

# Are “Pay Now, Terms Later” Contracts Worse for Buyers? Evidence from Software License Agreements

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## ABSTRACT

The rise of commerce over the Internet and telephone has led to widespread use of “pay now, terms later,” or rolling, standard-form contracts, in which buyers are not able to read the standard terms until after they have purchased the product. While some scholars and judges argue that rolling contracts do not merit special attention, others, including consumer advocates, are concerned that sellers take advantage of delayed disclosure by hiding especially unfavorable terms. I find no evidence for this view. In a large sample of software license agreements, I find that software publishers that use rolling contracts for their online sales do not offer more one-sided terms than those who make their licenses available prior to purchase. The results suggest that to the extent there are inefficiencies associated with standard-form contracts, they are not made worse by delayed disclosure.

## 1. INTRODUCTION

The rise of commerce over the Internet and telephone has led to an increase in the use of a new type of standard-form contracts, commonly called “pay now, terms later” (PNTL), or rolling, contracts. In such contracts, the buyer orders a good over the phone or the Internet but

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does not have an opportunity to review the standard terms governing warranties, limitations on liability, and numerous other elements of the purchase until later, when the contract arrives bundled together with the good. A typical example is a license that has been shrink-wrapped inside a software package. It cannot be read until after purchase, when the box is opened. Airplane tickets and most goods purchased by phone are other everyday examples.

Rolling contracts are the subject of heated debate. On the one hand, some legal academics and judges believe that rolling contracts facilitate efficient transactions and simply reflect the technological evolution of mass commerce. Most notably, in *ProCD v. Zeidenberg* (86 F.3d 1447 [7th Cir. 1996]) and *Hill v. Gateway 2000* (105 F.3d 1147 [7th Cir. 1997]), Judge Frank Easterbrook endorsed the use of rolling contracts as long as buyers had a right to review and reject the standard terms. He points out that in many circumstances it would be impractical or nearly impossible for sellers to communicate their standard terms to buyers prior to purchase. Gillette (2004) further observes that, as a practical matter, delayed disclosure is unlikely to make any difference to buyers since they rarely read form contracts. Barnett (2002) and Hillman (2002) offer complementary normative arguments to justify treating rolling contracts like any other form contract. And Baird (1999) recommends that in the absence of evidence of systematic advantage taking, contractual innovations associated with new technologies should evolve naturally.

On the other hand, other legal scholars (see, for example, Macaulay 2004; Bern 2004) vehemently disagree with the notion of rolling contracts. On normative grounds, these scholars argue that delayed disclosure runs afoul of the contract-based theory of mutual assent. Together with consumer advocates, these scholars argue that rolling contracts should not be enforceable because of their potential for abuse. In particular, by concealing the terms until after the buyer has received the good, sellers may be inclined to offer less favorable terms. Some have even argued that marketing products to consumers without effectively

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communicating standard terms before payment is unfair and deceptive as well as a violation of various federal and state acts (see, for example, Braucher 2000). Moreover, if standard terms cannot be reviewed until after the product is delivered, comparison shopping becomes costlier, and thus the forces of competition, which might otherwise induce sellers to internalize buyers' interests in the setting of standard terms, will be diminished (Braucher 2000; see also Barnett 1992, p. 866). Commentators (see, for example, Brandt and Wallace 2001; Newitz 2005) have been particularly concerned about transactions that involve the general public as opposed to large business buyers, since the former may be less able to comparison shop effectively.

Neither side of the debate, however, can point to any systematic empirical evidence to support its position. This paper fills the gap by studying the standard terms offered by software companies that sell their products online. Several factors make this a particularly appropriate environment in which to test for bias in hidden contract terms. First, the end-user license agreement (EULA) associated with each software product presents a rich standard-form contract. Second, there is substantial variation in how forthcoming companies are in disclosing their EULAs on their Web sites to potential buyers. Some software publishers show the terms to buyers before purchase, while a large fraction simply does not (that is, they use rolling contracts). Third, software products are homogeneous enough from company to company to allow for meaningful large-sample comparisons of their EULAs. Thus, a simple way to test whether rolling contracts are instruments of advantage taking is to compare the standard terms offered by software companies that do utilize rolling contracts with those that do not.

I conduct my analysis using a hand-collected sample of 515 software EULAs. The sample includes EULAs from virtually every well-known software publisher as well as from hundreds of smaller publishers. The EULAs pertain to products directed at both corporate and general public users across a wide range of software markets. The sample studied here is a subsample of the EULAs analyzed in Marotta-Wurgler (2007). That paper analyzes 647 EULAs to provide a detailed description of the characteristics and function of common EULA terms and documents the prevalence and determinants of such terms.

To determine whether firms that delay disclosure offer more one-sided terms than those that are forthcoming, I use the methodology developed in Marotta-Wurgler (2007) to measure the net buyer friendliness of each EULA using a simple index. The methodology tracks 23

common EULA terms, including terms pertaining to acceptance of the license notices, scope of the license, restrictions on transfer, warranties and disclaimers of warranties, limitations on liability, maintenance and support services, and conflict resolution. I assign a score of  $-1$  for each term that is more pro-seller relative to the default rules of Article 2 of the Uniform Commercial Code (U.C.C.) and a score of  $+1$  for each term that is more pro-buyer relative to the default rules. I give a score of  $0$  if the contract is silent in regards to the specified term or if the specified term matches the default rule. The overall pro-seller or pro-buyer bias of a given EULA is computed as the sum of the values for each of the 23 terms. While crude, this methodology captures the overall bias of the EULA (again, relative to the relevant default rules) in a way that allows for an empirical analysis.

This paper studies the relationship between contract bias and pre-purchase accessibility. I focus on the comparison between rolling and nonrolling contracts, but for the latter group I also construct a measure of the ease or convenience of contract accessibility. My main finding is that companies that utilize rolling contracts do not offer more pro-seller terms than firms that make their EULAs available prepurchase. These results should be reassuring to those comfortable with the logic of the *ProCD* ruling and the increasing presence of rolling contracts. In fact, contrary to the concerns expressed by supporters of presale disclosure, I find that those companies that force consumers to click “I agree” to the terms of a EULA before completing their purchase actually present slightly more pro-seller terms than firms that offer rolling contracts, although this small difference might be economically insignificant. The clear conclusion is that sellers are not being sneaky by hiding one-sided contracts. These results hold for both consumer- and business-oriented software products.

In summary, this paper tests and rejects the notion that PNTL contracts are worse for buyers. At least with respect to software license terms, buyers do not, on average, receive more pro-seller contracts when the terms are disclosed only after purchase. Scholars and consumer advocates, then, should not be particularly concerned about rolling contracts. It is important to note, however, that the tests in this paper cannot answer the broader question of whether all EULAs, or standard-form contracts in general, contain poor-quality terms according to some absolute standard. Rather, the results suggest that, to the extent there are inefficiencies associated with this class of contracts, they are not made worse by delayed disclosure. The results call into question the need for

recent proposals urging mandatory presale disclosure and proposals urging notice that terms will follow in situations in which disclosure is impossible (see Hillman 2006). Instead, the results suggest that the question to address in future research should be whether the terms in standard-form contracts in general are the result of competitive market forces.

The paper proceeds as follows. Section 2 outlines the debate over the desirability of rolling contracts. Section 3 describes the general methodology and the sample of EULAs. Section 4 describes the prepurchase accessibility of software EULAs. Section 5 discusses the pro-seller and pro-buyer bias of EULA terms. Section 6 contains the main analysis, examining the bias in terms of a function of prepurchase accessibility. Section 7 concludes.

## **2. ROLLING CONTRACTS: BACKGROUND, PRIOR RESEARCH, AND HYPOTHESES**

An enormous range of modern transactions are governed by standard-form contracts (see Slawson 1971). In these transactions, the buyer is generally presented with boilerplate in a take-it-or-leave-it fashion with no opportunity to negotiate over the terms contained therein. While the buyer might be able to determine the delivery method and bargain over price, secondary terms such as warranties and remedies for breach are part of nonnegotiable boilerplate.

The use of standardized contracts facilitates mass commerce by drastically reducing drafting and negotiating costs (see Rakoff 1983, p. 1222; Kessler 1943, p. 631). Some of these savings can be passed on to buyers in the form of lower prices. While some commentators are concerned about the potential for seller overreaching in the form of abusive terms, others have countered that, in addition to the legal protections granted by the U.C.C. and state laws, market forces ensure that buyers' interests are taken into account (see American Law Institute 1979, sec. 211; U.C.C. sec. 2-302; Katz 1998).

In traditional standard-form contract exchanges, the buyer is able at least to observe the terms of the contract before deciding whether to purchase the good. Commerce over the phone and Internet, however, has led to the use of rolling, or PNTL, standard forms. In exchanges involving such contracts, the buyer is not able to read the contract until after he or she has paid for the good and received delivery. Rolling contracts have sparked heated debate. While some believe that they are

essential to the development of e-commerce and new exchange mechanisms, others are concerned about their potential for abuse.

### 2.1. *ProCD v. Zeidenberg* and the Defense of Rolling Contracts

The scholarly debate largely originated with the Seventh Circuit's decision in *ProCD v. Zeidenberg* (86 F.3d 1447). Easterbrook, writing for the court, held that a standard-form contract that was shrink-wrapped inside a software box was enforceable under the U.C.C.

The plaintiff, ProCD, created a database using information from various telephone directories that it sold at two different prices. The cheaper version included a clause limiting the use of the database to noncommercial purposes in a license agreement that was shrink-wrapped inside the box. Since the box could only be opened postpurchase, the license constituted a rolling contract. The license also stated that the software could be returned within 30 days of purchase. ProCD sued when defendant Zeidenberg bought the cheap version of the software and used the database commercially, thus ignoring the license. The issue in the case was whether the postpurchase terms formed part of the contract.

In holding for ProCD, Easterbrook first determined that software licenses were ordinary contracts and thus governed by the law of contracts and the U.C.C.<sup>1</sup> He concluded that a valid contract was created when ProCD proposed a contract that the buyer could accept by using the software after having had an opportunity to read the terms of the license, as Zeidenberg had done. In explaining the decision, Easterbrook remarked on the potential efficiency losses of not enforcing software shrink-wrap licenses. Failure to enforce the postpayment terms would subject manufacturers to broad implied warranty terms and consequential damages. Such an arrangement would harm consumers by raising prices. He concluded that "terms of use are no less part of 'the product' than are the size of the database and the speed with which the software compiles listings. Competition among vendors, not judicial revision of a package's contents, is how consumers are protected in a market" (86 F.3d 1453).

In *Hill v. Gateway*, a decision a year later, the Seventh Circuit reaffirmed that the holding in *ProCD* was not limited to software licenses but applied to all contracts in which payment preceded terms as long

1. Courts generally assume that Article 2 of the Uniform Commercial Code (U.C.C.) governs software licenses (see, for example, *Novacore Techs., Inc. v. GST Communications Corp.*, 20 F. Supp. 2d 169, 183 [D. Mass. 1998]; *VMark Software, Inc. v. EMC Corp.*, 37 Mass. App. Ct. 610, 611 n.1, 642 N.E.2d 587 [1994]; see also Lemley 1995).

as buyers were given an opportunity to review the standard terms and to return the product if they found them disagreeable (105 F.3d 1147 [7th Cir. 1997]). In recent years, a number of courts have followed the *ProCD* logic and enforced rolling contracts (see, for example, *I. Lan Systems, Inc. v. Netscout Serv. Level Corp.*, 183 F. Supp. 2d 328, 338 [D. Mass 2002]; *Mortenson Co. v. Timberline Software Corp.*, 998 P.2d 305, 307 [Wash. 2000]; *Walton v. Experian*, No. 02C5067, 2003 WL 22110788 [N.D. Ill. September 9, 2003]).

The *ProCD* decision generated great activity on the academic front. A group of scholars agreed with Easterbrook's decisions by noting that since the majority of buyers rarely read the terms in form contracts, it does not matter whether boilerplate is made available before or after purchase (see Gillette 2004; Katz 1990, p. 533; Eisenberg 1985; Hillman 2002, 2005; Barnett 2002). In their view, failure to read contract terms, whether traditional or rolling, should not necessarily result in restrictive terms since sellers in well-functioning markets will compete for the business of the marginal consumer. As long as a minority of informed buyers demand contracts reflecting the preferences of the general buyer population and sellers are unable discriminate between buyer types, sellers will offer the preferred terms in order to obtain the business of the informed types (see Schwartz and Wilde 1979, 1983). Gillette (2004), Baird (1999), and Schwartz (1999) argue that rolling contracts need not interfere with this process since even if sellers do not make the contract available before purchase, concerned buyers are still able to shop for terms. For instance, prior to purchase, concerned buyers can contact the seller and request the standard terms, or, after purchase, they can return the product if they find the terms disagreeable. So as long as the increased cost generated by delayed disclosure does not significantly reduce the number of informed buyers, rolling contracts will not be more one-sided than traditional-form contracts.<sup>2</sup> Given this, any effort to prescribe the terms in standard-form contracts will make buyers worse off because sellers will be unable to compete on the basis of the terms they offer.

These scholars similarly resist mandatory contract disclosure regulations. Schwartz (1999) reasons that in cases in which sellers would find it infeasible to include terms prepurchase, a rule requiring sellers to notify buyers before purchase that additional terms will follow is

2. Gillette (2004) also argues that the interests of nonreading buyers might be internalized by representatives such as the market, courts, and regulators. Under certain assumptions, assent by representation, he argues, can satisfy the same objectives as personal assent.

problematic. Given that buyers already know that there will be additional terms, such a rule just provides an opportunity for buyers to sue over whether the notice is adequate, thus creating an opportunity for wasteful litigation.

A rule requiring presale disclosure by Internet retailers might seem less problematic, as sellers can easily post their standard terms on their Web sites. Hillman (2006), however, argues that such a rule may backfire. If buyers do not read standard terms at all, mandatory disclosure will not increase readership and term shopping. It might, however, allow suspect terms to be more easily enforced because the contracting process appears more legitimate.

## 2.2. Concerns about Rolling Contracts

The decisions in *ProCD* and *Hill* have left others deeply worried, and a handful of courts still refuse to enforce standard terms not explicitly agreed to (see, for example, *Step-Saver Data Systems, Inc. v. Wyse Technology*, 939 F.2d 91, 102 [3d Cir. 1991]; *Arizona Retail Sys. Inc. v. Software Link*, 831 F. Supp. 759 [D. Ariz. 1993]; *Klocek v. Gateway*, 104 F. Supp. 2d 1332 [U.S.D.C. Kan. 2000]). By concealing the standard terms until after the buyer has already purchased the good, these courts and some scholars fear sellers might systematically take advantage of buyers and hide unfavorable terms. Braucher (2000) argues that post-payment disclosure of terms may suppress beneficial competition over terms when search costs are nontrivial. For instance, software companies that offer no warranty have incentives not to disclose that fact in advance because disclosure might scare away some customers. Similarly, under the assumptions laid by Schwartz and Wilde (1979, p. 660), if delayed disclosure increases the cost of shopping for terms, fewer buyers will shop, thus weakening the competitive pressures that keep the quality of terms in check. In addition, Goldberg (1974) argues that even if there is an informed minority of buyers, sellers may include restrictive terms in boilerplate if markets are insufficiently competitive. Korobkin (2003, p. 1217; see also Eisenberg 1995; Rakoff 1983) offers behavioral justifications for being wary of rolling contracts. He suggests that consumers tend to focus on the salient or attention-grabbing features of a product, such as price, quantity, and warranty terms. Consequently, even when markets are competitive, sellers will compete only on those salient attributes while providing low-quality nonsalient terms. But not disclosing terms until after purchase is perhaps the ultimate way to render terms less salient, increasing the potential for abuse. (Russo [1977, p.



194] notes that consumers make more accurate decisions when information is displayed in a convenient way.)

### 3. METHODOLOGY AND DATA

#### 3.1. A Test Based on End-User License Agreements of Software Sold over the Internet

Ultimately, whether rolling contracts are more one-sided than regular standard terms is an empirical question. I address this question by looking at software products sold online. In particular, using a large sample of EULAs of software products that are sold over the Internet, I examine whether terms offered after purchase are, or are not, more pro-seller than those available prepurchase.

For several reasons, this is a particularly nice setting in which to test whether rolling contracts are unusually exploitative. First, software companies vary greatly in the way they present their EULAs to potential buyers. Some present their terms prominently on their Web sites prior to purchase. Others use rolling contracts, disclosing terms only after purchase of the software. Still others make their terms available prior to purchase but effectively hide the contract deep in the innards of a complex Web site.

Second, although rolling contracts date back many years, most recent and important cases, as mentioned earlier, stem from transactions involving new technologies such as computer software and hardware (*Carnival Cruise Lines v. Shute*, 499 U.S. 585 [1991]).<sup>3</sup> They are particularly pervasive in e-commerce transactions, which were estimated to be \$136.4 billion for 2007 and are growing in importance each year (U.S. Census Bureau 2008). In fact, software license agreements are at the heart of the current debate about the enforceability of rolling contracts. For example, disagreement among scholars and consumer advocates over the enforcement of software shrink-wrap and click-wrap licenses have stalled recent efforts to create uniform laws to govern transactions of information goods over the Internet, such as the Uniform Computer Information Transactions Act. An analysis of contracts for software sold online thus places us at the core of the debate.

3. *Carnival Cruise Lines* held that a forum selection clause on the back of a ticket that the plaintiffs received postpurchase was an enforceable contract. See also Gillette (2004) for a discussion of how many rolling-contract cases involve new technologies.

Third, the terms of software license agreements for both custom and mass-marketed software have been heavily litigated in the recent past (see Section 2.1 for representative cases; see also *Stenzel v. Dill, Inc.*, 2005 Me. 37 [2005]); *1-A Equip Co. v. Icode, Inc.*, 2003 Mass. App. Div. 30 [Mass. App. Div. 2003]; *Davidson & Assoc. v. Internet Gateway*, 334 F. Supp. 2d 1164, 1178 [D. Mo. 2004]; *Altera Corp. v. Clear Logic, Inc.*, 424 F.3d 1079 [9th Cir. 2005]). As more and more businesses rely on software to perform most key and routine operations, damages from bugs or glitches can be significant and quite frequent. The extent to which a license limits damages, or warrants certain product functions, has important practical effects. Fourth, the product itself, noncustomized or prepackaged software, is homogeneous enough to allow for a meaningful comparison of the EULAs from different companies. Consequently, sellers of many different types of software tend to protect themselves from certain liabilities in similar ways. However, to the extent that different types of software are not directly comparable, my large sample allows me to use within-category variation to test whether rolling EULAs are more biased.

### 3.2. Data

The sample analyzed in this paper is a large subsample of that recently analyzed in Marotta-Wurgler (2007).<sup>4</sup> That paper uses a sample of 647 software license agreements to provide a detailed descriptive account of the content of EULAs. It documents the prevalence and determinants of terms that are common in EULAs. To summarize these provisions in a quantitative way, it introduces the bias index methodology, which (crudely) summarizes the net pro-seller bias of each contract in a single number. This paper exploits the data and methodology introduced in that paper to analyze a substantively different question, whether rolling contracts are more biased against buyers than traditional-form contracts.<sup>5</sup>

The starting point for obtaining the sample of EULAs used here was the *Software Industry Directory 2005* (Webcom Communications 2005), a comprehensive list of 7,700 software development and publishing com-

4. That paper includes 132 additional EULAs from firms that do not necessarily sell their software through their corporate Web site (but rather through Amazon.com), which are excluded from this analysis.

5. The sample and bias index methodology are also used in Marotta-Wurgler (2008), which examines whether sellers in more concentrated markets of the software industry offer more one-sided terms than sellers in more competitive markets in that industry.

panies. All market software of one type or another to U.S. buyers. For each company in the *Directory*, I manually determined if the company sold its software online through its corporate Web site, that is, where a buyer could select a product and click all the way through to payment and checkout.

Limiting the sample to companies that sell their products directly through their corporate Web sites, although they may utilize other distribution channels, enables me to clearly document how firms differ in the way they present EULAs to buyers before purchase. However, since virtually all prepackaged software companies sell their products, at least in part, through their Web sites, this sample selection procedure should be interpreted mainly as a way of weeding out thousands of custom software publishers and resellers who do not actually manufacture the software sold through their Web sites.

For each company in the remaining sample, I chose one representative product that could be purchased online. I selected the company's flagship software package, when it was apparent; otherwise, I chose a product at random. To test whether companies impose poorer standard terms on unsophisticated buyers, I also recorded whether the product appeared to be targeted to a consumer or business user.<sup>6</sup> A few dozen companies offer business and consumer versions of the same product, and for these companies, I selected both product versions.

I then obtained the EULA for each of the selected products. Some companies make their licenses easily available on their Web sites, while others require some—perhaps considerable—trial-and-error searching. If the EULA was available anywhere on the site, I collected it. Otherwise, I e-mailed the company to ask if the EULA was available on its Web site (to double-check that it is not) and if not, to please send it to me. Most companies complied, although a small fraction did not answer repeated requests and thus could not be included in the sample. To reduce selection bias further, I purchased a handful of products in order to obtain the EULAs.

This process led to a sample of 515 EULAs. Since, as mentioned above, I collected two EULAs for 47 companies having consumer and business versions of the same product, the sample covers 468 distinct

6. For 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 Survey Solutions 6, a software product used to conduct Web-based surveys, is categorized as business software.

companies. The sample includes EULAs from well-known software publishers and hundreds of smaller ones.

I also collected several other product and company characteristics for use as control variables. I recorded the selected product's price, recognizing that all else being equal, good terms for consumers are more costly to provide. Many companies offer a free version of their products for buyers to try for a limited period. I noted whether a trial version of each product was available, since this enables buyers to verify whether the product suits their needs, is compatible with their system, and so forth. In addition, most licenses are of unlimited duration and for a single user. I recorded whether the license is single or multiuser because the latter would tend to have a higher price. Another important license feature is whether the license is standard or for developers. Developer licenses allow the buyer to use the software to develop derivative products and hence are common for products that aid programmers in creating new software. Since some of the rights granted under the developer EULA differ from the standard license, I recorded this aspect of the license as well.

Other company-level characteristics I gathered (from the *Directory* data set or other sources, such as Hoover's Online, or direct correspondence with the company) include revenues, whether a company is publicly traded or private, and the year of incorporation. The average revenue of the companies in the sample is \$371 million, but the standard deviation is \$4.27 billion, indicating that the average is driven by very large companies. The median revenue is \$2 million. Publicly traded companies make up 15 percent of the sample. A little under half of the products in the sample, 41 percent, are oriented toward consumers (or home businesses) rather than larger businesses. About 70 percent of the companies offer a trial version of their software. Finally, the average price for the products in the sample is \$899, with a standard deviation of \$2,710. The median price for software products is \$299, the minimum price is \$9.95, and the maximum price is \$40,000.

Last, I classified each product into one of 146 software product categories, from antivirus to voice recognition software. I borrowed these categories from Amazon.com, the largest Internet retailer, which uses them to organize the tens of thousands of software products that it markets. The following section introduces the methodology I used to measure contract accessibility on a company's Web site.

#### 4. PREPURCHASE ACCESSIBILITY OF END-USER LICENSE AGREEMENTS

##### 4.1. Measuring Accessibility

A key variable in this study is the accessibility of the selected product's EULA on the company's Web site. The most basic aspect of accessibility is whether the EULA is findable at all on the Web site or is made available only postpurchase. To capture this distinction, I label as "findable" those EULAs that can be found somewhere on the sellers' Web site. License agreements that are made available only after purchase, whether on the Web site or inside a box, are not findable.<sup>7</sup> By definition, rolling contracts are not findable.

Table 1 gives summary statistics on this dimension of EULA accessibility. About 48 percent of sellers make their EULA available in their Web site, whereas 52 percent provide the EULA only after purchase. A very small percentage of sellers offer their software with no EULA; as it is unclear whether to classify these cases as findable or not, I exclude these from the subsequent analysis.<sup>8</sup>

If the EULA is findable somewhere on the Web site, I also measure whether it is relatively more or less accessible. To do so, I start by determining the most obvious or most natural navigational path through the Web site that a consumer would use to purchase the product. This is usually quite straightforward, since commercial Web sites are designed to get buyers to purchase as easily as possible, starting from the home page. I then count the distance, in terms of the minimum number of clicks, between the most obvious click path to purchase and the actual location of the EULA. License agreements that are a greater number of clicks away from the most natural path of purchase are deemed less

7. Many sellers ship the software and the EULA to a physical address provided by the buyer. Sometimes, however, buyers can download the software directly from the seller's site. In these cases, if the buyer is unable to access the EULA until after she has paid for the software, the EULA is coded "not findable," since it is not accessible until after purchase, which is the critical distinction. To be clear, I code as "not findable" those EULAs that can be obtained only by explicitly requesting them from the seller via phone or e-mail because those are not made available by sellers in the normal course of an online transaction without an additional and costly buyer action. Of course, as a semantic matter, one could alternatively call these contracts "findable but at high cost."

8. Arguably, products sold without a EULA are among the most buyer friendly, as they are sold outright, are not licensed, and include the implied warranties of the U.C.C. (I thank Lewis Kornhauser for this point.) I exclude these cases from my analysis of the effects of contract location on contract bias because the location of a contract that does not exist is hard to define. In any case, there are only four companies, all very small, that use no EULA whatsoever and that would otherwise be in my sample.

**Table 1.** Prepurchase Accessibility of End-User License Agreements (EULAs)

Accessibility	EULAs	%
Findable:		
Forced:		
0 Clicks	24	4.7
.5 Click	5	1
1 Click	79	15.3
2 Clicks	62	12
3 Clicks	44	8.5
4 Clicks	12	2.3
5 Clicks	5	1
6+ Clicks	15	3
PNTL	269	52.2

**Note.** Location of EULAs on company Web sites is shown. The analysis is based on 515 EULAs. Distance is defined as the number of clicks the contract is away from the most natural path to purchase, starting from the home page. A distance of 0 indicates that the EULA is displayed directly to the buyer. A distance of .5 indicates that the buyer is required to acknowledge the EULA, but the contract itself is not displayed without another click. Distances of 0 and .5 are described as “forced” because the buyer is forced to either see the EULA or acknowledge its existence. Distances between 0 and 6+ are described as “findable,” as the buyer is able to find the EULA on the Web site. Pay now, terms later (PNTL) EULAs are not findable by definition and were obtained through e-mail and telephone request or product purchase.

accessible, albeit still findable. A buyer belonging to (or at least aspiring to) the informed minority would find it easier to comparison shop among firms with low distance scores.

For example, consider a buyer who wishes to purchase Internet Security 7.0 from McAfee’s Web site. After selecting the product and proceeding to checkout, he will discover (at the time of this writing) that before he is allowed to enter his credit card information, he must agree to the product’s EULA by clicking on “I agree” below a scroll box that contains the standard terms. Because the EULA is directly on the most natural click path for purchasers and requires no extra clicks to find, it has a distance score of 0. As Table 1 shows, 4.7 percent of sellers, or about 10 percent of those that make their EULAs available on their Web sites, score a 0, which indicates the maximum possible degree of pre-purchase accessibility.

Symantec, on the other hand, presents a license for its Norton An-

tivirus 2008 product that is a minimum of two clicks away from the most obvious path of purchase. At the time of this writing, a link at the bottom of the Symantec homepage, entitled “license agreements,” provides links to the EULAs of Symantec products. Thus, it takes a buyer one click from the main page (which is always used as the starting point of the most natural path of purchase) to access the list of EULAs and a second click to actually see the EULA of the desired product, for a total distance of two clicks.

As mentioned above, McAfee forces the buyer to acknowledge that he agrees to a license before he is allowed to pay. The buyer may or may not read the terms in the screen, but by clicking “I agree” he knows that the software is governed by a license and that he has agreed to its terms. The same is true for companies that force buyers to check “I agree” in a box before entering their credit card information, although they may not show the actual EULA without one more click on the provided link. In these peculiar in-between cases, I record the distance as .5, because although the buyer must actively acknowledge the existence of a contract, he must also click once to see its terms. Table 1 shows that 1 percent of all sellers, or 2 percent of sellers whose EULAs were findable, display their licenses to buyers in this manner. To more clearly capture the distinction between EULAs that the buyer is forced to acknowledge and those that are not explicitly presented prior to purchase (and can be found only through a determined search), I label EULAs with distance scores of 0 and .5 as “forced.” About 5.7 percent of sample firms, or 11.8 percent of those that make their EULAs findable, fall into this group.

Some products’ EULAs are a minimum of six clicks away from the most natural path of purchase. Given the labyrinthine structure of some corporate Web sites, in which each page links to many others, such licenses can be extremely difficult to find, even for a determined consumer.

#### 4.2. Determinants of Prepurchase Accessibility

To see whether certain products’ EULAs are more likely to be made available before purchase, I consider the following models:

$$\text{Findable}_i = a_0 + a_m + b'X_i + c'Z_i + u_i, \quad (1)$$

$$\text{Forced}_i = a_0 + a_m + b'X_i + c'Z_i + v_i, \quad (2)$$

and

$$\text{Distance}_i = a_0 + a_m + b'X_i + c'Z_i + w_i. \quad (3)$$

In regression (1), the dependent variable is Findable, a dummy indicating whether a EULA is findable on a seller's Web page. In regression (2), the dependent variable is Forced, a dummy indicating whether a seller requires buyers to agree to the contract before they are able to purchase a product. In regression (3), the dependent variable is Distance, a variable indicating how many clicks it would take a buyer to access the license. The independent variables are  $X$ , a vector of product characteristics that includes the natural log of the product's price, dummies for whether the product is oriented toward consumer end users, whether the sellers offers a trial version for the product, whether the license is multiuser, and whether the license is for developers; and  $Z$ , a vector of firm characteristics that includes the natural log of revenue, the natural log of age since incorporation, and a dummy indicating whether the company is publicly traded. All three models include software market fixed effects and have standard errors clustered at the company level to account for the fact that for 49 companies, I collect two (usually very similar) EULAs instead of one.

The first two regressions in Table 2 report the results of model 1. Firm size, as measured by revenue, is the only firm characteristic that is significantly positively related to whether a EULA is findable. Specifically, the coefficient on the natural log of revenue implies that a 1-unit increase in this variable increases the probability that the EULA is findable by 5 percent. A plausible interpretation is that larger firms are more likely to have in-house counsel who may advise making the EULA available before purchase to increase its enforceability.

Developer licenses are also more likely to be findable, perhaps because license terms are more important for users of such products. Many of the benefits that these users obtain from the product hinge on how restrictive the license is. Younger software publishers are also more likely to make their EULAs available on their Web sites. One possibility is that buyers feel less compelled to thoroughly examine the terms of a familiar seller whose reputation is well known. A simpler explanation is that older firms are less likely to be exclusively software companies. They may sell many products online that are completely unrelated to software, thus reducing the likelihood that the structure of their Web sites will cater specifically to the software buyer. The inclusion of product category



**Table 2. Determinants of End-User License Agreement (EULA) Accessibility**

	Findable (N = 515)		Forced (N = 515)		Distance (N = 246)	
	(1)	(2)	(3)	(4)	(5)	(6)
Consumer	.01 (.06)	.02 (.06)	-.04 (.03)	-.03 (.03)	.26 (.26)	-.02 (.27)
ln Price	-.00 (.02)	.01 (.02)	.00 (.01)	.00 (.01)	-.00 (.08)	-.01 (.10)
Trial	.01 (.05)	-.05 (.06)	-.01 (.02)	-.00 (.03)	.02 (.22)	.13 (.24)
Multiuser	.08 (.08)	.04 (.09)	-.03 (.04)	-.08 (.04)	-.10 (.33)	-.46 (.34)
Developer	.19* (.08)	.19+ (.10)	-.05 (.04)	-.01 (.05)	.11 (.31)	.18 (.38)
ln Revenue	.05** (.01)	.04** (.01)	.01* (.01)	.01 (.01)	.08 (.05)	.13** (.05)
ln Age	-.11* (.04)	-.12* (.05)	.01 (.02)	.01 (.02)	-.21 (.19)	-.39+ (.21)
Public	.00 (.08)	.04 (.08)	-.07+ (.04)	-.05 (.04)	.35 (.31)	.03 (.35)
Adjusted R <sup>2</sup>	.07	.06	.02	.03	.05	.26

Note. Ordinary least squares regression results are presented. The independent variables are a dummy indicating a consumer-oriented product, the natural log of the price of the product, whether there is a trial version of the software available on the Web site, dummies for multiuser and developer licenses (the default category is single-user license), the size of the company as proxied by the natural log of revenue, and the natural log of the age of the company since incorporating as of 2005. The average company age is 15 years. Even-numbered models include market fixed effects based on Amazon.com software classifications.

+ Significant at the 10% level (*F*-tests for fixed effects).

\* Significant at the 5% level (*F*-tests for fixed effects).

\*\* Significant at the 1% level (*F*-tests for fixed effects).

dummies (indicating different Amazon.com “markets”) does not change these results, which indicates that they hold within categories as well.<sup>9</sup>

The second set of models is based on equation (2) and further confirms this notion. Larger firms are also more likely to force buyers to agree to the terms of the EULA before allowing them to purchase. This again may reflect the advice of sophisticated in-house counsel. On the other hand, when size is controlled for, public firms are slightly less likely to force consumers to acknowledge a EULA. These results are less robust to the inclusion of market fixed effects.

In the last pair of constructed models, based on equation (3), the dependent variable is the distance score, given that the EULA is findable.<sup>10</sup> These estimates indicate that more clicks are required to find EULAs when the seller is larger or younger. On the basis of my experience reviewing hundreds of software publishers’ sites, I believe the explanation most likely involves the fact that larger companies and, controlling for size, younger companies tend to have more detailed Web sites—the former because the company simply has more products to describe and to sell, the latter because their Web pages tend to be more sophisticated and reflect the most recent Web design technology.

Interestingly, none of the regressions in Table 2 indicate any relationship between the EULA location and whether the product is consumer or business oriented. If it were the case that sellers took advantage of naïve consumers by hiding their exploitative terms until after purchase, we might expect to see a significant negative relationship between consumer-oriented products and findability. In fact, rolling contracts are used with about equal frequency for both business- and consumer-oriented software products.

## 5. END-USER LICENSE AGREEMENT BIAS

### 5.1. Measuring Overall Bias

A software program’s EULA delineates the rights and obligations of the buyer and the seller. License agreements of prepackaged software tend

9. That is, the coefficient on log revenue, for example, reflects the comparison of Symantec and smaller antivirus companies, not Symantec and small companies that sell graphics or word-processing software.

10. As an alternative to the ordinary least squares (OLS) models in Table 3, I performed logit regressions for the binary outcomes in specifications (1)–(4) and Poisson models for specifications (5) and (6). The marginal effects for all models are quite similar to the OLS model. I report OLS results for simplicity of interpretation.

to address similar issues, such as restrictions on use and transfer, warranty disclaimers, and limitations on liability, regardless of whether they apply to an antivirus or a graphics program. As discussed in more detail in Marotta-Wurgler (2007), software companies generally license rather than sell their software to restrict buyers' posttransfer use of the software. Aside from this difference, the legal implications regarding enforcement of the EULA and its terms are the same as those regarding regular standard forms. As noted earlier, to date, most courts have relied on Article 2 of the U.C.C. to interpret and enforce EULA terms in resolving disputes involving mass-market software transactions.

To measure the bias of a given EULA, I use the EULA bias index methodology from Marotta-Wurgler (2007). This is a simple index that takes account of 23 common standard contract terms that allocate rights and risks between buyers and sellers. These are the terms that are generally regarded as important in the software industry. They are defined as follows. For each of 23 terms, a score of  $-1$  is assigned if the term in the contract is more pro-seller than the default rules of the U.C.C., a score of  $+1$  is assigned if the term is more pro-buyer relative to those rules, and a score of  $0$  is assigned if the contract is silent with regard to the specified term or if the specified term matches the default. This methodology allows me to measure the relative bias of any given term in a meaningful and objective manner against the default rules of U.C.C. Article 2 across all EULAs. I thus measure each EULA's relative net buyer friendliness by adding up the scores of each of the 23 terms.

For example, a provision found occasionally in EULAs entitles buyers to receive software updates and upgrades for a specified period after purchase. Since there is no default rule mandating such an entitlement and since, other things being equal, a buyer would clearly prefer a EULA that entitles her to receive updates rather than one without such an entitlement, the presence of this provision is awarded a score of  $+1$  in the overall index. Of course, a significant rise in price accompanying the inclusion of this term in the EULA can easily turn it into a pro-seller term. To isolate a term's bias, one must control for price. I do this by controlling for product characteristics that affect price. I also include market fixed effects for characteristics that I cannot measure directly. Although these controls are by no means complete, they should be enough to isolate the relationship between contract bias and contract location.

Table 3 lists all 23 terms, details how each is scored, and provides the mean and standard deviation for each term's score. To identify which

**Table 3.** End-User License Agreement (EULA) Terms and Bias: Methodology

Term	Bias Measurement	Mean
Acceptance of license: Does license alert consumer that product can be returned if she declines terms?	1 = yes; 0 = no	.50 (.50)
Scope of license: Does definition of “licensed software” include regular updates such as enhancements, versions, releases, and so on? Are there license grant restrictions?	1 = yes; 0 = no mention 0 = no or no mention; -1 = yes (for example, for business-oriented products, “for business purposes” or “internal purposes only” language; for consumer-oriented products, restrictions on commercial use)	.17 (.38) -.19 (.39)
Can licensee alter or modify the program?	0 = yes or no mention; -1 = no	-.63 (.48)
Can licensee create derivative works?	0 = largely unrestricted or no mention; -1 = strict prohibition, derivative works owned by licensor, or need permission of licensor	-.36 (.48)
Transfer of license: Are there restrictions on transfer?	0 = no or no mention; -1 = some or full restrictions (licensee cannot assign, transfer, lease, sublicense, distribute, and so on, or needs written consent of licensor)	-.95 (.22)
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	-.48 (.50)

Warranties and disclaimers of warranties: Are there express warranties?	1 = yes; 0 = no	.05 (.22)
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?	1 = yes; 0 = no	.31 (.46)
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	.30 (.46)
Is the disclaimer in caps, bold, or otherwise conspicuously presented?	0 = yes or no disclaimers appear; -1 = no	-.23 (.42)
Disclaims IWM and IWFPF or contains "as is" language?	0 = no; -1 = yes	-.91 (.29)
Disclaims warranty that software will not infringe on third parties' intellectual property rights?	0 = no; -1 = yes	-.37 (.48)
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	-.15 (.36)
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," and so on)	-.27 (.44)
Disclaims consequential, incidental, special, or foreseeable damages?	0 = no or no mention; -1 = yes	-.90 (.30)
Are damages disclaimed under all theories of liability (contract, tort, strict liability)?	0 = no or no mention; -1 = yes	-.32 (.47)

**Table 3.** *continued*

Term	Bias Measurement	Mean
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	-.58 (.49)
Is there an indemnification clause?	0 = no, no mention, or two-way indemnification; -1 = indemnification by licensee	-.16 (.37)
Maintenance and support: Does base price include maintenance and support for 31 days or more?	1 = yes; 0 = no or no mention	.66 (.47)
Conflict resolution: Forum specified?	0 = court, choice of licensee, or no mention; -1 = specific court or mandatory arbitration	-.31 (.46)
Law specified?	0 = same as forum or no mention; -1 = yes and different from forum	-.00 (.04)
Who pays licensor's attorney fees?	0 = paid by losing party or no mention; -1 = paid by licensee	-.01 (.10)
Overall bias index	Sum of all terms	-4.83 (2.79)

**Note.** Terms recorded 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 are described. 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. Standard deviations are in parentheses. IWM = implied warranty of merchantability; IWFPF = implied warranty of fitness for particular purpose.

terms are important to software licensors and licensees, I rely on four external sources. The first two are the practitioner-oriented manual *Software Agreements Line by Line* (Overly and Kalyvas 2004) (mostly directed to an audience of sophisticated licensees) and the *SIIA Guide to Software Contracts* (Software and Information Industry Association 1998; Marx and Software and Information Industry Association 2003), a comprehensive reference of different types of software contracts made available to its publisher members by the Software and Information Industry Association, one of the biggest trade associations in the software industry. Both of these trade references provide taxonomies of the typical structure of software license agreements and discuss the most important terms therein. Mass-market EULAs have fairly standardized categories of terms, so it is not surprising that both references identify virtually the same set of terms as important. I also rely on the discussions of two leading textbooks in software and e-commerce law, *E-Commerce* (Mann and Winn 2002) and *Software and Internet Law* (Lemley et al. 2003). Both textbooks study industry practices and relevant case law to provide thorough accounts of the most common terms in EULAs, note whether such terms are pro-buyer or pro-seller, and examine the terms' current legal treatment by courts. All four accounts are consistent.<sup>11</sup> The index is thus composed of those 23 terms that are perceived as important by these exogenous references and that govern buyers' normal use of the software.<sup>12</sup>

The 23 provisions that make up the overall index fall into seven categories. Each term is coded as pro-buyer or pro-seller, as suggested by discussion in the sources described. The first category, acceptance of license, includes a term designed to alert the buyer of her options should she find the license or product disagreeable. The second category, scope of license, contains four terms restricting the buyer's use of the software. The third category, transfer of license, is composed of two terms that restrict the buyer's ability to sell or transfer the software. The fourth category, warranties and warranty disclaimers, and is composed of six terms that delineate the degree and type of warranty protection offered

11. All four sources indicate general consensus among software vendors and users as to whether a particular term can be seen as pro-seller or pro-buyer relative to the relevant default rules.

12. I exclude terms dictating sellers' use of personal information, terms describing copyright or patent rights (as they belong exclusively to the realm of federal intellectual property law), and terms that are unenforceable in any court, such as disclaimers of good faith.

to buyers. For example, it notes whether sellers offer any express or limited warranties and whether they disclaim the implied warranties of merchantability and fitness for a particular purpose under the U.C.C. The fifth category, limitations of liability, contains six terms specifying the extent of the seller's liabilities for different types of buyer loss arising out of use of the software as well as terms allocating risks of loss. It also covers the buyers' available remedies, if any, for such losses. The sixth category, maintenance and support, takes into account whether the base price of the software includes these services.<sup>13</sup> The last category, conflict resolution, includes three terms that restrict a buyer's choices regarding her decision of where to sue and under what law (forum selection and choice-of-law clauses), whether to have a jury trial (arbitration clauses), and how legal fees are to be allocated as a result of a legal dispute.<sup>14</sup>

The advantage of this overall index is that it is transparent, is replicable, and allows for empirical comparisons of EULAs. However, since each of the 23 terms is given the same weight, a built-in assumption is that each term matters equally to buyers. Although this assumption is likely unrealistic, it can be easily relaxed by measuring the relationship between contract location and the bias of particular sets of terms, considered separately, rather than the overall bias.

## 5.2. End-User License Agreement Bias Summary Statistics

As constructed, the overall bias index ranges from a maximum score of 6, indicating a very buyer friendly EULA relative to the relevant default rules, to a minimum score of -17, corresponding to a EULA that greatly limits the sellers' obligations toward buyers and restricts the buyer's use of the software. It is important to stress that the overall index score for each EULA should not be interpreted as measuring whether the contract is pro-seller or pro-buyer in an absolute sense but rather as a measure of bias as compared with the default rules of Article 2. The construction of an "absolute" measure of bias would require numerous assumptions

13. Some sellers offer a menu of maintenance and support services for an additional price or under a separate contract, while others just include basic maintenance and technical support in the product's base price. To be able to make meaningful comparisons among firms, I count whether a company includes a base level of maintenance and support (over 30 days) in its base price and then use the base price as a control variable, instead of recording whether a firm offers support under separate contract.

14. I interpret the specification of a particular forum or a mandatory arbitration provision as generically less buyer friendly than the default, under which buyers usually have more options about where to bring claims. See U.C.C., art. 1, sec. 1-105.



regarding sellers' costs and buyers' preferences. Indeed, one reason the range of possible scores is not centered at zero is that the default rules of the U.C.C. tend to benefit buyers.

Table 3 shows that the average overall bias index score in the sample is  $-4.83$ . This number reflects that, on average, contracts contain a net of almost five terms that are more pro-seller than the default rules. The minimum overall score in our sample is  $-13$ , and the maximum is  $2$ . Thus, EULAs vary widely in how buyer friendly they are.

## 6. ARE PAY NOW, TERMS LATER END-USER LICENSE AGREEMENTS WORSE FOR BUYERS?

### 6.1. Overall Bias and Accessibility

Having measured both the accessibility and one-sidedness of a large sample of EULAs, I am now ready to address the central debate involving rolling contracts, namely, whether hidden terms are more one-sided than terms made available before purchase. Table 4 presents the average overall bias of EULAs by the degree of their accessibility. It also compares the mean bias of EULAs of a given accessibility to the mean bias of rolling EULAs.

The results show that those EULAs made available before purchase are actually significantly less buyer friendly than rolling EULAs. In particular, findable EULAs are less buyer friendly than rolling EULAs by  $.67$  points, a statistically significant difference (albeit economically rather small). Findable EULAs can be broken down further into those that are forced and those that are not. While findable EULAs of both types are significantly more pro-seller than rolling contracts, it is particularly surprising that the forced EULAs—those that the buyer must explicitly acknowledge before buying the product—are the most one-sided contracts of all. This is in striking contrast to the suggestion that sellers hide more one-sided contracts.

I analyze these effects with variations of the following model:

$$\text{Bias}_i = a_0 + a_m + b'X_i + c'Z_i + d'\text{Location}_i + \varepsilon_i, \quad (4)$$

where Bias is the overall bias index,  $X$  and  $Z$  are vectors of product and firm variables, as described earlier, and Location is a measure of contract accessibility. The model also includes market fixed effects. Of course, we should not interpret the coefficients  $d$  on Location as causal effects. Rather, my goal in this specification is simply to measure the correlation

**Table 4.** End-User License Agreement (EULA) Accessibility and Bias

Accessibility	EULAs		Overall Bias		Overall Bias – PNTL Bias
	N	%	Mean	SD	
Findable	246	47.7	–5.19	2.83	–.67**
Forced	29	5.7	–5.69	2.75	–1.18*
0 Clicks	24	4.7	–5.33	2.75	–.82
.5 Click	5	1	–7.4	2.3	–2.89*
Not forced	217	42.1	–5.12	2.84	–.61*
1 Click	79	15.3	–4.85	2.92	–.34
2 Clicks	62	12	–5.53	2.92	–1.02**
3 Clicks	44	8.5	–4.82	2.86	–.31
4 Clicks	12	2.3	–4.75	1.76	–.24
5 Clicks	5	1	–4.80	3.56	–.29
6+ Clicks	15	3	–6.13	2.47	–1.62*
PNTL	269	52.2	–4.51	2.72	

**Note.** End-user license agreements are classified as findable, which means that the contract is available somewhere on the company's Web site, or pay now, terms later (PNTL). Findable contracts are either forced, which means that consumers are required to agree before purchasing, or not forced, which means that the contract is one or more clicks away from the purchasing consumer's natural click path. The last column reports the difference between the mean overall bias of EULAs of a given accessibility and PNTL EULAs.

\* Significant at the 5% level.

\*\* Significant at the 1% level.

between these two choice variables to test the hypothesis that hidden contracts are more restrictive. Similarly, I am interested in whether any such correlation survives upon controlling for various firm and product characteristics. In other words, an equally useful model (which yields similar results) would be to regress Location on Bias rather than the reverse, as in equation (4).

The results are summarized in Table 5. The first column shows the most basic test, where the dummy Findable is the only independent variable. This simply replicates the result in the first row of Table 5. The second column uses Forced as the only independent variable. The third column shows that among the subset of EULAs that are not forced but still findable, there is no relationship between bias and how distant (that is, how many clicks away) the EULA is from the most obvious path of purchase. This is another strike against the view that sellers hide particularly one-sided contracts. The fourth column separates the effects of forced and findable by including both in the regression. It shows that a forced EULA scores an additional .57 points lower, on average, than one that is findable but not forced, but the difference between those two

**Table 5.** End-User License Agreement (EULA) Bias, Accessibility, and Company and Product Characteristics

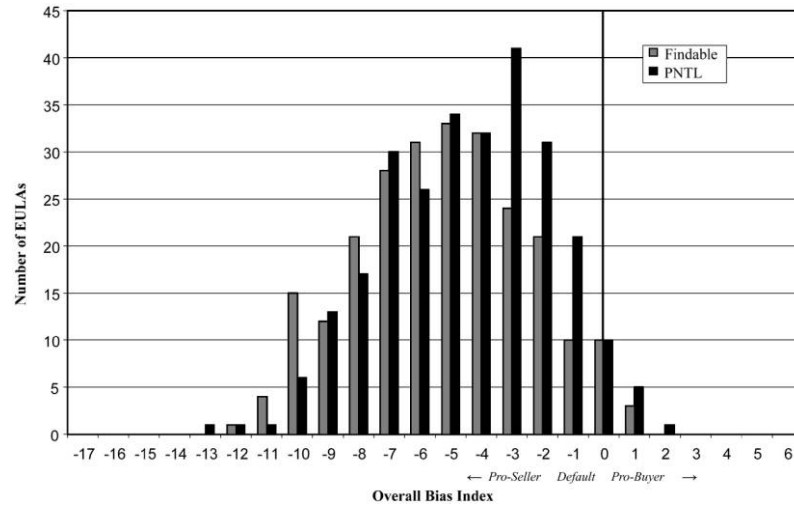
	All Products							
	(1)	(2)	(3)	(4)	(5)	(6)	Business (7)	Consumer (8)
Findable	-.67** (.26)							
Forced		-.91* (.55)		-.61* (.27)	-.33 (.28)	-.31 (.26)	.01 (.36)	-1.22** (.41)
Distance			-.05 (.11)	-.57 (.57)	-.82 (.51)	-1.38* (.56)	-1.51* (.70)	-1.17 (1.35)
Consumer					.29 (.28)	.10 (.26)		
In Price					.11 (.10)	.06 (.10)	.02 (.15)	.26 (.19)
Trial					.48+ (.27)	.43 (.28)	.50 (.40)	.51 (.43)
Multiuuser					-.53 (.43)	-.36 (.53)	.01 (.52)	-1.44 (2.21)
Developer					.65 (.42)	.95+ (.53)	.43 (.61)	2.15* (.90)
In Revenue					-.09 (.07)	-.08 (.07)	-.14 (.10)	-.01 (.10)
In Age					1.80** (.24)	1.46** (.26)	1.73** (.36)	.95* (.41)
Public					-.93+ (.48)	-1.03* (.44)	-1.40* (.65)	-.18 (.60)
Fixed effects	...	...	...	...	...	Market**	Market	Market
N	515	515	246	515	515	515	304	211
Adjusted R <sup>2</sup>	.01	.00	.00	.01	.15	.37	.43	.50

**Note.** Ordinary least squares regression results are presented. The dependent variable is the overall bias index of the EULA. Higher values indicate pro-buyer bias; lower values indicate pro-seller bias. The independent variables include measures of prepurchase accessibility (Findable, Forced, or Distance), product characteristics (a dummy for consumer-oriented products, the log of the product's price, a dummy for whether a trial version of the product is offered, a dummy for EULAs allowing for multiple users, and a dummy for developer licenses), company characteristics (natural log of revenue, natural log of years since incorporation, and a dummy for publicly traded), and software market dummies based on Amazon.com classifications. The average age is 15 years. The first six specifications include all licenses, and the last two specifications are restricted to licenses of business-oriented software and consumer-oriented software. Standard errors are in parentheses and clustered by company.

\* Significant at the 10% level (*F*-tests for fixed effects).

\* Significant at the 5% level (*F*-tests for fixed effects).

\*\* Significant at the 1% level (*F*-tests for fixed effects).



**Figure 1.** Distribution of the overall bias index

groups is not significant. These results could also be anticipated from Table 5.

Figure 1 breaks down the distribution of the overall bias index by contract accessibility. The bias indexes of PNTL EULAs and findable EULAs each have a bell-shaped distribution, indicating that the results are not driven by a few extreme values. Again, findable EULAs can be seen to be slightly more pro-seller than the PNTL ones.

Of course, it is debatable whether a EULA that is 1 point or so more pro-seller would be perceived by a buyer as worse in any meaningful sense. However, the key point for my purpose is that rolling contracts are clearly not more pro-seller than those made available before purchase. Put simply, the evidence rejects the main arguments presented against rolling contracts, at least in the case of software sold online.

Finally, there is a last concern that may be useful to address. It has been suggested to me that perhaps the uncertainty about the enforceability of rolling contracts is keeping sellers who use such contracts in check and that if this uncertainty is removed, we will then observe sellers using rolling contracts to hide biased terms. This is not a serious concern, however, simply because at the time this sample was gathered, almost every state has favorable decisions on the enforceability of rolling con-

tracts (see Schwartz and Wilde 1979, 1983).<sup>15</sup> In any event, we can restrict our attention to states where there is clearly no uncertainty about the enforceability of rolling contracts: Maryland and Virginia, which have adopted the Uniform Computer Information Transactions Act, a statute governing computer information transactions that explicitly allow sellers to use rolling contracts; and states in the Seventh Circuit, where *ProCD* was decided. Of the 34 companies in my sample that are incorporated in and have choice-of-law clauses in the aforementioned states,<sup>16</sup> it is again the case that firms that disclose their contracts before purchase have more restrictive terms than sellers that use rolling contracts. Thus, there is no evidence that legal uncertainty is what is affecting the results.

Relatedly, courts might interpret terms in rolling contracts more strictly than those in traditional-form contracts. In this case, it is courts' more stringent interpretation standard for rolling contracts that keeps sellers who use such contracts in check.<sup>17</sup> And if this strict interpretation is removed, sellers will use rolling contracts, which are relatively less accessible, to hide more restrictive terms. Given the results of the paper, however, this possibility seems unlikely. Under the current regime there is an economically small (albeit statistically significant because of a large sample size) difference between the terms of firms that choose to disclose their contracts prior to purchase and firms that use rolling contracts. This casts some doubt on the hypothesis that sellers with more onerous terms will use traditional-form contracts to increase the probability of enforcement.<sup>18</sup>

## 6.2. Controlling for Product and Seller Characteristics and Buyer Type

The remaining specifications of Table 5 add control variables and split the sample into consumer- and business-oriented products. The effects of Forced and Findable remain generally similar when controlling for product category fixed effects, company size and age, product price, and the consumer product dummy, but with the inclusion of these controls Forced and Findable usually are not both significant.

15. One notable exception is Oklahoma. See, for example, *Rogers v. Dell Computer Corp.*, 2005 Okla. 51, 23 (2005).

16. Sixteen companies are in Uniform Computer Information Transactions Act states, and 18 are in states in the Seventh Circuit.

17. I thank Geoff Miller and an anonymous referee for this point.

18. A review of several court decisions did not reveal differences in treatment of litigated terms in rolling and nonrolling contracts.

In terms of product characteristics, the fifth row explores the relationship between product price and the overall bias of its standard terms. The general intuition is that if EULA terms are important to buyers and there is a well-functioning market for terms, then buyers should be willing to pay something in exchange for a pro-buyer term or demand a discount to accept a pro-seller term. To the extent that terms are priced, we should expect that the resulting coefficient on price would be positive and significant. As can be seen in all four specifications (three of which include market fixed effects, because prices vary greatly across markets because of basic differences in product functionality and complexity), the coefficients are indeed positive but not significant for the overall index. Of course, if we were to discover a strong effect in these regressions, causality would be difficult to establish, since price and EULA terms may be jointly determined. Although these results provide some support to the intuition that the overall effect of terms on price would be small, for arguably the most important set of terms, warranties, there is indeed a positive and significant relationship between price and pro-buyer bias (unreported). As another perspective, a regression of log price on the 23 index terms (unreported), and controlling for license type, market fixed effects, and the consumer-product dummy, yields 17 positive coefficients and only eight negative coefficients. Thus, more than two-thirds of the terms that made up the index are associated with higher prices when the bias is more toward the buyer. Not surprisingly, few of these effects (other than warranties) are precisely estimated or are statistically significant, but it seems noteworthy that the majority of the point estimates are consistent with the idea that the terms are related to price. Overall, these results lend at least a measure of support to the idea that the terms studied are meaningful enough to consumers to affect their willingness to pay.

Critics of rolling contracts have been particularly concerned that sellers will take advantage of unsophisticated nonbusiness buyers who may lack the resources, knowledge, and ability to comparison shop for terms. Whereas Table 4 showed that sellers do not hide EULAs of products directed to the general public more than they do their business-oriented products' EULAs, the coefficient on Consumer in Table 5 tests whether non-business-oriented products have EULAs that are more pro-seller. As can be seen, there is no consistent relationship between whether the software is directed to members of the general population and the overall bias. I also consider a related hypothesis. If nonbusiness buyers are less sophisticated and resourceful than business buyers, perhaps sellers will

try to hide one-sided terms only for consumer-oriented products. The last two specifications test this by examining whether EULA location affects overall bias for a given buyer type. The results show that rolling contracts are not worse for either type of product; rather, forced and/or findable contracts are worse for both business- and consumer-oriented products.

### **6.3. End-User License Agreement Bias by Subindex and Accessibility**

As noted earlier, a potential drawback of the overall index is that it implicitly assumes that all provisions matter equally. Suppose that buyers care only about certain provisions and that sellers hide contracts that are worse with respect to those provisions but not worse overall. For instance, Korobkin (2003) suggests that buyers value only salient terms of standard-form contracts, such as warranties. If that is the case, then we should ask whether sellers who use rolling contracts offer worse warranties, rather than worse terms overall.

This section addresses this question by studying the relationship between EULA location and subindex bias scores. I create seven subindexes that capture the net bias of each group of terms in Table 3. For example, the transfer-of-license subindex is composed of two terms: “Are there restrictions on transfer?” and “Can the licensee transfer the software to an end user who accepts the license terms without the licensor’s prior permission?” I then repeat the previous regression analysis but use the bias of each subindex as the dependent variable.

The results in Table 6 show that hidden EULAs are not worse in any particular dimension. In fact, consistent with earlier results, the only significant pattern is that sellers who make their EULAs more accessible actually offer worse terms in certain respects. This is the true for provisions regarding transfer of license, limitations on liability, and conflict resolution.<sup>19</sup> Given that conflict resolution provisions such as forum selection and arbitration are often casually mentioned as the most regular form of seller “abuse,” it is noteworthy that software publishers do not, in fact, rely on delayed disclosure as a way of imposing such terms (see, for example, Carrington 1998).

Finally, in results omitted to save space, I repeat the regressions in Table 6 but restrict the sample to consumer-oriented products only to investigate whether sellers take advantage of consumers by hiding par-

19. In results omitted to save space, I repeated the regressions in Table 6 but used the individual terms as dependent variables and obtained similar results.

**Table 6.** End-User License Agreement (EULA) Subindex Bias, Accessibility, and Company and Product Characteristics

	Acceptance of License		Scope of License		Transfer of License		Warranties and Disclaimers		Limitations of Liability		Maintenance and Support		Conflict Resolution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Findable	-.00 (.05)	-.02 (.05)	-.01 (.09)	.04 (.09)	.01 (.06)	.05 (.06)	-.06 (.10)	-.12 (.10)	-.14 (.11)	-.15 (.11)	.00 (.05)	.01 (.05)	-.13** (.05)	-.13** (.05)
Forced	-.10 (.10)	-.06 (.12)	-.24 (.22)	-.31 (.24)	-.25** (.10)	-.35** (.13)	.01 (.23)	.03 (.26)	-.25 (.20)	-.58* (.24)	.15* (.08)	.16* (.09)	-.14 (.11)	-.21* (.11)
Fixed effects	...	Market**	...	Market**	...	Market**	...	Market**	...	Market*	...	Market**	...	Market**
Adjusted R <sup>2</sup>	.06	.24	.05	.23	.05	.23	.09	.28	.11	.32	.04	.24	.13	.33

**Note.** Ordinary least squares regression results are presented. The dependent variables are the seven subindex bias scores. Higher values indicate pro-buyer bias; lower values indicate pro-seller bias. The independent variables include measures of prepurchase accessibility (Findable or Forced). Even-numbered models also include controls for product characteristics (a dummy for consumer-oriented products, the log of the product's price, a dummy for whether a trial version of the product is offered, a dummy for EULAs allowing for multiple users, and a dummy for developer licenses), company characteristics (natural log of revenue, natural log of years since incorporation, and a dummy for publicly traded), and software market dummies based on Amazon.com classifications. Standard errors are in parentheses and are clustered by company. N = 515.

+ Significant at the 10% level (*F*-tests for fixed effects).

\* Significant at the 5% level (*F*-tests for fixed effects).

\*\* Significant at the 1% level (*F*-tests for fixed effects).



ticular one-sided terms. I find that, with the exception of limitations on liability, unsophisticated consumers do not receive worse terms than business buyers. In fact, they tend to receive more pro-buyer terms with respect to transfer of license and conflict resolution.

## 7. SUMMARY AND IMPLICATIONS

Pay now, terms later, or rolling, contracts are an increasingly important form of commercial contracting. The goal of this paper is to empirically inform the debate about whether rolling contracts impose harsher terms on buyers. I collect and analyze the terms of several hundred EULAs for software packages sold online. The wide variation in the degree of pre-purchase accessibility of these EULAs enables me to give a fairly rigorous answer to whether rolling contracts offer worse terms to buyers, at least in this particular market setting.

I find that the terms included in rolling contracts are not systematically more pro-seller than those included in contracts disclosed before purchase. In fact, contrary to fears often associated with rolling contracts, I find that contracts displayed prepurchase are actually slightly more pro-seller than rolling contracts. The results are robust to controlling for product price, seller size, consumer- versus business-product orientation, and other effects.

It is important to note that my tests are not designed to address whether sellers offer poor-quality terms in an absolute sense; rather, they are focused on the comparative analysis between terms that are made available prepurchase and those that are not. Thus, the appropriate conclusion is that, to the extent that there are inefficiencies associated with standard-form contracts, they are not made worse by delayed disclosure. This conclusion should be encouraging to supporters of Judge Easterbrook's rationale for enforcing rolling contracts. It also implies that regulation directed at eliminating or reforming rolling contracts may be unnecessary. More generally, these results suggest that the current normative discussions on EULAs should shift from whether disclosure is adequate or should be required to whether terms in standard-form contracts are an appropriate outcome of competitive market forces.

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