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Competition and the Quality of Standard Form Contracts: The Case of Software License Agreements

Florencia Marotta-Wurgler*

Standard form contracts are pervasive. Many legal academics believe that they are unfair. Some scholars and some courts have argued that sellers with market power or facing little competitive pressure may impose onesided standard form terms that limit their obligation to consumers. This article uses a sample of 647 software license agreements drawn from many distinct segments of the software industry to empirically investigate the relationship between competitive conditions and the quality of standard form contracts. I find little evidence for the concern that firms with market power, as measured by market concentration or firm market share, require consumers to accept particularly one-sided terms; that is, firms in both concentrated and unconcentrated software market segments, and firms with high and low market share, offer similar terms to consumers. The results have implications for the judicial analysis of standard form contract enforceability.

I. INTRODUCTION

Standard form contracts are pervasive in most consumer and business transactions involving goods and services. Many academics and courts have

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suggested that standard form contracts are unfair. A particularly common concern is that sellers with market power or in concentrated markets lack sufficient competitive pressure to offer terms that buyers prefer, instead choosing to impose one-sided terms that greatly limit their obligations to buyers.¹ Indeed, courts invalidate provisions in standard form contracts under the doctrine of unconscionability,² of which a factor is whether the buyer is deprived of meaningful choice because the seller is a monopolist³ or has significant market share.⁴

The view that market power reduces the quality of standard terms is not theoretically unambiguous, however. Some have argued that if consumers prefer warranties instead of disclaimers, for example, and if they would be willing to pay a premium for this protection, even a monopolist will offer

¹Friedrich Kessler, Contracts of Adhesion—Some Thoughts About Freedom of Contract, 43 Colum. L. Rev. 629 (1943).

²U.C.C. § 2–302. Unconscionability has both a procedural and a substantive element. Procedural unconscionability refers to oppression used in the process of making a contract, such as defective disclosure of terms, or lack of alternatives for the adhering party. Substantive unconscionability refers to oppressive or harsh content in a contract. Both factors alone are necessary but not sufficient for a court to invalidate a contract under the unconscionability doctrine, although this varies from jurisdiction to jurisdiction. See James J. White & Robert Summers, Handbook of the Law Under the Uniform Commercial Code 128 (1972). Note that because most modern transactions involve larger corporations and individual consumers (regardless of competitive conditions), courts will generally refuse to consider unequal bargaining power as the only factor in a finding of procedural unconscionability.

³See, e.g., Pack v. Damon Corp., 320 F. Supp. 2d 545, 556 (E.D. Mich. 2004) (finding no procedural unconscionability because the "[p]laintiff has not shown that GRVC was his only source for buying a new motor home, or that other potential sources required submitting disputes to arbitration"); Lozada v. Dale Baker Oldsmobile, Inc., 91 F. Supp. 2d 1087, 1100 (D. Mich. 2000) (noting that "[i]n order to determine whether a contract is procedurally unconscionable, the court typically considers the relative bargaining power of the parties, their relative economic strength, the alternative sources of supply"); Rozeboom v. Northwestern Bell Tel. Co., 358 N.W.2d 241, 242, 242–45 (S.D. 1984) (finding a term unconscionable because the seller was a monopoly and the buyer could not shop for alternatives).

⁴See, e.g., Flores v. Transamerica HomeFirst, Inc., 93 Cal. App. 4th 846, 853 (Cal. Ct. App. 2001); Arnold v. United Cos. Lending Corp., 204 W. Va. 229, 511 S.E.2d 854, 861 (1998) ("The relative positions of the parties, a national corporate lender on one side and elderly, unsophisticated consumers on the other, were 'grossly unequal.'"); A & M Produce Co. v. FMC Corp., 135 Cal. App. 3d 473, 186 Cal. Rptr. 114, 125 (1982) (finding procedural unconscionability because FMC had substantially more sales than A&M and thus much more bargaining power).

warranties.⁵ If this argument is correct, only the monopolist's pricing behavior and not the standard terms it offered would be cause for concern or regulation. Others have suggested that competition is irrelevant to the content of standard terms for a quite different, almost opposite, reason: in practice, buyers rarely read the fine print anyway, so they are unlikely to make purchase decisions based on what it contains.⁶

Some recent studies in other economic settings have suggested that competitive forces do improve product quality. For example, studies have examined the relationship between competitive conditions and product quality, such as frequency and length of flight delays, or public school quality, and concluded that sellers in more competitive markets provide better quality than sellers in more concentrated markets.⁷ At some level, standard form contract content can be viewed as a dimension of product quality.

Despite the large literature exploring the role of competition in shaping standard form contracts and the practical importance attached to their enforcement, there has been little systematic empirical work. This article fills this void by examining whether the terms that software companies offer in their license agreements with buyers are related to the competitive

⁵I summarize this literature later in the article. Noteworthy contributions include A. Michael Spence, Monopoly, Quality, and Regulation, 6:2 Bell J. of Econ. 417–29 (1975); Alan Schwartz, A Reexamination of Non-Substantive Unconscionability, 63 U. Va. L. Rev. 1074 (1977); George L. Priest, A Theory of the Consumer Product Warranty [hereinafter, Priest, A Theory of the Consumer Product Warranty [hereinafter, Priest, A Theory of the Consumer Product Warranty], 90 Yale L.J. 1297 (1981); Alan Schwartz & Louis Wilde, Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis, 127 U. Pa. L. Rev. 630 (1979); Alan Schwartz & Louis Wilde, Imperfect Information in Markets: The Examples of Warranties and Security Interests, 69 Va. L. Rev. 1387 (1983); Richard Craswell, Passing on the Costs of Legal Rules: Efficiency and Distribution in Buyer-Seller Relationships, 43 Stan. L. Rev. 361, 363 (1991). See also Richard Posner, Natural Monopoly and its Regulation, 21 Stan. L. Rev. 548 (1969).

⁶Later in the article, I summarize the perspectives of Victor P. Goldberg, Institutional Change and the Quasi-Invisible Hand, 17 J. L. & Econ. 461, 485 (1974); Avery Katz, Your Terms or Mine? The Duty to Read Fine Print in Form Contracts, 21 RAND J. of Econ. 518, 533 (1990); Russell B. Korobkin, Bounded Rationality, Standard Form Contracts, and Unconscionability 70 Chi. L. Rev. 1203 (2003).

⁷See, e.g., Michael J. Mazzeo, Competition and Service Quality in the U.S. Airline Industry, 22 Rev. of Ind. Org. 275 (2003); Stephen Foreman & Dennis Shea, Publication of Information and Market Response: The Case of Airline on Time Performance Reports, 14 Rev. Ind. Org. 147 (1999); Caroline M. Hoxby, Does Competition Among Public Schools Benefit Students and Taxpayers? 90 Am. Econ. Rev. 147 (2000).

conditions that the sellers face. That is, do monopolists, or software firms with market power more generally, force consumers to accept more restrictive terms, as has been feared?

The analysis is based on a sample of 647 hand-collected end user license agreements (EULAs) of standard "prepackaged" software products, the same sample introduced in another article published in this journal.⁸ That article provides a detailed study of EULA terms regarding acceptance of the license; scope of the license; restrictions on transfer; warranties and disclaimers of warranties; limitations on liability; maintenance and support services; and conflict resolution. Marotta-Wurgler measures the net "buyer friendliness" of each contract by constructing a simple index. The index tracks 23 important and common terms that allocate rights and risks between buyers and sellers of software. The conclusion there is that on average, EULAs are biased toward the seller, but there is a great deal of variation across sellers in the terms they offer.

In this article, I attempt to use competitive conditions faced by different sellers to explain the observed variation in EULA terms. The sample is comprised of EULAs from 598 different software companies, including established software publishers like Microsoft and Symantec as well as hundreds of smaller, lesser-known firms. The products whose sample EULAs I gather span 114 distinct segments of the software industry, from security software to virtual encyclopedias, with varying degrees of concentration. I gather data on market share of individual companies in different software markets represented in my sample as well as the overall concentration of those markets. Software market share data are not widely or easily available, so I estimate market shares and concentration measures using a recently developed methodology that uses Amazon.com "sales rankings" to estimate sales. I obtain additional market share data from various published estimates.

In general, I find that the overall pro-buyer or pro-seller bias of standard terms has little correlation with any measure of competitive conditions. Sellers in more competitive markets offer similar standard form terms to those offered by sellers in highly concentrated markets; and, within a given software market, firms with larger market share and minor players offer similar terms. There are a few exceptions involving particular sets of terms,

⁸Florencia Marotta-Wurgler, What's in a Standard Form Contract? An Empirical Analysis of Software License Agreements, 4 J. Empirical Legal Stud. 677 (2007).

but the main conclusion is that most EULA terms do not appear to depend on competitive conditions in a measurably important way. Of course, a natural concern, given this conclusion, is that my measures of competitive conditions are too noisy to reveal the true relationship. However, I find a significant positive relationship between product price and market share or industry concentration; thus, the competitive conditions appear to be wellmeasured enough to detect this more theoretically unambiguous relationship, suggesting that they would also reveal a relationship to standard form terms, if one existed.

To summarize, while the analysis cannot address absolute statements as to whether EULA terms are efficient in general (addressing that question would require numerous debatable assumptions regarding buyer preferences, seller costs, and other attributes of product quality), it does address another specific question of longstanding concern, whether greater market power is associated with more pro-seller standard terms. At least in the context of software license agreements, there is no evidence that this is the case. However, in light of the difficulty of measuring competitive conditions, and in light of the studies mentioned above that do claim to find a connection between competition and product quality, further research is warranted. A possible reconciliation is that competition enhances salient aspects of product quality but has weaker effects on less salient aspects, such as standard terms.⁹

In terms of practical implications, the results, taken at face value, may help policymakers decide whether courts should de-emphasize market structure and market share as factors when determining whether a given term is "procedurally unconscionable" and hence unenforceable. Also, this analysis of software licenses may assist ongoing debates about the type of rules that should govern online transactions involving software, especially the rules addressing procedural unconscionability.

The article proceeds as follows. Section II describes the hypotheses and prior empirical studies addressing the relationship between product quality and competitive conditions. Section III introduces the sample of EULAs and the methodology used to estimate contract bias and competitive conditions. Section IV examines the empirical relationship between license terms and competitive conditions. Section V concludes.

⁹See Korobkin, supra note 6.

II. Hypotheses and Prior Evidence

A. Do Standard Terms Depend on Market Structure? Perspectives

In a famous article, Kessler posited that sellers with market power exploited consumers by imposing harsh terms in a take-it-or-leave-it fashion. He argued that "standard form contracts are typically used by enterprises with strong bargaining power. The weaker party, in need of goods and services, is frequently not in a position to shop around for better terms, either because the author of the standard form contract has a monopoly (natural or artificial) or because all competitors used the same clauses."¹⁰ Kessler feared that in the absence of competition, consumers may be stuck with both high prices and poor standard terms.

Courts have also frequently articulated, and acted on, a belief that market power shapes standard terms. In *Henningsen v. Bloomsfield Motors*,¹¹ for example, the New Jersey Supreme Court, in striking down Chrysler's restrictive warranty, emphasized the fact that only three manufacturers, including Chrysler, controlled over 90 percent of the passenger car market. Echoing Kessler, the court wrote that "the gross inequality of bargaining position occupied by the consumer is apparent. There is no competition among carmakers in the area of the express warranty. Where can the car buyer go to negotiate for better protection? Such control and limitation of his remedies are inimical to the public welfare and, at the very least, call for great care by the courts to avoid injustice through application of strict common-law principles of freedom of contract."¹² In a study of automobile warranties, Whitford supported this view, concluding that the warranties offered were designed to minimize sellers' costs, not to internalize buyers' interests.¹³

Still today, many courts continue to share the view of the *Henningsen* court when deciding whether a contract or term is procedurally unconscionable.¹⁴ Most notably, in holding a preemployment arbitration clause

12Id. at 391.

¹⁴See, e.g., note 3.

¹⁰See supra note 1, at 632.

¹¹32 N. J. 358 (1960).

¹³William C. Whitford, Law and the Consumer Transaction: A Case Study of the Automobile Warranty, Wis. L. Rev. 1006, 1062 (1968).

procedurally unconscionable, the California Supreme Court stated that "the economic pressure exerted by employers on all but the most sought-after employees may be particularly acute, for the arbitration agreement stands between the employee and necessary employment, and few employees are in a position to refuse a job because of an arbitration requirement."¹⁵ Similarly, courts still consider whether buyers have market alternatives in deciding whether to find a term procedurally unconscionable. In Bradberry v. T-Mobile USA, Inc.,¹⁶ the defendant sought to argue that a class action waiver provision in a standard form cell phone contract was not procedurally unconscionable because the plaintiffs had alternative market choices. The court did not reject this argument, but noted that "neither party provide[d] evidence regarding the availability of alternative sources of cellular phone service without the allegedly unconscionable terms." Likewise, courts have been generally less inclined to find procedural unconscionability when the complaining party had reasonable market alternatives without the offending contract clause.17

Kornhauser developed the notion in *Henningsen* regarding tacit collusion among car manufacturers, arguing that "where market concentration exists one will probably observe . . . shoddy or less durable goods, or oppressive contract terms assigning risks to buyers that might be borne by sellers when there is less market concentration."¹⁸ Kornhauser's suggestion is that sellers in concentrated markets may tacitly agree not to compete on certain dimensions, such as warranty coverage, to facilitate price coordination and thus monopoly profits.¹⁹

¹⁵Armendariz v. Foundation Health Psychcare Servs., 24 Cal. 4th 83 (Cal. 2000). The court also found grounds for substantive unconscionability and refused to enforce the arbitration clause.

¹⁶No. C 06-6567 CW, 2007 WL 1241936 (N.D. Cal. Apr. 27, 2007).

¹⁷See, e.g., Dean Witter Reynolds v. Superior Court, 211 Cal. App. 3d 758 (Cal. Ct. App. 1989). In that case, the court stated that "[w]e do not hold or suggest . . . that *any* showing of competition in the marketplace as to the desired goods and services defeats, as a matter of law, *any* claim of unconscionability. Rather we hold that the 'oppression' factor of the procedural element of unconscionability may be defeated, if the complaining party has a meaningful choice of reasonably available alternative sources of supply from which to obtain the desired goods and services free of the terms claimed to be unconscionable."

¹⁸Lewis Kornhauser, Unconscionability in Standard Forms, 64 Cal. L. Rev. 1151, 1169 (1976).

¹⁹Kornhauser's scenario most likely explains the behavior of the automakers in *Henningsen*. I thank Robert Scott for this point.

Other scholars disagree with the view that standard terms depend on competitive conditions. Some argue that standard terms may be efficient even under monopoly. They point out that a product's standard terms are just one of many attributes of a product, simply another dimension of product quality.²⁰ For instance, Spence shows that a profit-maximizing monopolist will offer whatever quality is preferred by the marginal consumer (the consumer who is just willing to pay the going price), since that level maximizes his or her willingness to pay.²¹ Thus, as long as the preferences of the marginal consumer are the same as those of the average consumer, even a monopolist will offer optimal terms, albeit at a supra-competitive price.

This theoretical conclusion may hold even in the more realistic case in which a majority of consumers do not read standard terms. Schwartz and Wilde argue that nonreading buyers benefit from an "informed minority" of buyers whose willingness to pay for the product is sufficiently sensitive to the quality of the standard terms.²² If all buyers have the same taste for quality, a monopolist that cannot discriminate between reading and nonreading buyers may then offer the terms preferred by all buyers.²³

Some scholars agree that while standard terms do not depend critically on market structure, the terms offered are likely to be biased toward the seller. Goldberg points out that if a market is competitive with respect to price, it does not follow that it will be competitive with respect to terms because shopping for terms—which involves reading lengthy, hard-tounderstand contracts—is costlier than shopping for price.²⁴ Goldberg notes that "unless the firm intentionally makes the particular term an important

²¹See Spence, supra note 5.

²⁴Goldberg, supra note 6. Schwartz and Wilde, supra note 5, make a similar argument.

²⁰See ProCD v. Zeidenberg, 86 F.3d 1447 (7th Cir. 1997). In refusing to strike down the standard terms that were shrinkwrapped in a software package, Judge Easterbrook reasoned that "[t]erms of use are no less a part of 'the product' than are the size of the database and the speed with which the software compiles listings." Id. at 1453.

²²See Schwartz and Wilde, supra note 5.

²³On the other hand, if some characteristic of the good—e.g., warranty terms—does facilitate price discrimination, quality is likely to be affected. See Spence, supra note 5, for a proof that a price-regulated monopolist will provide lower-quality goods. See Richard Schmalensee, Market Structure, Durability, and Product Quality: A Selective Survey, 17:2 Econ. Inquiry (1979) for a summary of scenarios under which a monopolist would provide lower product quality than that in a competitive industry with similar cost conditions.

selling point . . . few, if any, customers will perceive the existence of variations in terms."²⁵ When buyers only shop for price and not terms, firms will lower their contract quality to reduce price and compete for buyers. In equilibrium, prices will be low and the terms harsh. Goldberg and others, such as Cruz and Hinck, suggest that a few aggressive term shoppers might not suffice to correct this market failure.²⁶

Katz develops a related argument.²⁷ He argues that, under certain conditions, not reading standard terms is a dominant strategy for the small minority of buyers who place a high value on the quality of standard terms. The intuition is that sellers will offer quality no higher than necessary for these buyers to accept their offer. Anticipating this, such buyers will no longer find reading worthwhile and thus drop out of the group of readers. But this leads sellers to offer the lowest quality required to attract the readers with the next-most quality-sensitive preferences, who decline to read, and so on. In equilibrium, nobody reads and terms are low quality.

Closely related behavioral rationales have been offered to explain consumers' failure to read. Korobkin, for example, suggests that boundedly rational consumers will focus only on the salient features of a product, such as price, quantity, and, perhaps, warranty terms.²⁸ He concludes that competition will lead salient terms to be optimal, but that it is unlikely to keep nonsalient terms from being biased toward the seller.

Finally, existing law could constrain the relationship between competitive conditions and standard terms. As mentioned earlier, some courts use market structure and market share as factors in determining whether a given term is procedurally unconscionable and hence unenforceable. Therefore, sellers in concentrated markets or with high market share might be afraid to offer worse terms for fear of having those terms deemed unenforceable.

²⁵Goldberg, supra note 6, at 485.

²⁶R. Ted Cruz & Jeffrey J. Hinck, Not My Brother's Keeper: The Inability of an Informed Minority to Correct for Imperfect Information, 47 Hastings L.J. 635, 675 (1995).

²⁷Katz, supra note 6.

²⁸Korobkin, supra note 6. The view that buyers may focus on a subset of terms was discussed in Todd Rakoff, Contracts of Adhesion: An Essay in Reconstruction, 96 Harv. L. Rev. 1173 (1982).

B. Prior Empirical Studies

As is clear from the above discussion, the relationship between standard terms and competitive conditions has been studied extensively in theory. In terms of empirical work, only a handful of studies have studied the effects of competition on product quality, and only a fraction of these have examined the quality dimension of standard form terms. Studies finding a link between market concentration and product quality include Mazzeo, who finds that flight delays are significantly greater, both in frequency and in magnitude, on routes where only one airline provides direct service.²⁹ He also finds that increases in competition are associated with improved on-time performance. Foreman and Shea also examine the airline industry and find similar results.³⁰ Hoxby studies school competition and finds evidence that metropolitan areas with more school districts have higher-quality schools, as measured by indexes of student achievement.³¹

Only a few, now dated studies have directly addressed the relationship between market concentration and the quality of standard terms. Bogert and Fink examine warranties of small samples of various goods, and Priest studies home appliance warranties.³² Bogert and Fink provide anecdotal descriptions of warranty terms and suggest that trade associations standardize warranty practices to achieve collusion (of the sort later envisioned by Kornhauser), but present no systematic analysis. In the analysis closest in spirit to my own, Priest examines the warranties of 62 different types of household appliances, such as refrigerators and washing machines, and collects market share and industry concentration data. He finds that firms with large market share within a particular industry do not offer more restrictive terms than smaller firms within that same industry, and he finds no relationship between the level of industry concentration and warranty coverage.

²⁹See Mazzeo, supra note 7.

³⁰See Foreman & Shea, supra note 7.

³¹See Hoxby, supra note 7.

³²George G. Bogert & E.E. Fink, Business Practice Regarding Warranties in the Sale of Goods, 25 Ill. L. Rev. 400 (1930); Priest, A Theory of the Consumer Product Warranty, supra note 5. See also W. Whitford, Law and the Consumer Transaction, supra note 13; Jennifer L. Gerner & W. Keith Bryant, Appliance Warranties as a Market Signal? 15 J. Consumer Aff. 75 (1981).

III. DATA AND METHODOLOGY

A. A Sample of EULAs

The sample includes 647 EULAs from 598 distinct software companies. There is one example EULA, or at most two, from virtually every well-known software publisher and from hundreds of smaller ones. The sample is introduced elsewhere.³³ I briefly recount the sample selection process here.

One portion of the sample, comprising 515 EULAs from 468 companies, was derived from the Software Industry Directory 2005, a comprehensive list of 7,700 software development and publishing companies. For each company in the Directory, I manually determine whether the company sold its software online through its corporate website. (Virtually all mass-market software publishers sell their product online. Selecting only companies that sell online from the Directory should thus be seen mainly as a way of weeding out thousands of custom software publishers who do not offer nonnegotiable standard terms and resellers who do not actually publish any software.) For each company in the remaining sample, I choose one representative product that could be purchased online. I select the company's flagship software package, when it is apparent; otherwise, I choose a relatively highly marketed product at random. To test whether companies impose poorer standard terms on unsophisticated buyers, I also record whether the product appears to be targeted to consumers or business users.³⁴ A few dozen companies offer "business" and "consumer" versions of the same product, and for these companies, I select both product versions.

The second set of EULAs, comprising 132 EULAs from 130 additional companies, come from products of software companies that sell products through Amazon.com (one of the largest software retailers) and that are not already represented in the first set of products—in other words, the company sells software through Amazon.com, but not necessarily through its own corporate website. (As explained in Section III.C, data from Amazon.com are used to estimate market share and market concentration.) For these

³³Supra note 8.

³⁴For example, Cyber Sentinel 3.0 Home Edition, designed to prevent children from accessing adult sites from a home computer, is categorized as "consumer" software, while Client Management Services v1.30 is categorized as "business" software. For a detailed description of the product selection and coding process, see Marotta-Wurgler, supra note 8, at 681–83.

companies, I selected products with relatively high Amazon.com "sales ranks" relative to the sales ranks of the company's other products sold on Amazon.com.

I collect the product's price and several other product-level characteristics. With a few exceptions, most licenses in the sample are of unlimited duration and single-user. Given that multi-user licenses would tend to have a higher price, I record whether the license is single or multi-user. Another feature is whether the license is "developer" or "standard." Developer licenses tend to be less restrictive because they allow the buyer to use the software to create and distribute derivative products. I record whether a trial version of the software is offered. I classify each product into one of 146 product categories, or what I call "markets," ranging from anti-virus to voice-recognition software. I borrow these categories from Amazon.com, which uses them to organize the tens of thousands of software products that it sells.³⁵

In terms of company-level characteristics, I gather revenues; whether a company is publicly traded or private; and the year of incorporation to estimate a company's age. I cap the "age" of a company at 25 years, since any company activity prior to the 1980s was unlikely to focus on prepackaged software. These data items were gathered from the *Directory* data set or other sources, such as *Hoover's Online*, or, in some cases, from correspondence with the company.

I briefly mention the summary statistics for the company and product characteristics, as they are reported in Marotta-Wurgler (2007). Average revenue is \$499 million. Median revenue, however, is only \$2.2 million, indicating that the average is driven by very large companies. The average age is 15 years (measured as of 2005); the median age is 14 years. Publicly traded companies make up 16 percent of the sample. As to product characteristics, almost half the products in the sample, 45 percent, are oriented toward consumers (or small home businesses) rather than larger businesses. The average price of consumer-oriented products is \$143 and the median price is \$60, whereas the average price of business-oriented products is \$1,263 and the median price is \$499. About 70 percent of the companies offer a trial version of their software. Lastly, the EULAs in the sample span 114 of the 146 software markets listed by Amazon.com.

 $^{^{35}\!\}text{See}$ Marotta-Wurgler, supra note 8, at 684–88 for a breakdown of sample licenses by Amazon.com classification.

B. Measuring EULA Bias

To measure the bias of a given EULA, I use the "EULA bias index" methodology from Marotta-Wurgler (2007). This simple index tracks 23 common standard contract terms that allocate rights and risks between buyers and sellers and are generally regarded as important in the software industry. To identify important terms, I rely on the discussions in trade references, a practitioner-oriented manual, and two leading textbooks on e-commerce and software law.³⁶

A basic question is how to form an objective measure of whether a given term is "biased" toward the buyer or toward the seller. Although software is often licensed rather than sold, the legal implications regarding enforcement of the EULA and its terms are the same as those regarding regular standard forms.³⁷ Many courts have held that the sale or license of software should be interpreted as the sale of a good within the meaning of Article 2 of the UCC.³⁸ Consequently, when faced with a dispute over the validity of a EULA or a term contained therein, courts have relied on Article 2 to determine its enforceability.³⁹

Consequently, the methodology of Marotta-Wurgler (2007) defines a term as biased toward the seller if it is more pro-seller than the default rules of the UCC; as biased toward the buyer if it is more pro-buyer than those

³⁶The Software & Information Industry Association, The SPA Guide to Contracts and the Legal Protection of Software, Software Publishers Association (1998) [hereinafter, The Guide]; Marx, Peter & The Software & Information Industry Association, Contracts in the Information Industry IV (The Software & Information Industry Association 2003); Michael Overly & James P. Kalyvas, Software Agreements Line by Line (Aspatore, Inc. 2004); Ronald J. Mann & Jane K. Winn, Electronic Commerce (Aspen Publishers 2002); Mark A. Lemley, Peter S. Menell, Robert P. Merges & Pamela Samuelson, Software and Internet Law (Aspen Law & Business 2003).

³⁷Licenses constitute private agreements between licensors and licensees and are therefore governed by contract law. For a detailed discussion, see Marotta-Wurgler, supra note 8, at 690.

 ³⁸See, e.g., Advent Sys. Ltd. v. Unisys Corp., 925 F.2d 670, 676 (3d Cir. 1991); Step-Saver Data Sys.
 v. Wyse, 939 F.2d 91 (3d Cir. 1991); Downriver Internists v. Harris Corp., 929 F.2d 1147, 1150 (6th Cir. 1991).

³⁹As explained in further detail in Marotta-Wurgler, supra note 8, at 690 n.14, because Article 2 was originally designed to govern transactions involving physical goods (and not information goods), it arguably does not offer the best set of default rules for transactions involving software. To this date, due to a lack of more appropriate applicable rules, courts rely on Article 2 to enforce and interpret EULAs. I thus use Article 2 as the relevant benchmark to measure EULA bias.

default rules; and as neutral if the contract is silent on that term or matches the default. Empirically, this is captured by assigning a negative one-point score to each term that is more pro-seller than the default rules of the UCC; a positive one-point score if the term is more pro-buyer relative to those rules; and a zero score if the contract is silent in regard to such term or if the specified term matches the default. Though rather crude, this methodology allows for an objective and meaningful measure of "bias" of a given term, the default rules of Article 2, in a way that is comparable across contracts. The scores are then summed across the 23 terms to construct an overall measure of the "net buyer friendliness" for each EULA.

Table 1 lists the key terms and details how each is scored. The terms fall into seven categories. The first category, ACCEPTANCE OF LICENSE, includes a term that informs the buyer of his or her options in case the buyer decides to decline the EULA. The second category, SCOPE OF LICENSE, contains four terms that restrict the buyer's posttransfer use of the software. The third, TRANSFER OF LICENSE, includes two terms that limit the buyer's ability to sell or transfer the software. The fourth category, WARRANTIES AND WARRANTY DISCLAIMERS, includes six terms pertaining to warranty protection and disclaimers of implied warranties provided by the UCC. The fifth category, LIMITATIONS OF LIABILITIES, includes six terms allocating risks of loss, specifying the extent of the seller's obligations for different types of buyer loss arising out of use of the software, and buyers' available remedies, if any. The sixth category, MAINTENANCE AND SUPPORT, takes into account whether the base price of the software includes these services.⁴⁰ The last category, CONFLICT RESOLUTION, includes three terms that restrict a buyer's choices regarding his or her decision seek legal redress.⁴¹

As constructed, the maximum possible overall bias score in the overall bias index is 6, corresponding to a very buyer-friendly EULA relative to the UCC default rules. The minimum achievable score is -17, signifying a contract that limits all of the seller's obligations and greatly restricts buyers' use of the software. Note that the overall index score for each EULA should not be interpreted as measuring whether the contract is biased for or against the

⁴⁰As with terms regarding transfer or restrictions of scope, note that for common classes of EULA terms such as "Maintenance and Support" UCC Article 2 provides no appropriate default rules.

⁴¹For this set of terms, I rely on UCC Article 1, Section 1-105, incorporated by reference in Article 2.

Table 1: EULA Terms and Bias—Methodology

	Score
Acceptance of License	
Does license alert consumer that product can be returned if he or she declines terms?	1 = yes 0 = no
Scope of License	
Does definition of "licensed software" include regular updates such as enhancements, versions, releases, etc.?	1 = yes 0 = no mention
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)
Can licensee alter/modify the program?	0 = yes or no mention
Can licensee create derivative works?	 0 = largely unrestricted or no mention -1 = strict prohibition, derivative works owned by licensor, or need permission of licensor
Transfer of License	
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)
Can licensee transfer the software to an end user who accepts the license terms without licensor's prior permission?	0 = yes or no mention -1 = no
Warranties and Disclaimers of Warranties	
Are there express warranties?	1 = yes
	0 = no
Is there a limited warranty stating that software is free from defects in materials and workmanship or that the software will work according manual specifications in force for a limited period?	l = yes 0 = no
Is there a limited warranty stating that the media of software distribution and documentation are free from defects in force for a limited period?	1 = yes $0 = no$
Is the disclaimer in caps, bold, or otherwise conspicuously presented? Disclaims IWM and IWFPP or contains "AS IS" language?	0 = yes or no disclaimers appear -1 = no 0 = no -1 = yes

Table 1:Continued

	Score
Disclaims warranty that software will not	0 = no
infringe on third parties' intellectual property rights?	-1 = yes
Limitations on Liability	
Who bears the risk of loss?	0 = licensor, for losses caused by factors under licensor's control, or no mention -1 = licensee
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.)
Disclaims consequential, incidental, special,	0 = no or no mention
or foreseeable damages?	-1 = yes
Are damages disclaimed under all theories of	0 = no or no mention
liability (contract, tort, strict liability)?	-1 = yes
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
Is there an indemnification clause?	0 = no, no mention, or two-way
	1 = indemnification
	-1 = Indemnification by licensee
Maintenance and Support	
Does base price include M&S for 31 days or more?	1 = yes 0 = no or no mention
Conflict Resolution	
Forum specified?	0 = court, choice of licensee, or no mention
1	-1 = specific court or mandatory arbitration
Law specified?	0 = same as forum or no mention
	-1 = yes and different from forum
Who pays licensor's attorney fees?	0 = paid by losing party or no mention -1 = paid by licensee

NOTE: The table describes the terms tabulated for the EULAs in the sample and how each term is scored for purposes of measuring the overall buyer (licensee) versus seller (licensor) bias of the contract. Negative scores capture pro-seller terms and positive scores capture pro-buyer terms. Zero scores capture neutral terms or (in case the term is not discussed in the particular contract) terms that would correspond to the default rule.

buyer in an absolute sense, but only as a measure of bias relative to the relevant default rules. It would require numerous assumptions about sellers' costs and consumers' preferences in order to construct an "absolute" measure of bias.

Panel A in Table 2 shows that the average overall bias index score in the sample is -4.85, meaning that, on average, contracts contain a net of nearly five terms that are more pro-seller than the default rules. The minimum overall score in the sample is -13 and the maximum is 2. The scores are also normally distributed.⁴² Thus, there is a very wide range in how buyer-friendly software license agreements are, and we are concerned with whether some of this variation may be explained by variation in competitive conditions.

C. Measuring Competitive Conditions

Next, I add data on software markets' competitive conditions. Standard measures of competitive conditions include market share, at the company level, and concentration ratios and the Herfindahl-Hirschman index (HHI), at the market level. Concentration ratios simply add up the total market share of the largest N firms in a given market. The HHI, a measure of concentration that is commonly used by the Justice Department and the Federal Trade Commission to evaluate horizontal mergers, is obtained by adding the squares of the individual market shares of the firms that compete in a given market. Unlike concentration ratios, HHI accounts for disparities in firm size in a given market. For example, a market in which one firm has 80 percent market share would have the same four-firm concentration ratio as a market in which the largest four firms each have 20 percent market share, but the former market would have a much higher HHI.

All the standard measures are based on company-level market share data. Since market share data are not publicly reported by the companies in my sample in any consistent format, the first challenge is to estimate these data. I use two approaches. The first makes use of a recently developed methodology that is based on the "sales ranks" of a company's products on Amazon.com. Amazon.com is the largest online marketplace in general and the largest seller of online software, listing nearly 20,000 products from 500 software companies. Although Amazon.com does not make available the precise sales of each product, it does provide a "sales rank," whereby products with higher rates of sales achieve sales ranks closer to 1, while lower rates of sales are closer to rank 20,000.

⁴²For a detailed description of the characteristics of the Overall Bias Index, see Marotta-Wurgler, supra note 8, at 695–702.

Panel C. Market Competition

Moderately concentrated

Unconcentrated

Concentrated

HHI Other

HHI

	N Obs	Mean (SD)	Minimum	Median	Maximum
Panel A. EULA Bias Index					
Overall bias index	647	-4.85	-13	-5	2
		(2.81)			
Acceptance of license subindex	647	0.49	0	0	1
-		(0.50)			
Scope of license subindex	647	-1.05	-3	-1	1
		(0.98)			
Transfer of license subindex	647	-1.40	-2	-1	0
		(0.61)			
Warranties and disc. of subindex	647	-0.84	-3	-1	2
		(1.00)			
Limitations on liability subindex	647	-2.40	-6	-2	0
		(1.24)			
Maintenance and support subindex	647	0.68	0	1	1
		(0.46)			
Conflict resolution subindex	647	-0.33	2	0	0
		(0.50)			
Panel B. Company Market Share					
MS	189	0.12	0.00	0.04	1
		(0.19)			

647

647

647

647

70

0.34

(0.22)

0.05

(0.22)

0.21

(0.41)

0.74

(0.44)

0.40

(0.30)

0.07

0

0

0

0.05

0.28

0

0

1

0.36

1

1

1

1

0.87

Table 2: Summary Statistics for EULA Bias and Competitive Conditions

NOTE: Means, standard deviations, maxima, and minima for each of the seven subindexes that comprise the overall bias index described in Table 2. Negative scores capture pro-seller terms and positive scores capture pro-buyer terms. Estimates of competitive conditions across different software markets. For 189 EULAs in the sample, the product is sold on Amazon.com. Market share is an estimate of the company's share of all Amazon.com sales in that Amazon.com market. The estimate is based on Amazon.com sales ranks as described in the text. HHI is Herfindahl-Hirschman Index. For each Amazon.com market, it is estimated as the sum of the squared market shares of all companies that sell through Amazon.com. Unconcentrated is a dummy indicating that HHI is between 0.10 and 0.18. Concentrated is a dummy indicating that HHI is based on the republished market share estimates, collected from various sources as described in the text.

A number of recent papers have suggested how Amazon.com product sales ranks can be used to estimate product sales.⁴³ This is possible because the relationship obeys a power law, meaning that the relationship between observable rank and the unobservable quantity sold for product p is closely approximated by:

$$Sales_{p} = a * Rank_{p}^{b}.$$
 (1)

The exponent b is negative, so a lower sales rank (closer to 1) is associated with higher sales. The constant term a accounts for the fact that the variable *Sales* is a rate. Thus, a is proportional to the length of time over which *Sales* is measured. Given this relationship, and given the Amazon.com sales rank data, a company's market share can be estimated with knowledge of the exponent b, since a drops out of the calculation.

Here is a simple example. Suppose that a given company c has two products in a given software market m, for example, anti-virus software, and those products' sales ranks are 12 and 427. Suppose that other anti-virus products sold by other competitors are ranked 4, 50, and 10,000. Then the company's market share in the anti-virus market can be estimated as:

$$MS_{cm} = (a12^{b} + a427^{b})/(a4^{b} + a12^{b} + a50^{b} + a427^{b} + a10,000^{b}),$$

which simplifies to:

$$MS_{cm} = (12^{b} + 427^{b}) / (4^{b} + 12^{b} + 50^{b} + 427^{b} + 10,000^{b}).$$

The same approach can be used regardless of the number of competitors or the number of products per competitor.

To finalize this calculation, we need *b*. Various approaches have been taken to estimate *b*. Chevalier and Goolsbee use a simple experiment in which they obtain from a publisher information about a particular book's weekly sales. They then purchase several copies of that book on Amazon.com over a 10-minute period and track the change in the sales ranking. This led to an estimate of *b* for books of -0.855. Brynjolfsson, Hu, and Smith estimate

⁴³See Judith Chevalier & Austan Goolsbee, Measuring Prices and Price Competition Online: Amazon.com and BarnesandNoble.com, 1 Quant. Mktg. & Econ. 203 (2003); Erik Brynjolfsson, Yu Hu & Michael D. Smith, Consumer Surplus in the Digital Economy, 49 Mgmt. Sci. 11 (2003).

b by mapping weekly sales data for 321 books obtained from a publisher to the Amazon.com sales ranking of each book. They estimate *b* as -0.871 for books. They also reproduce the Chevalier and Goolsbee experiment and obtain an estimate of -0.916. Thus, for books, estimates of *b* are stable. However, since there is no theoretical reason to expect the *b* for books to be the same as the *b* for software, which is ranked separately, I use the estimate of *b* from Ghose and Sundarajan.⁴⁴ After carefully tracking Amazon.com sales rank fluctuations for hundreds of software products over a two-week period, they estimate *b* for Amazon.com software as -0.828. I use this estimate.

I gather Amazon.com sales rank data for all the significant sellers in all the 114 Amazon.com markets represented in my sample.⁴⁵ I construct market share estimates for all the top sellers in each market and then construct concentration ratios and HHI for each market. In addition, 189 of the EULAs in my sample belong to companies that sell that product, or products in the same software market, through Amazon.com. Hence, for these EULAs, I can estimate the market shares for the relevant company and the relevant market, providing a complementary, firm-level notion of competitive position.

The second source of competitive conditions data is provided by the direct market share estimates for the major players in several (Amazon.comdefined) markets in recent issues of the *Market Share Reporter*. This is an annual compilation of market share statistics that are reported in business journals, newspapers, and brokerage house reports. I collected some additional data from the *U.S. Business Reporter*, an online subscription service that also summarizes and republishes some market share data. From these sources, I construct HHI Other, that is, a market-level HHI statistic based on data other than the Amazon.com sales ranks. The overlap between these market share estimates and the company-market combinations in my EULA sample was not large enough to construct an alternative measure of market share, however.

⁴⁴Anindya Ghose & Arun Sundarajan, Evaluating Pricing Strategy Using eCommerce Data: Evidence and Estimation Challenges, 21 Stat. Sci. 121 (2006).

⁴⁵Because some markets encompass hundreds of software products, and because lower-ranked products have a rapidly diminishing impact on market share estimates, I only record product sales ranks that are within a factor of 100 of the product with the highest sales ranking in that market.

D. Competitive Conditions Summary Statistics

The competition data are summarized in the bottom panels of Table 2. Panel B shows that the mean market share for the companies whose products I collected EULAs for, and for which I could obtain a market share estimate, is 12 percent. The median is 4 percent and the range is from less than 1 percent to 100 percent. Panel C shows the market-level competition data. As mentioned above, HHI is the sum of squared estimated market shares for all companies who sell in that Amazon.com market. This variable ranges from 0.07 for some highly unconcentrated markets to 1.00 for a few markets with dominant sellers. Again, there is a wide spread, with a mean HHI of 0.34, a median of 0.28, and a standard deviation of 0.22.

To put these figures into perspective, FTC merger guidelines suggest that an "unconcentrated" industry is one in which HHI is less than 0.10.⁴⁶ Markets with an HHI between 0.10 and 0.18 are defined as "moderately concentrated," while markets with an HHI above 0.18 are deemed "concentrated." Using these definitions, I construct dummy variables for each category based on the Amazon.com HHI estimates. The table shows that about 5 percent of the observations in the sample fall into the unconcentrated category, 21 percent are moderately concentrated, and 74 percent are concentrated. Fortunately, the sample is sufficiently large that even 5 percent implies a meaningful number of observations in the unconcentrated category. Concentration ratios give similar impressions and are omitted.

The HHI statistics computed from other sources (non-Amazon.com) have a similar mean and range to those computed from Amazon.com data. HHI Other is available for the markets of 70 EULAs in my sample.

IV. EULA BIAS AND COMPETITIVE CONDITIONS

Does competition improve the quality of standard form contracts? Table 3 begins to address this question. The basic regression specification is:

$$Bias_i = a_0 + a_s + b'X_i + c'Z_i + d'Comp_m + \varepsilon_i.$$
(2)

⁴⁶See United States Department of Justice & Federal Trade Commission, Horizontal Merger Guidelines (1997), available at (http://www.usdoj.gov/atr/public/guidelines/hmg.htm).

The dependent variable in Equation (2) is the overall bias index for the *i*th product. The independent variables are vectors X and Z, which, as before, include product and firm characteristics, as well as *Comp*, a measure of competitive conditions such as HHI; the FTC merger guidelines dummies; HHI Other; or market share. The model also includes sector-level fixed effects, and standard errors are clustered at the company level to adjust for the fact that some companies have two EULAs in the sample.⁴⁷

The first three specifications of Table 3 show that higher concentration, in the form of higher HHI, does not lead to more pro-seller terms. The effects of HHI are statistically insignificant and the point estimates are small, indicating that the average effect of going from a perfectly competitive (HHI of 0) to perfectly monopolistic (HHI of 1) market is on the order of a fraction of a term. For consumer products, higher concentration is associated with slightly more *pro-buyer* terms.

The second three models, which include dummies for moderately concentrated and concentrated (according to FTC guidelines), allow us to look for a nonlinear effect of HHI. This methodology, like the linear specification, also fails to reveal any economically meaningful relationship between market concentration and the bias of the average EULA in that market.

The top part of Figure 1 illustrates these results graphically. The bars in the figure illustrate the average bias of EULAs in markets with different concentration levels (unlike in the regressions, the effects of control variables are not included). As suggested by the regressions, EULAs from moderately concentrated and concentrated markets are only slightly more proseller overall than EULAs drawn from unconcentrated markets.⁴⁸

The third set of regressions looks at the relationship between HHI Other and EULA terms. I again find no evidence that concentration leads to worse terms. In fact, when HHI Other is high, terms are significantly more *pro-buyer*. This result is based on relatively few data points and thus should be

⁴⁷As in Marotta-Wurgler, supra note 8, I present results for least-squares regressions solely for simplicity of reporting and interpretation. I have verified that logit and (in cases of polychoto-mous dependent variables such as Equation (2)) ordered logit models deliver identical inferences in the results to follow.

⁴⁸In light of the lack of significant relationship between concentration and EULA terms, it is worth noting that the sample sizes generally offer high statistical power to perceive even small (e.g., one-point) differences between samples. See Marotta-Wurgler, supra note 8, at 708 n.50, for an example power calculation.

	011016601			odutoo	Debende	nt Variable	: Overall B	ias Index				
	All	Consumer	Business	HH	Consumer	Business	All	Consumer	Business	HH	Consumer	Business
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(01)	(11)	(12)
IHH	-0.19	0.88 (0.89)	-0.64									
Mod. conc.	(000)	(10:0)	(00.0)	-0.84	-0.92	-0.62						
Conc.				(00.0) -0.65	(0.72) - 0.66	(1.02) - 0.42						
				(0.56)	(0.68)	(66.0)) L			
HHI Other							2.86**	3.50** (1.54)	2.70 (1.63)			
MS										0.34	-1.13	3.81
Co. and product	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	(1.87) Yes	(4.60) Yes	(5.03) Yes
controls												
Fixed effects M	Sector 647	Sector 980	Sector 358	Sector 647	Sector 980	Sector 358	Sector 70	Sector 36	Sector 3.4	Market 189	Market	Market 73
$\operatorname{Adj.} R^2$	0.13	0.14	0.18	0.14	0.14	0.17	0.24	0.17	0.46	0.33	0.26	0.18
Norre: Regression indicate pro-seller oriented products Amazon.com mar centrated), and H shares (MS). Proc multi-user and de multi-user and de matural log of the "Business & Office parentheses. Stanc percent, and 10 p	results. T results. T s only (B) ket share HI based huct contr huct contr veloper li arge of th ard error hard error ercent lev	The depend mples inclu usiness). Cc estimates (I on other pi on other pi on other pi on other pi on other pi on other pi all near the company, szor.com si szor.com si szor.co	ent variabl He all EUI ompetitive HHI), dum Iblished so nodels incl default is ; and a dum oftware ma ed for clus 'ely.	e is the o As (All), condition mies for unces. Co ude the l single-use amy for p rkets (e.g tering at	verall bias i EULAs of EULAs of moderately mpetitive cc og of price verse). (ublich trad ublich trad ublich trad the compar	index of the consumer- consumer- consumer- concentra onditions : , a dumm Company (ted compa & Office : y level. **	ne EULA. oriented J l are mead ted and cc ted and cc at the com y indicatii controls in mics. Fixec > Business *, **, and	Higher vall products or sured by H oncentratec pany level a ng a consur a all models a feffets ince Accounting Accounting	ues indicat ly (Consu lerfindahl-J I markets (are measur ner-oriente i include th lude Amaz statistical s	e pro-buy mer), or Hirschman the exclu red using / red produc ne natural con.com so titing"). Sti tignificanc	er bias; low EULAs for n Indexes ded group Amazon.coi :1, and dum 1.log of rew oftware sect andard err andard err e at the $1 + 1$	ier values business- based on is uncon- market imies for enue, the cors (e.g., ors are in ercent, 5

Table 3: Regressions—EULA Bias and Competitive Conditions

Figure 1: EULA bias and competitive conditions.



Overall Bias Index

viewed with caution but, at a minimum, it provides further, somewhat independent, evidence against the hypothesis that market power leads to worse terms.

Finally, the last specifications of Table 3 show that there is no important negative relationship between market share and contract terms, either. That is, within a given market, it is not the case that firms with high market shares offer significantly worse terms. In consumer software, there is a negative but insignificant effect of market share; in business software, there is a positive but insignificant effect. When consumer and business software are combined, the effect is positive but insignificant. The bottom part of Figure 1 illustrates these findings. The figure suggests that firms with 20–50 percent of market share offer slightly worse terms than other firms, but there is no pattern as we increase market share from less than 1 percent all the way to 20 percent. Furthermore, the effect is small even before including the effects of any market, company, or product control variables.⁴⁹

As noted earlier, a built-in assumption of the overall bias index analyzed in Table 3 is that all contract provisions matter equally to buyers. However, buyers may care only about a particular set of terms.⁵⁰ For instance, a home user might not care about whether a software's license agreement forbids that he or she create derivative works, but instead about being able to contact technical support if a problem arises. Russell Korobkin posits that bounded rationality and other behavioral biases lead buyers to focus only on "salient" terms such as price and warranties.⁵¹

Table 4 explores this by repeating the first and tenth specifications from Table 3, but using the seven bias subindexes as the dependent variables in the following linear regression:

$$SubBias_i = a_0 + a_s + b'X_i + c'Z_i + d'COMP_m + \varepsilon_i.$$
(3)

⁴⁹It is important to note, however, that if consumers care about license terms and base their purchase decisions on their content, then pro-buyer terms should lead to increases in sales and market share for some products. Failure to control for this joint causation might bias the results downward, meaning that market share might indeed be associated with more restrictive terms. This should not be a great cause for concern to the extent that consumers do not factor contract terms in their purchasing decisions. (The fact that terms do not appear to be highly priced provides some support for this assumption.)

⁵⁰See, e.g., Rakoff, supra note 28.

⁵¹See Korobkin, supra note 6.

(1) (2) (3) (4) (5) (6) (7) (8) (9) (1)	$ \begin{array}{c c} (4) & (5) \\ (4) & (5) \\ -0.21 \\ 0.76 \\ (0.11 \\ (0.41) \end{array} $	(9)	(2)		T 1aD	lity	mannu and Sı	nance pport	Con Resol	flict ution
	-0.21 -0.21 0.76 (0.64)			(8)	(6)	(01)	(11)	(12)	(13)	(14)
HHI 0.02 0.05 -0.21^{*} 0.18 -0.29 (0.10) (0.20) (0.11) (0.20) (0.25)	0.76	*. (0.18 (0.20)		-0.29 (0.25)		0.08 (0.09)		-0.01 (0.10)	
MS 0.81^{**} 0.76 0.28 -0.75 0 (0.32) (0.64) (0.32) (0.56) $(0$	(+0.0)	0.28 (0.32)		-0.75 (0.56)		0.39 (0.68)		-0.06 (0.29)		-1.08^{***} (0.31)
Jo. and Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Yes Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
product controls										
ijred Sector Market Sector Market Sector Market Sector Mar 	larket Secto	r Market	Sector	Market	Sector	Market	Sector	Market	Sector	Market
effects v 645 190 645 190 645 190 645 190 645 190	10 647	189	647	189	547	89	647	189	647	189
V 04/ 103 04/ 103 04/ 103 04/ 103 04/ 103	170 00	г и	60.	.49	.11	.70	.06	.60	.11	.59

Table 4: Regressions—EULA Subindex Bias and Competitive Conditions

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In Equation (3), *SubBias* is the bias for each of the seven subindexes for the *i*th product. As can be seen from a quick scan of Table 4, HHI is not significantly related to six of the seven subindexes. Firms in more concentrated markets tend to have more restrictive terms pertaining to buyers' ability to transfer the license, although the effect is modest. Market share, where significant, enters with mixed signs. Within markets, firms with higher market shares are more likely to give notice regarding the acceptance of the license and return instructions, but tend to give slightly worse terms on the dimension of conflict resolution.

One possible objection to the lack of significant results in Tables 3 and 4 is that competitive conditions are notoriously difficult to measure. Therefore, it could be the case that my "nonresults" reflect a standard errors-invariables bias toward zero. To explore this possibility, I run regressions to test whether my competition proxies are associated with product price, controlling for other product attributes. If my measures of HHI and MS are indeed valid measures of competition, we would expect them to be associated with price.

In regressions omitted to save space (but available on request), I confirm that the competition measures are indeed significantly related to price. Specifically, the estimates suggest that a market that goes from perfectly competitive to perfectly monopolistic on the HHI measure will see software prices rise by a statistically significant average of 34 percent, control variables being equal. This magnitude seems plausible. The regressions also suggest that the effect of HHI is stronger in consumer products, and the nonlinear specifications suggest that the main effect on price comes as the market goes from unconcentrated (the omitted category) to moderately concentrated. When I use HHI Other as the market concentration measure, the effect is even larger. Finally, when I use market share as the competition measure and include market dummies, I find that firms that have high market share also charge significantly higher prices than those with lower market share, and the effect is again most pronounced in consumer-oriented products. These results support, to the extent possible, the view that the competition measures are valid, and hence the lack of an apparent relationship between the competition measures and standard terms is not driven by an errors-in-variables problem.

In summary, it is difficult to see any important empirical effect of competitive conditions on standard terms, at least in the context of software and given the contract bias measure utilized here. The results are consistent with those theoretical perspectives that predict no relationship between

competitive conditions and standard terms. As these perspectives are themselves quite varied, I leave the task of discriminating among them to future work.⁵² It is important to note, however, that the absence of the relationship between product quality (as measured by contract terms) and competitive conditions is inconsistent with the empirical findings of Hoxby and Mazzeo et al., suggesting the need of further empirical investigation into the limits of the relationship between competitive conditions and aspects of product quality. Still, the results here do cast doubt on a popular view, expressed initially by Kessler and subsequently by many other commentators and courts, that more market power leads to more restrictive boilerplate.

V. Conclusions and Implications

Variations of the argument that standard terms are an instrument of market power recur in the literature on standard terms, with many scholars suggest-

⁵²There is one specific hypothesis that we can address here, namely, that firms with market power do not offer worse terms because they are held in check by courts who may declare such terms procedurally unconscionable. Most states combine both procedural aspects (such as market power) and substantive aspects in their determination of unconscionability. In the State of Washington, however, courts have refused to consider the seller's relative bargaining power in this determination. Instead, these courts focus more on whether the consumer had the opportunity to review and reject the terms. Twenty of the firms in my sample are incorporated and have choice of law in the State of Washington. I find that within this subsample, sellers in more concentrated markets do not offer worse terms than sellers in less concentrated markets. Although the sample size is small, the relationship between HHI and contract bias is positive, albeit statistically insignificant. An alternative possibility is that firms with market power do not offer more restrictive terms because they rely on technological, rather than contractual, restrictions, to limit buyers' use of the software. To control for this possibility, I include only software products that are strictly governed by EULA terms and not controlled by the seller via other technological measures (such as application service provider or on-demand business models).

It has also been suggested to me that a relationship between contract quality and competition may be more likely to exist in those product categories where consumers are likely to be repeat purchasers. This claim can be roughly tested with these data. Software markets in some sectors, such as "Business and Office" or "Web Development," are more likely to sell new versions and upgrades of particular products than those product segments in the "Home and Hobbies" or "Education and Reference" sector. In regressions omitted to save space, I compare the relationship between competitive conditions and term quality in those product segments in sectors where repeat business is likely to those where repeat business is unlikely, controlling for other factors. I find almost no difference in this relationship between the two groups. For consumer products, and where repeat business is likely, I find a statistically significant negative relationship between term quality and competitive conditions when going from unconcentrated to moderately concentrated markets. However, this relationship reverses when I use HHI as the independent variable.

ing that competition is all that ensures that standard terms reflect buyers' preferences. Others dispute this conclusion. However, most of the debate has been theoretical.

This article provides a careful empirical analysis of competitive conditions on standard form contract terms. I show that competitive conditions are essentially uncorrelated with the quality of standard terms, at least in the context of software sold online. More competitive segments of the software industry offer similar standard form terms to highly concentrated segments of the software industry. Similarly, within an industry, firms with larger market share offer similar terms to minor players. These results cast doubt on the notion that competitive conditions play an important role in the setting of standard terms.

A few caveats are in order. First, an assessment of whether EULAs or standard terms in general are efficient (or pro-buyer or pro-seller in an absolute sense) would require making a judgment about the quality of these contracts against an absolute standard. This article does not attempt to do this. What this article does measure is the *relative* one-sidedness of EULAs to measure differences in terms of products in competitive and uncompetitive markets. Second, the results in this article are opposite to a handful of other empirical studies that examine the relationship between other aspects of product or service quality, suggesting a need for further research.

The results offer some practical implications for judges, regulators, and practitioners who need to determine whether a term may be procedurally unconscionable. In particular, by presenting some evidence that sellers with market power *do not* offer unusually biased terms, the results suggest that an important aspect of the standard analysis involved in the determination of procedural unconscionability may be on a shaky foundation, as market power does not appear to suffice to ensure that standard terms are unusually pro-seller.