254	256,679	1,917,968	-723,200	111.5	23,600,000
Change Revenue (%)	254	226	627	-90	24.08	5000
Public 2003	264	0.11	0.32	0	0	1
Public 2010	264	0.14	0.35	0	0	1
Age 2003 (Yrs)	264	13.62	8.01	0	13	68
Age 2010 (Yrs)	264	20.62	8.01	7	20	75
Lawyers	118	0.74	0.44	0	1	1
Pro-Consumer State	264	0.32	0.61	-1	0	1
<b>Panel B. Product and Market Characteristics</b>						
Trial 2003	264	0.73	0.45	0	1	1
Trial 2010	264	0.77	0.42	0	1	1
Median Price 2003 (\$)	264	812	1310	14.99	360	12,000
Median Price 2010 (\$)	256	841	1686	8.99	350	20,995
Consumer Product	264	0.36	0.48	0	0	1
Multi-user License	264	0.08	0.28	0	0	1
Developer License	264	0.08	0.27	0	0	1
HHI	236	0.37	0.24	.065	.30	1
<b>Panel C. Contract Characteristics</b>						
Any Terms Changed	264	0.39	0.49	0	0	1
Number of Words 2003	264	1517	1365	33	1152	8406
Number of Words 2010	262	1938	2077	106	1354	13,416
Flesch Score 2003	259	33.33	7.45	14.3	32.6	63.6
Flesch Score 2010	258	33.43	7.14	15	33.35	55.1

TABLE 2: EULA TERMS AND BIAS: 2010 vs. 2003

No.	Category and Term	Score	Mean 2010 (SD)	Mean 2003 (SD)	Mean Change (SE)
	Acceptance	1 = yes 0 = no	0.458 (0.499)	0.470 (0.500)	-0.011 (0.022)
1	Does the license alert consumer that the product can be returned if she declines the terms?				
	Modification and Termination		-0.227 (0.539)	-0.167 (0.439)	-0.061*** (0.021)
2	Are the license's terms subject to change?	0 = no -1 = yes	-0.106 (0.309)	-0.076 (0.265)	-0.030** (0.012)
3	Does the license allow licensor to disable the software remotely if licensee breaches any EULA terms, according to licensor?	0 = no -1 = yes	-0.121 (0.327)	-0.091 (0.288)	-0.030** (0.013)
	Scope		-1.792 (1.169)	-1.659 (1.162)	-0.133*** (0.046)
4	Does the definition of "licensed software" include regular updates such as enhancements, versions, releases, etc.?	1 = yes 0 = no or no mention	0.170 (0.377)	0.136 (0.344)	0.034** (0.015)
5	Can the licensee alter/modify the program?	0 = yes or no mention -1 = no	-0.640 (0.481)	-0.598 (0.491)	-0.042*** (0.015)
6	Can the licensee create derivative works?	0 = largely unrestricted or no mention -1 = strict prohibition, derivative works owned by licensor, or need permission of licensor	-0.379 (0.486)	-0.352 (0.479)	-0.027* (0.015)
7	Does the license prohibit reverse engineering of the software?	0 = no or no mention -1 = yes	-0.716 (0.452)	-0.663 (0.474)	-0.053*** (0.017)
8	Are there license grant restrictions?	0 = no or no mention -1 = yes (e.g., for business-oriented products, "for business purposes" or "internal purposes only" language; for consumer-oriented products, restrictions on commercial use)	-0.227 (0.420)	-0.182 (0.386)	-0.045*** (0.018)
	Information Collection		-0.117 (0.367)	-0.061 (0.269)	-0.057*** (0.017)
9	Does the license allow licensor to collect and/or distribute the licensee's personally identifiable information?	0 = no or no mention -1 = yes	-0.102 (0.304)	-0.053 (0.225)	-0.049*** (0.014)
10	Does the license allow the licensor to install software that will track the licensee's activity?	0 = no or no mention -1 = yes	-0.015 (0.122)	-0.008 (0.087)	-0.008 (0.005)
	Transfer		-1.466 (0.584)	-1.394 (0.595)	-0.072*** (0.021)
11	Are there limitations on transfer?	0 = no or no mention -1 = some or full restrictions (licensee cannot assign, transfer, lease, sublicense, distribute, etc.; or, needs written consent of licensor)	-0.955 (0.209)	-0.943 (0.232)	-0.011* (0.007)
12	Can the licensee transfer the software to an end user who accepts the license terms without the licensor's prior permission?	0 = yes or no mention -1 = no	-0.511 (0.501)	-0.451 (0.499)	-0.061*** (0.017)
	Warranties and Disclaimers		-0.871 (0.994)	-0.875 (0.973)	0.004 (0.028)
13	Are there express warranties?	1 = yes 0 = no	0.042 (0.200)	0.042 (0.200)	0.000 (0.005)
14	Is there a limited warranty in force for a limited period stating that the software is free from defects in materials and workmanship or that the software will work according to manual specifications?	1 = yes 0 = no	0.311 (0.464)	0.295 (0.457)	0.015 (0.017)
15	Is there a limited warranty for a limited period stating that the media of software distribution and documentation are free from defects in force?	1 = yes 0 = no	0.280 (0.450)	0.269 (0.444)	0.011 (0.017)
16	Is the disclaimer in caps, bold, or otherwise conspicuously presented?	0 = yes or no disclaimers appear -1 = no	-0.231 (0.422)	-0.261 (0.440)	0.030** (0.013)

17	Disclaims IWM and IWFP or contains "as is" language?	0 = no -1 = yes	-0.913 (0.283)	-0.890 (0.313)	-0.023** (0.009)
18	Disclaims the warranty that software will not infringe on third parties' intellectual property rights?	0 = no -1 = yes	-0.360 (0.481)	-0.330 (0.471)	-0.030** (0.014)
Limitations on Liability			-2.413 (1.221)	-2.273 (1.187)	-0.140*** (0.047)
19	Who bears the risk of loss?	0 = licensor (for losses caused by factors under licensor's control), or no mention	-0.167 (0.373)	-0.152 (0.359)	-0.015 (0.012)
20	Who bears the performance risk?	0 = licensor (for causes under licensor's control), or no mention, or licensee (for uses expressly forbidden by licensor) -1 = licensee (language "licensee assumes responsibility of choice of product and functions," etc.)	-0.299 (0.459)	-0.277 (0.448)	-0.023 (0.015)
21	Disclaims consequential, incidental, special, or foreseeable damages?	0 = no or no mention -1 = yes	-0.924 (0.265)	-0.902 (0.299)	-0.023** (0.009)
22	Disclaims damages under all theories of liability (contract, tort, strict liability)?	0 = no or no mention -1 = yes	-0.299 (0.459)	-0.273 (0.446)	-0.027* (0.015)
23	What is the limitation on damages?	0 = no mention or cap on damages greater than purchase price -1 = cap on damages less than or equal to purchase price	-0.553 (0.498)	-0.519 (0.501)	-0.034* (0.019)
24	Is there an indemnification clause?	0 = no, no mention, or two-way indemnification -1 = indemnification by licensee	-0.170 (0.377)	-0.152 (0.359)	-0.019 (0.015)
Maintenance and Support			0.667 (0.472)	0.663 (0.474)	0.004 (0.014)
25	Does the base price include maintenance and support for 31 days or more?	1 = yes 0 = no or no mention			
Conflict Resolution			-0.341 (0.513)	-0.284 (0.476)	-0.057*** (0.019)
26	Forum specified?	0 = court, choice of licensee, or no mention -1 = specific court or mandatory arbitration	-0.322 (0.468)	-0.273 (0.446)	-0.049*** (0.017)
27	Law specified?	0 = same as forum or no mention -1 = yes and different from forum	-0.011 (0.106)	-0.008 (0.087)	-0.004 (0.004)
28	Who pays the licensor's attorney fees?	0 = paid by losing party or no mention -1 = paid by licensee	-0.008 (0.087)	-0.004 (0.062)	-0.004 (0.004)
Third Parties			-0.216 (0.574)	-0.098 (0.346)	-0.117*** (0.028)
29	Does the license require the licensee to agree to third-party licenses or terms?	0 = no or no mention -1 = yes	-0.121 (0.327)	-0.064 (0.246)	-0.057*** (0.015)
30	Does the license disclaim the licensor's liability for any included third-party software?	0 = no or no mention -1 = yes	-0.080 (0.271)	-0.034 (0.182)	-0.045*** (0.015)
31	Does the license allow the licensor or third parties to install additional software?	0 = no or no mention -1 = yes	-0.015 (0.122)	0.000 (0.000)	-0.015** (0.008)
32	Consumer Protection: Does the license inform the licensee of statutory rights?	1 = yes, contract informs consumer about state law rights they may have 0 = no or no mention	0.473 (0.500)	0.417 (0.494)	0.057*** (0.017)
Overall Bias			-5.845 (3.405)	-5.261 (3.153)	-0.583*** (0.128)

TABLE 3: BIAS, CHANGE, AND INNOVATION<sup>94</sup>

	(1a)	(1b)	(2)	(3)	(4)	(5)
	Overall Bias 2003	Overall Bias 2010	Any Terms Changed [1 = yes, 0 = no]	Net Change Overall Bias	Number of Innovative Terms 2003	Change Number of Innovative Terms 2010
Multi-user License	-0.950 (0.670)	-0.420 (0.629)	-0.052 (0.108)	0.467 (0.357)	-0.257* (0.151)	-0.0873 (0.106)
Developer License	0.329 (0.740)	-0.720 (0.970)	-0.104 (0.121)	-0.803 (0.678)	0.149 (0.134)	0.174 (0.253)
Ln Price	0.163 (0.173)	0.0756 (0.180)	0.029 (0.034)	-0.139 (0.137)	-0.00647 (0.0370)	0.0314 (0.0394)
Change Ln Price			0.108 (0.108)	-0.202 (0.432)	(0.112)	-0.101
Consumer Product	-0.215 (0.527)	-0.155 (0.583)	-0.058 (0.088)	-0.000400 (0.372)	0.184 (0.123)	0.0433 (0.132)
Ln Revenue	-0.338*** (0.0978)	-0.375*** (0.119)	0.047*** (0.0158)	-0.0513 (0.0968)	0.0676*** (0.0257)	0.0988*** (0.0306)
Change Ln Revenue			0.0863*** (0.0328)	-0.228* (0.135)		0.136** (0.0575)
Ln Age	1.480*** (0.395)	3.079*** (0.694)	0.0372 (0.0638)	0.597** (0.244)	-0.260** (0.107)	-0.160* (0.0826)
Pro-Consumer State	0.114 (0.339)	-0.0506 (0.386)	0.0838 (0.0611)	-0.144 (0.232)	-0.0318 (0.0842)	0.175** (0.0706)
HHI	-0.980 (0.849)	-1.211 (0.826)	0.158 (0.142)	-0.479 (0.507)	0.259 (0.193)	0.224 (0.157)
Overall Bias 2003				-0.157*** (0.0531)		
Number of Common Terms					0.0492*** (0.0129)	
Change in Number of Common Terms						0.119*** (0.0283)
Constant	-6.875*** (1.252)	11.91*** (2.285)		-1.413 (1.217)	-0.103 (0.402)	-0.617* (0.341)
Observations	231	228	223	223	231	223
Adjusted $R^2$	0.105	0.109	0.078	0.063	0.131	0.285

<sup>94</sup> Standard errors in parentheses. Marginal effects and pseudo R-squared from a logit regression are reported in column (2); other regressions are ordinary least squares; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

TABLE 4: BIAS, CHANGE, AND INNOVATION: PRESENCE OF LAWYERS<sup>95</sup>

	(1a)	(1b)	(2)	(3)	(4)	(5)
	Overall Bias 2003	Overall Bias 2010	Any Terms Changed [1 = yes, 0 = no]	Net Change Overall Bias	Number of Innovative Terms 2003	Change Number of Innovative Terms 2010
Lawyers	-2.263** (0.993)	-3.515*** (1.037)	0.151 (0.197)	-2.159*** (0.669)	0.778*** (0.265)	0.431 (0.267)
Table 3 Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103	101	98	98	103	98
Adjusted $R^2$	0.124	0.239	0.236	0.174	0.213	0.306

<sup>95</sup> Standard errors in parentheses. Marginal effects and pseudo R-squared from a logit regression are reported in column (2); other regressions are ordinary least squares; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

TABLE 5: LITIGATED TERMS

#	Term	Cases pre- 2003	Cases 2003- 2009	Proba- bility Upheld All Years	Proba- bility Upheld pre- 2003	Proba- bility Upheld 2003- 2009	Change in Proba- bility Upheld	Highlights
5	Can the licensee alter/ modify the program?	1	1	1	1	1	0	<i>Davidson &amp; Associates v. Jung</i> <sup>96</sup>
6	Can the licensee create derivative works?	1	6	1	1	1	0	<i>Dun &amp; Bradstreet Software Services, Inc. v. Grace Consulting, Inc.</i> <sup>97</sup>
7	Does the license pro- hibit reverse engi- neering of the software?	1	4	0.8	0	1	1	<i>Bowers v. Baystate Technologies, Inc.</i> <sup>98</sup>
8	Are there license grant restrictions?	3	2	0.40	0.33	0.5	0.17	<i>ProCD, Inc. v. Zeidenberg</i> <sup>99</sup>
11	Are there limitations on transfer?	8	6	0.86	0.75	1	0.25	<i>Vernor v. Autodesk, Inc.</i> <sup>100</sup>
13	Are there express war- ranties?	1	1	0	0	0	0	.
14	Is there a limited war- ranty stating that the software is free from defects in materials and workmanship or that the software will work according to manual specifications in force for a limited period?	0	1	0	.	0	.	.
16	Is the disclaimer in caps, bold, or otherwise conspicuously presented?	1	4	0.8	1	0.75	-0.25	<i>Vision Graphics, Inc. v. E.I. Du Pont De Nemours &amp; Co.</i> <sup>101</sup>
17	Disclaims IWM and IWFPP or contains "as is" language?	8	4	0.83	0.75	1	0.25	<i>Vision Graphics, Inc. v. E.I. Du Pont De Nemours &amp; Co.</i> <sup>102</sup>
21	Disclaims conse- quential, incidental, special, or foreseeable damages?	2	3	1	1	1	0	<i>i.Lan Systems, Inc. v. Netscout Service Level Corp.</i> <sup>103</sup>
22	Disclaims damages under all theories of lia- bility (contract, tort, strict liability)?	0	1	1	.	1	.	<i>Pure Bioscience v. Ross Systems, Inc.</i> <sup>104</sup>

<sup>96</sup> 422 F.3d 630 (8th Cir. 2005).<sup>97</sup> 307 F.3d 197 (3d Cir. 2002).<sup>98</sup> 320 F.3d 1317 (Fed. Cir. 2003).<sup>99</sup> 86 F.3d 1447 (7th Cir. 1996).<sup>100</sup> 555 F. Supp. 2d 1164 (W.D. Wash. 2008).<sup>101</sup> 41 F. Supp. 2d 93 (D. Mass. 1999).<sup>102</sup> *Id.*<sup>103</sup> 183 F. Supp. 2d 328 (D. Mass. 2002).<sup>104</sup> No. 07-1117, 2008 WL 938956 (S.D. Cal. Apr. 7, 2008).

23	What is the limitation on damages?	4	1	1	1	1	0	<i>M.A. Mortenson Co. v. Timberline Software Corp.</i> <sup>105</sup>
26	Forum specified?	24	41	0.77	0.61	0.85	0.24	<i>Specht v. Netscape Communications Corp.</i> <sup>106</sup> ; <i>Caspi v. Microsoft Network, LLC</i> <sup>107</sup>
27	Law specified?	3	4	0.71	0.67	0.75	0.08	<i>Vision Graphics, Inc. v. E.I. Du Pont De Nemours &amp; Co.</i> <sup>108</sup>
28	Who pays the licensor's attorney fees?	0	1	0	.	0	.	<i>McKee v. AT&amp;T Corp.</i> <sup>109</sup>

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<sup>105</sup> 998 P.2d 305 (Wash. 2000) (en banc).

<sup>106</sup> 306 F.3d 17 (2d Cir. 2002).

<sup>107</sup> 732 A.2d 528 (N.J. Super. Ct. App. Div. 1999).

<sup>108</sup> 41 F. Supp. 2d 93 (D. Mass. 1999).

<sup>109</sup> 191 P.3d 845 (Wash. 2008) (en banc).

TABLE 6: LITIGATION AND INDIVIDUAL TERM CHANGES<sup>110</sup>

	(1)	(2)
	From 0 to -1	From -1 to 0
Uphold Probability	0.0899** (0.0388)	-0.0686*** (0.0200)
Change in Uphold Probability	0.0899*** (0.0169)	-0.0498** (0.0218)
Controls from Table 3 Column (3)?	Yes	Yes
Observations	1191	1139
Pseudo $R^2$	0.092	0.094

<sup>110</sup> Marginal effects from logit regressions; standard errors clustered by company in parentheses; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .