Will Increased Disclosure Help? 
Evaluating the Recommendations of the ALI’s “Principles of the Law of Software Contracts”

Florencia Marotta-Wurgler* 
New York University School of Law 

June 16, 2010

The American Law Institute’s new “Principles of the Law of Software Contracts” aim to improve online contracting practices. Instead of regulating terms directly to reduce the possibility of unfair or biased terms, the Principles emphasize increased contract disclosure to encourage readership and comparison shopping. I test whether increasing disclosure in the proposed manner is likely to increase readership in the setting of End User License Agreements of software sold online. I follow the clickstreams of 47,399 households to 81 Internet software retailers and find that EULAs are approximately 0.36% more likely to be viewed when they are presented as clickwraps that explicitly require assent, as suggested by the Principles, than when they are presented as browsewraps. The results indicate that mandating disclosure will not by itself change readership or contracting practices to a meaningful degree. I briefly review other approaches to reform that may be more effective but come with their own limitations.

* Associate Professor of Law. I am grateful to participants at the AALS section on Commercial Law and Related Consumer Law, Barry Adler, Oren Bar-Gill, Yannis Bakos, Kevin Davis, Clay Gillette, Lewis Kornhauser, Roberta Romano, and Jeff Wurgler for helpful comments. Mangesh Kulkarni provided excellent research assistance.
Perhaps the most serious problem that deters reading in the software retail context, singled out by many commentators and highlighted in litigation, is the manner of presenting terms.1

1. Introduction

The end user license agreements (EULAs) that attach to most software products are controversial contracts. On one hand, EULAs allow software publishers to allocate rights and obligations associated with their products and educate consumers about intellectual property rights.2 But others are concerned that transferors’ widespread use of shrink-wraps or browsewraps may not effectively put transferees on notice of those terms.3 This lack of consumer awareness, some fear, allows sellers to offer unfair terms that contractually extend intellectual protections beyond those afforded by federal intellectual property laws, for example, and that limit liability for product failure.4

Not surprisingly, given these disparate viewpoints, there is currently no clear set of rules to govern software licenses. This uncertainty is costly to both sellers and buyers. Addressing conflicting court decisions and harmonizing the law of software contracts has proved no easy task, however. Previous efforts such as Article 2B of the Uniform Commercial Code (UCC) failed to obtain the approval of the American Law Institute (ALI), and the Uniform Communications Information Transactions Act (UCITA) was adopted only in Maryland and Virginia. These efforts were strongly opposed by many academics and consumer advocates due to a belief that the draft rules did not sufficiently protect consumers.

The ALI has recently proposed a new approach in their “Principles of the Law of Software Contracts” (Principles). Unlike its predecessors, the drafters of the Principles start from

---

1 ALI Principles of the Law of Software Contracts [hereinafter, Principles], at 112.


an explicit assumption that current market forces alone are too weak to ensure that sellers offer terms they consider fair to buyers. At least anecdotally, this assumption seems reasonable in the mass-market retail context. When too few buyers are sensitive to standard terms (i.e. they fail to read them, understand them, or care about them), there is no “informed minority” of comparison shoppers that will induce sellers to internalize buyers’ preferences. To the extent that sellers are not otherwise constrained by reputation or effective regulation, offering unfavorable terms may be profit maximizing.

The Principles’ drafters emphasize the regulation of disclosure rather than regulation of terms. They anticipate that disclosure will promote the emergence of an informed minority, and it would avoid the intrusive and controversial nature of direct regulation of terms. In particular, Section 2.02, a provision providing safeguards for transactions involving mass retail transactions, includes a set of best practices of disclosure that ensure enforcement of a seller’s terms. One provision requires software vendors, both online and brick-and-mortar, to post their license agreements in a “reasonably accessible manner” on the corporate website whether or not they sell software through that website. The Principles ask that terms be conspicuously available via a hyperlink before purchase “so that a transferee cannot help but see the notice.” Finally, sellers who sell their software via their corporate website must use clickwraps, which require buyers to click on “I agree” next to a scroll box with the text of the license. If effective, this approach to correcting market failure would seem superior to direct regulation.

If contract readership remains relatively unaffected by increased disclosure, however, mandating increased disclosure would be ineffective and could even introduce new costs and inefficiencies. Courts might be led to mistakenly believe that terms are the product of well-working market mechanisms and be more lenient in policing abusive terms. Or, required

---

5 The Principles also include some mandatory terms, such as non-disclaimable implied warranty of no known material hidden defects. Section 3.05(b).

6 Principles at 117.

7 Principles at 117.

8 Principles Section 2.02(c)(3).

disclosure in the form of clickwraps might be costly to sellers if the additional steps in the checkout process causes some shoppers to lose patience. Finally, these recommendations would generate costly changes to current software seller disclosure practices, because most contracts currently offered are either “pay now, terms later” contracts (PNTLs) or else browsewraps that users must explore the website to find.

In this paper I test the central presumption of the ALI’s approach, namely that increased EULA disclosure will indeed lead to increased readership. The current analysis, which concentrates on the method of disclosure encouraged by the Principles, is drawn from a more general study of the effectiveness of alternative disclosure techniques. I use clickstream data to track the visits of 47,399 households to software retailers’ websites over a period of one month. For each household in the panel, I track the exact sequence of web pages (URLs) accessed to a given software website, including those that correspond to EULAs, as well as the time spent on each URL. For each software retailer in the sample, I record whether the EULA is presented as a clickwrap (“I agree”) or a browsewrap.

The main finding is that increasing contract accessibility does not result in an economically significant increase in readership. Mandating assent by requiring consumers to agree to terms by clicking on an “I agree” box next to the terms increases contract readership by at best on the order of 1%. Averaging across six different estimates of shoppers’ readership rates, I estimate that clickwraps are read only 0.36% more often than browsewraps, and the overall average rate of readership of EULAs is on the order of 0.1% to 1%. This low average rate of readership is conservative in that I assume that all shoppers that access a EULA page for at least one second can be said to have read it, despite the fact that the average EULA is 2,300 words long and written in complex language.

An increase in the shopper readership rate of 0.36%, from a base rate of 1% or less, will not create an informed minority of comparison shoppers. The clearest policy implication is that mandating disclosure is no panacea. Disclosure is but a necessary condition for readership. It

---

10 Ronald Mann & Travis Siebeneicher, Just One Click: The Reality of Internet Contracting, 108 Colum. L. Rev. (2008).
appears that the cost of accessing the contract is not the issue; rather it is the expected benefit from reading it.

Policymakers need to focus much more on changing consumers’ expectations about the net benefits of becoming informed. Shoppers that know the EULA exists but choose not to read it might do so because they expect that contracts are too long and hard to understand, too unlikely to become relevant in their use of the product, or in any case address issues that are less important than product characteristics such as price and function. Options available to policymakers thus include reducing contract length, simplifying and standardizing language, and developing ratings that would convey the essence of terms with minimal effort.13 Direct regulation also remains an option of last resort, but one that needs to remain on the table despite the Principles drafters’ understandable apprehension. Realistically, even a suite of well-designed changes to disclosure and presentation methods may be insufficient to raise readership by the one-to-two orders of magnitude needed to reach a rate that could plausibly support an informed minority equilibrium.

Furthermore, recent research suggests that the drafters’ implicit fear that firms that use PNTLs or shrinkwraps will take advantage of delayed disclosure by offering particularly one-sided terms is misguided. A study of the terms offered by 515 software retailers who sell their software online finds that PNTL contracts were in no regard more one-sided than those of sellers that disclosed their contracts prior to purchase as browsewraps or clickwrap.14 If there is fear that sellers are using poor disclosure to sneak in unusually unfavorable terms, it is a fear that is currently not justified. Still, for the aforementioned reasons, the effect of disclosure on EULA readership is an important general question that needs to be addressed.

Section 2 of the paper provides an overview of the perceived problems with EULAs and the Principles’ approach to alleviating them. Section 3 describes the methodology. Section 4 describes the main results. Section 5 discusses implications.

2. Disclosure as the Principles’ Main Approach to Prevent Market Failure

13 See Section 5 and references cited therein for a detailed discussion of the policy implications of these findings.

14 See Marotta-Wurgler, supra note 11.
The law governing software transactions is in disarray. During the past two decades courts have struggled with the contract and intellectual property law issues presented by this new technology. In the absence of clear rules on the subject, courts have disagreed on a variety of subjects, ranging from whether software should be classified as a good under Article 2 of the UCC, to whether software publishers can use EULAs to extend protections granted by intellectual property laws.15 One of the most contentious issues has been whether terms presented after payment, generally in the form of shrinkwraps or PNTLs, where buyers cannot see the terms of the contract until after purchase, should become part of the agreement between the parties.16 Similarly, courts have struggled with whether browsewraps, where sellers present their terms via hyperlinks at the bottom of their corporate web pages, present sufficient notice and “opportunity to read” before requiring a manifestation of assent.17 The conflicting case law that emerged as a result of this has generated much uncertainty and has increased the cost of doing business to both buyers and sellers alike.

As noted earlier, despite multiple attempts to harmonize the law of software contracts, most proposals were unsuccessful. Article 2B of the UCC failed to obtain the support of the ALI, mostly because it was perceived as being too seller-friendly.18 The proposed law then became the UCITA, which was enacted only in Maryland and Virginia and was met with harsh criticism. One of the most serious objections against UCITA was that it embraces the enforcement of shrinkwraps and PNTLs. Critics fear that sellers will take advantage of delayed disclosure to include self-serving terms.19

---


17 See Ben-Shahar, supra note 9, and cases cited therein.


In May, 2009, the ALI approved the Principles of the Law of Software Contracts. One of the Principles’ biggest deviations from UCITA regards contract formation. The Principles reject delayed or non-conspicuous contract disclosure as an acceptable contract formation mechanism due a belief that this might contribute to low contract readership and prevent the creation of an informed minority of shoppers. Recent research has shown that this concern is indeed legitimate. In a recent large sample study examining the online shopping behavior of consumers to 66 software companies, Bakos et al. found that that only about 1 in 1,000 shoppers chose to read the fine print and that this number was insufficient to constitute an informed minority.

To address this problem, the drafters embrace a regime that focuses on disclosure. The hope is that increased disclosure will help create an informed minority of consumers as well as make it easier for watchdog groups to access terms and spread the word about unsavory provisions. Sellers who wish to maintain the reputation and level of sales will thus respond to increased scrutiny by offering more desirable terms. The relevant provision is Section 2.02, which provides safeguards for mass market retail transactions by outlining a series of seller “best practices” with respect to disclosure that, if followed, ensure enforcement of a seller’s terms.

Specifically, the Principles require that software vendors, both online and brick-and-mortar, post the terms of their license agreements in a “reasonably accessible” manner on their website. To comply with this provision, sellers who offer physical copies of software and shrinkwrap their EULAs must establish an online presence.

Rev. 1805 (2000). But see Florencia Marotta-Wurgler (2009), supra note 11. More recently, critics have focused on proposed Amendments to Article 2 of the UCC, which explicitly exclude information goods from its scope. The fear is that courts currently relying on Article 2 of the UCC to address software licensing issues will turn to UCITA for guidance.


See Principles, supra note 1.

Id at 132.

Principles Section 2.02(c)(1) states that “[a] transferee will be deemed to have adopted a standard form as a contract if the standard form is reasonably accessible electronically prior to the initiation of the transfer at issue.” The comments state that “[i]transferors should adopt the best practices of subsection (c) to ensure enforcement of the
While these new rules will certainly affect the business practices of brick-and-mortar retailers, it is the e-commerce practices that would be most affected. Subsection 2.02(c)(3) prescribes that sellers who sell their software through their corporate website must use clickwraps. Specifically, to be enforceable, buyers must click on an “I agree” icon next to a scroll box with the text of the license. The drafters note that “[t]his form of clickwrap closely resembles traditional modes of agreeing to paper standard forms.” Since it is cheap to change a browsewrap into a clickwrap, the drafters reason this change shouldn’t be controversial. The drafters note that unless a transferee is familiar with the terms due to previous dealings, terms presented in a browsewrap format would not constitute sufficient notice.

If this form of disclosure succeeds in increasing the number of informed consumers, it is clearly superior to other more intrusive alternatives that might be costlier to implement. However, for the reasons noted earlier, if contract readership remains unaffected by these new rules, mandating increased disclosure could be potentially harmful.

Mandatory disclosure regimes have been broadly criticized for being ineffective. For instance, Ben-Shahar argues that disclosure regulations that seek to increase the opportunity to read contracts are unlikely to have any effects on consumer behavior because consumers generally ignore fine print, regardless of how accessible it is. Ben-Shahar and Schneider report how mandatory disclosure regimes have failed in a variety of contexts and advocate abandoning this form of regulation. Marotta-Wurgler (2010) finds that making contracts more accessible in the future...
the web by reducing the number of mouse-clicks it takes to access them doesn’t affect contract readership in any significant way.\textsuperscript{31}

Despite the possible shortcomings of disclosure regimes, the drafters defend their approach by arguing that even if it doesn’t work, mandating disclosure is arguably a cheap solution that, unlike more intrusive alternatives, is unlikely to create any distortions.\textsuperscript{32} They also suggest that since business users are more likely to read disclosed terms, disclosure might help that subset of buyers. Finally, presenting consumers with an opportunity to read supports Llewellyn’s idea of individual assent and autonomy, even if most consumers don’t read.\textsuperscript{33} If adopted by courts, the Principles will affect the way buyers and sellers contract online for years to come. It is thus important to test whether the Principles’ recommendations will succeed in increasing the number of informed consumers and in creating an informed minority of shoppers capable of disciplining sellers. This paper provides empirical evidence on this question.

3. **An Empirical Assessment of the Principles’ Approach**

To assess whether mandated EULA disclosure increases readership, I study the browsing and shopping behavior of online consumers to 81 software retailers who sell their products through their corporate website and who also make their EULAs available somewhere on their site. I measure the proportion of shoppers, variously defined, that choose to become informed about the EULAs that govern the featured software as a function of whether they are presented as clickwraps or browsewraps.

3.1. **Data and Sample Construction**

This paper uses the clickstream data set introduced by Bakos et al. These data track the Internet browsing behavior of 92,411 U.S. households during January 2007 and were collected by a major online research company who tracks the browsing behavior of a representative panel of U.S. households.\textsuperscript{34} Each browsing “session” captures whether the household member initiated a secure (i.e., encrypted) connection and each company visited has a unique identifier for the

\textsuperscript{31} Florencia Marotta-Wurgler, supra note 12.

\textsuperscript{32} Principles, supra note 1 at 120.

\textsuperscript{33} Id at 137.

\textsuperscript{34} See Bakos et al., id, for a detailed description of the data collection process.
company or division that owns that web server. The data also contain demographic information about the household.

The sample of browsing sessions under study includes only visits to online software retailers that sell their products on their corporate website and that make their contracts available somewhere on the site before or during the checkout process. The sample excludes freeware providers, peer-to-peer software providers, web hosting companies, and companies that do not sell their software through their corporate website. The sample also excludes firms with less than 50 unique visitors who visited at least 2 pages in a given month. Ultimately, 47,399 households contribute to the sample by containing at least one session that satisfies these criteria during the sample period, and collectively these households visited 81 different software retailers who made their EULAs available on their sites.

I collect all the URLs that correspond to EULAs available on each seller’s website. I also collect company and product information that might affect a shopper’s propensity to become informed about EULA terms. As reported in Bakos et al., the average revenue of the 81 sample companies is $1.52 billion and the median is $6 million. The average age of these companies since incorporation is 16.7 years (median is 14). Regarding product characteristics, which might also affect the demand to learn about EULA terms, the average price for the median price of all products within each website is $352 and the median of that price is $49. Sixty-eight percent of the sample products for which I gather EULAs are targeted to consumers or home offices as opposed to larger firms. The products are spread across software categories (e.g., spreadsheet, antivirus). Refer to Bakos et al. for additional detail on the sample companies and households.

3.2. Contract Accessibility

To measure contract accessibility and disclosure, I collect all the EULA URLs that are available on a company’s website. Some companies offer only one product and post the EULA for that product. Most companies offer several products. Some use the same EULA for all their products, and others have different EULAs for each product, including present and past versions.

35 Marotta-Wurgler, supra note 12.

36 Bakos et al. uses a sample of 56 retail and 10 freeware companies. The companies in this sample includes all 56 retailers in that paper as well as 25 additional companies. The latter were not part of the original sample because shoppers are presented with the EULAs during checkout process, thus preventing us from measuring shoppers’ intent to become informed about terms voluntarily.
I record every EULA posted. There are 240 unique URLs corresponding to EULAs for our sample companies.

The Principles make a distinction between clickwraps and browsewraps. For each firm in the sample, I record in which of these two basic manners its EULAs are disclosed.37 Clickwraps can be further subdivided into two types. In one type, the buyer is asked to acknowledge the EULA by clicking “I agree” below a scroll box that contains the terms. As noted earlier, this is the type of clickwrap that the drafters would deem enforceable.38 Most sellers that use clickwraps do so in a slightly different way. They also ask the buyer to click “I agree,” but they require another click on a nearby hyperlink entitled “End User License Agreement” before the contract is presented. Other companies in the sample make their contracts available in their websites but require buyers to voluntarily seek them out. They may locate these browsewraps one or more clicks away from the natural path of purchase.

The distribution of contract accessibility by company is reported in Table 1. A total of 25 firms, or about 31% of the firms in the sample, use clickwraps. Of these, three are of the scroll box type and 22 are of the hyperlink type described above. The remaining 56 firms use browsewraps to present EULA terms.

3.3. Shoppers and Shopping Visits

Our data set includes the Internet browsing activity of all panel visitors to the sample companies. But people access software retailers’ corporate websites for reasons other than shopping. For example, some are looking for a patch to fix a problem with software they already own, others are looking to download a new update, others are looking for the quarterly financial statements, and so on. I thus need to identify those visitors that are shoppers in the sense that they are potentially interested in buying a product.

I follow the approach in Bakos et al. to identify shopping-oriented visits and discuss it briefly below. I attempt to exclude visits that do not access company servers dedicated to shopping or purchasing activities. I define a “company visit” as all page views (URL accesses) from a company’s website within a single user session. I adopt the approach widely used in the

37 For a more nuanced study of increased contract accessibility on readership, see Marotta-Wurgler (2010) at 12. That paper measures contract accessibility as the number of mouse-clicks it takes to access the EULA from the most natural path to purchase, from 0 to up to 6 clicks away.

38 See supra, note 27.
clickstream literature by identifying shopping visits based on the intensity of the company visit. Previous research has found that the more pages a user visits on a retailer’s site, the more likely she is to be a shopper.\textsuperscript{39}

The first task is to define a company visit. Shopping over the Internet can be different than shopping at brick-and-mortar stores. Internet shoppers can visit a company multiple times at any time of the day from their own home with just a few mouse-clicks. Indeed, researchers have found that users visit a store repeatedly within a month while contemplating a single purchase.\textsuperscript{40} I use two definitions of a company visit. The narrowest is that used by the data provider and some papers in the literature and considers a single visit as a period of web browsing activity separated by at least 30 minutes of inactivity.\textsuperscript{41} A user can have multiple visits over a day or several days. The broadest definition takes into consideration the possibility that a shopper may visit a company on multiple occasions, over the span of several days, before deciding for or against a purchase. For this definition of a company visit, I aggregate of the number visits to a unique company in a given month. The goal is to establish a range such that the typical shopping visit will lie somewhere in the middle of these two definitions.

The second task is to determine which company visits can be considered shopping visits. I use three definitions of a shopping visit. The broadest is a visit to at least two pages in the given company’s website. The more restrictive definition requires at least five page views. This is more likely to exclude casual browsers, but is still broad. The most restrictive definition of shopper is one that includes only those visitors who have actually selected a product and initiated a checkout or payment in a given session. Starting a checkout process indicates that a transaction was at least contemplated, even if in a few cases the purchase was ultimately not completed. This last definition of shopping visit captures only serious shoppers but is overly restrictive, as it excludes shopping visits that might have resulted in a purchase but did not. Given that there is no

\textsuperscript{39} See, e.g., Wendy W. Moe & Peter S. Fader, Dynamic Conversion Behavior at e-Commerce Sites, Mgmt. Sci. 50 (2004). See Bakos et al., supra note 21 for a detailed account and a list of references.

\textsuperscript{40} Eric J. Johnson, Wendy W. Moe, Peter S. Fader, Steven Bellman, & Gerald L. Lohse, On the Depth and Dynamics of Online Search Behavior, 50 Mgmt. Sci. 3, 299-308 (2004) (finding that less than 1% of all month-long sessions in their sample contained more than one purchasing transaction in a given company).

\textsuperscript{41} See Moe & Fader, supra note 39.
perfect way to identify shoppers with the data available, these three definitions can again be viewed as providing some upper and lower bounds on the number of shopping-oriented visits.

3.4. Reading

Obviously, we can observe only whether a given page was visited, not whether its content was read or understood. I define readership as remaining on the URL that contains a EULA for at least one second. This is conservative in that it certainly overcounts the effective rate of readership. The typical EULA is thousands of words long and cannot be read in one or even several seconds. Furthermore, some of the EULA page clicks may be accidental, or the browser may be looking for other information that is by chance also on the page that contains the EULA.

4. Are Clickwraps More Likely to be Read Than Browsewraps?

Tables 2 and 3 summarize the characteristics of visits to companies that present their terms as clickwraps of the hyperlink (not the scroll box) type or as browsewraps. This analysis excludes visits to the three companies with clickwraps of the scroll box type—the precise form of clickwrap preferred by the ALI—because all shoppers who begin the checkout process are automatically presented with the text of the EULA. This prevents us from observing the voluntary readership rate. I will address visits to these companies separately.

Table 2 measures visits as uninterrupted sessions and Table 3 measures visits by unique users, aggregating all the monthly sessions. Each table presents data for each definition of a shopping visit. I report the number of such visits to companies with clickwraps and browsewraps and the average and median number of page views. I also report the number of visits where the shopper accessed a EULA as well as the average and median length of time spent on the EULA URL when it is accessed.

The top panel of Table 2 looks at uninterrupted session/visits by visitors who clicked on at least 2 pages during a company visit. There are 11,184 visits to companies that make their contract available via a clickwrap, including repeat visits. The average and median numbers of pages viewed during these visits are 9 and 4, respectively. Yet of all of these thousands of visits, only 8 (or 0.07%) included a EULA access.

This is not much of an improvement over the readership rate of browsewraps. There are 120,545 visits to companies that use browsewraps, and the average and median numbers of pages viewed at those companies are 12 and 5, respectively. The total number of EULA visits for these
companies is 40 out of 120,545, or 0.03% of all visits. While the observed low readership rate here of browsewraps is consistent with the Principles’ view that they might provide insufficient notice or be too hard to find, the fact that the readership rate of clickwraps is also virtually nil suggests that access is not the fundamental constraint on readership.

The last columns summarize the time spent on the EULA URL when it is accessed. The median time spent on EULAs as clickwraps is 61 seconds and the median for browsewraps is 30 seconds. As noted in Bakos et al., the average EULA length is about 2,300 words long. Given the time spent on these contracts, it is unlikely that shoppers became meaningfully informed after having accessed them. Not only are very few shoppers choosing to read the terms, those who do read them often do not take the time required to fully understand them.

When a shopping visit is defined more strictly, as a visit in which at least 5 pages in a company website were accessed, the picture is similar. The readership rate of EULAs approximately doubles for both clickwraps and browsewraps, but it remains miniscule in both cases, at under 0.2%.

The bottom panel of Table 2 considers visits in which the shopper actually initiated a checkout process. In this case we can be sure that the visitors were serious shoppers. All of the visitors to clickwrap EULA sites here are aware of the license because the checkout process requires them to explicitly agree to the it. Still, only 2 out of 381 shoppers chose to actually view the license. This suggests that increased disclosure may simply be unable to induce shoppers to study terms, even when they are being required to confirm their assent.

Table 3 aggregates all monthly sessions of an individual user into single company visits. The results are similar to those in Table 2. For all cases the total number of visits is reduced because multiple visits by individual users are being combined. The overall results of Table 3, however, indicate that the general impressions from Table 2 do not depend on the precise definition of company visits. The very highest fraction of readers among retail shoppers across all shopper and session definitions is 1.46%. Only 3 out of the total of 205 buyers that were forced to acknowledge the EULA actually read it.\[42\]

---

\[42\] The issue is not one of sample size. The asymptotic standard error of the mean of the binomial distribution is \((p*(1-p)/n)^{1/2}\). Inserting \(p=0.0146\) and \(n=205\) gives an estimate of the standard error of 0.008. Roughly speaking, the 95% confidence interval for the estimated readership rate is 0.0146\(\pm\)1.96\*0.008, or 0 to 0.03, i.e. 0% to 3%. 

14
Tables 2 and 3 contain six distinct estimates of the effect of mandating disclosure on the readership rate. In the first panel of Table 2, the increase is 0.04% (0.07% - 0.03%), for example. Some of these are more likely to approach lower bounds and others more likely to represent upper bounds. Averaging across the six estimates yields 0.36%, but in any case the range is narrow in absolute terms.

These results raise serious doubts about whether disclosure will or even can have an impact on readership as substantial as that envisioned by the drafters of the Principles. There is one more category of disclosure to examine, however, which include the very best-disclosed EULAs—clickwraps of the scroll box type. These contracts are presented in a scroll box next to the “I agree” icon and don’t ask consumers even to click on a single link. Because all shoppers who decide to purchase a product are presented with the text of the EULA regardless of their interest in reading it, I can only measure the time spent on these pages to assess their true interest level. In interpreting the time spent on these pages, one must consider that these companies also require the shopper to write their name, billing address, and credit card information on the same page on which the EULA text appears.43

For uninterrupted sessions, there were 7,296 (unreported) visits to these firms with under the broadest definition of shopping visit. Of these, 523 had a EULA access (or 7.13%). The best way to interpret this result is that 7.13% of those visiting these companies started a checkout process. The average time spent on the page containing the EULA was 117 seconds and the median was 65 seconds. Given that these companies require shoppers to enter personal information as well as agree to a lengthy EULA, most of the time spent on this page was not spent reading the EULA text. More precisely, if the average EULA is 2,300 words long and the average adult reading rate of non-legalese is 250 to 300 words per minute, the shopper needs ten minutes just to read the full contract, leaving aside the other tasks required on the page. The results are similar under other definitions of shopping and company visits. Of all combinations of definitions, the highest median time spent on the EULA-containing page was 94 seconds.

43 This varies by firm. Some firms require shoppers to enter their names and address in the EULA page, while others require that shoppers enter their credit card information.
In unreported logistic regressions, I regress the probability that a EULA will be read on contract accessibility and controls for company, product, and shopper characteristics.\textsuperscript{44} I find that mandating assent has if anything a small and statistically significant negative effect on contract readership (0.2\% at the 5\% level of significance) in the case of the two broader definitions of shopping visits.\textsuperscript{45} In the case of secured checkouts, mandating assent increases readership by a statistically insignificant 0.7\%. The results hold even after considering that some products, such as Microsoft Office, may be repeat purchases and thus their EULAs are less likely to be read.\textsuperscript{46}

Although common sense suggests that such marginal increases in readership rates are too small to induce an informed minority equilibrium in which comparison shopping effectively polices terms, this can be demonstrated more quantitatively. Disregarding the impact of control variables, which as just noted diminishes the overall higher readership rate associated with clickwraps, the highest fraction of EULA accesses in our sample was found in the monthly aggregated sessions of shoppers that initiated a checkout session. Even among these most serious shoppers, the fraction of EULA access was under 1.5\% (3 out of 205). Using estimates for the requisite size of the informed minority from Bakos \textit{et al.}, I find that even this number is too small to discipline sellers into offering desirable terms.\textsuperscript{47}

The general conclusion is clear: No matter how prominently EULAs are disclosed, they are almost always ignored.

5. Implications

\textsuperscript{44} Complete product controls include whether the product is offered on a subscription basis, the natural log of the median product price, whether the product is targeted to business or consumer end users, and whether the product is offered with a trial version. Company controls include the natural log of revenue, whether the company is publicly traded, and the natural log of age. Shopper controls include gender, the natural log of age, and the natural log of income.

\textsuperscript{45} Marotta-Wurgler (2010), supra note 12 does a more nuanced study of the effects of contract accessibility on readership and finds that increased contract access (i.e., lower number of mouse-clicks it takes to access the contract) is indeed associated with increased readership, but that the total number of readers is extremely small.

\textsuperscript{46} Bakos \textit{et al.}, supra note 21, and here, check whether shoppers are less likely to read the EULAs of products that are more likely to be purchased repeatedly. Users that become familiar with a product that is continuously updated may feel less need to concern themselves with the EULA. Other products, such as test preparation software, are less likely to be purchased repeatedly. I create a dummy variable that equals one if the company markets products that are in our judgment likely to be repeat purchases. I find no relationship between the nature of the use of the software and users’ propensity to access EULAs.

\textsuperscript{47} Marotta-Wurgler (2010), supra note 12.
Disclosure regimes have long been the preferred approach to address problems stemming from imperfect information in a range of consumer contexts. The Principles follow this tradition and recommend increased disclosure as a device to increase readership and comparison shopping for standard terms. This paper evaluates whether this recommendation is likely to work.

Using the clickstream data of tens of thousands of households for a period of one month, I find clickwraps are not read at significantly higher rates. Depending on the methodology, I estimate that moving from browsewraps to clickwraps would increase shoppers’ readership rates by 0.04% to 1.32% relative to a baseline readership rate of around 0%. An average estimate of the effect across six methodologies is 0.36%. Put differently, switching to clickwraps would be expected to generate one more reader out of every 278 shoppers. I also find that the time spent on EULA URLs, even when they are accessed, is usually too small to allow for more than a cursory review. These findings suggest that the Principles’ goal of increasing disclosure to alleviate possible market failures will not increase readership or economic pressure on sellers.

It is also worth noting that there is evidence indicating that delayed or reduced contract disclosure is not associated with more pro-seller terms. Recent evidence shows that the terms of sellers who use PNTLs are no more one-sided than those of sellers that disclosed their contracts on their sites in the form of browsewraps or clickwraps. 48 This suggests that sellers aren’t using delayed or inconspicuous disclosure to sneak in particularly unfavorable terms.

An argument made in favor of disclosure is that even if it does not increase readership it honors contract law’s “opportunity to read” and protects individual autonomy. 49 The problem with that position is that these relatively intangible benefits need to be weighed against the real costs of changing policy.

There are a number of such costs. Some are direct costs to sellers. In my sample, only 3 out of 81 sellers currently use clickwraps of the specific type recommended by the Principles. A related cost is the lost business as a result of complicating the checkout process. 50

Other costs are hidden but potentially more significant. There is a possible opportunity cost that ineffective change forestalls real change. Once a regulation is in place, it might take

48 Marotta-Wurgler, supra note 11.

49 See Principles, supra note 1 at 133.

50 See Ronald Mann & Travis Siebeneicher, Just One Click: The Reality of Internet Retail Contracting, 108 Colum. L. Rev. 984 (2008) and references cited therein.
decades to revise its effectiveness and implement a new approach. In the meantime, the mere appearance of a new policy embraced by authorities might induce courts to be more lax about policing terms, to the extent that they are lulled into thinking that terms are now the product of a well-functioning market. As noted earlier, this concern is also shared by the drafters of the Principles.

It is important to be precise about the policy implications of these findings. I do not provide any evidence regarding whether EULA terms are indeed too unfavorable to the consumer—whether they are one-sided to a degree that buyers would take note if they were made to understand them. Sellers could be constrained by reputation or the fear of litigation and could be writing reasonable contracts in most cases. What I show is that if there are inefficiencies in this market, mandatory disclosure alone cannot be counted upon to make a difference, and it is dangerous to believe otherwise.

The evidence here also implicitly offers some guidance as to which types of intervention might be more effective in increasing economic pressure on sellers. Given the low readership rates regardless of accessibility, the problem appears to involve the expected net benefits to readership. Many EULAs are too long and complicated for one to rationally take the time to read them, especially when they govern the use of moderately-priced products. Several consumer watchdog groups maintain websites that identify EULAs with onerous terms. Unfortunately, Bakos et al. find that very few people access these websites either. There is even a program that users can install for free that screens EULA terms and alerts consumers of possible pitfalls, but most software shoppers are not aware of it.


52 See Hillman, supra note 9, Ben-Shahar & Schneider, supra note 9.


54 Bakos et al, supra note 21. See also Marotta-Wurgler (2010).

55 The company Javacool Software offers a version of its “EULAlyzer” software for free. Alexa, a site that measures Internet traffic, reports that its traffic rank is currently 78,085, thus indicating very few monthly visits. See http://www.javacoolsoftware.com/eulalyzer.html.
Simplifying and standardizing the presentation format of contracts would likely be helpful. This might change consumers’ expectations about the costs of reading contracts and might induce them to read more, although one should be realistic about the actual magnitude of any increase in readership. Alternatively, a brief, standardized label summarizing the key provisions on or near the product description page—similar to food nutrition labels—could only be helpful. Perhaps consumers could come to rely on standardized letter grades for contracts that had been approved by a credible and independent third party. But again, each one of these changes would be costly to implement and should not be formally proposed by authorities without evidence that these costs are outweighed by benefits. Studies like the one in this paper represent one approach to measuring the efficacy of alternative policy proposals.

It could also be the case that in some cases buyers would almost never find it worthwhile to become informed about terms. Given the low probability that an onerous term such as a forum selection clause will be triggered, consumers might be best served to become informed about EULAs only after an adverse event occurs. It might then be helpful to consider easing consumers’ ability to seek redress ex post, as the threat of litigation can also discipline sellers into offering reasonable terms. Possible solutions would be to facilitate access to small claims courts and reconsider the desirability of forum selection clauses and class action waivers. The Principles indeed introduce some mandatory clauses in this context.

Such an approach gets closer and closer to direct regulation of terms, however, which is always uncomfortable because the regulator is put in a difficult and paternalistic position. It is hard enough to determine optimal licensing terms in any one transaction but even harder to codify guidelines that would be beneficial in a broad majority of cases. Disclosure and suitable

---

56 The Federal Trade Commission has mandated standardized labeling in a variety of contexts. Examples include the Appliance Labeling Rule, the Fuel Ratings Rule, and the R-Value Rule. See http://www.ftc.gov/bcp/menus/business/energy.shtm. Another example of standardized disclosure is the Schumer Box, which requires that certain terms of credit cards be disclosed in a summarized and standardized fashion. See also Clayton P. Gillette, Preapproved Boilerplate, in Boilerplate: Foundations of Market Contracts (O. Ben-Shahar ed., 2006); Oren Bar-Gill & Oliver Board, Rethinking Disclosure or Product Use Information and the Limits of Voluntary Disclosure (mimeo, 2010).

57 This was proposed by Ben-Shahar, supra note 9.

modifications of contract format may be steps in the right direction, but we must be realistic about whether the likelihood that even a well-designed combination of changes along these lines would ever be able to raise the level of awareness of EULA terms to a meaningful fraction. Before taking this direction, we must move beyond anecdote and learn more about the extent to which terms now on offer are detrimental to consumer welfare.\textsuperscript{59}

Table 1. EULA Location Summary Statistics: Browsewraps v. Clickwraps.

NOTE—Browsewraps are contracts presented as hyperlinks on sellers’ web pages that generally require one or more clicks to access from the main page. Clickwraps are contracts presented next to boxes with “I agree” icons next to them that consumers must click on to continue with a particular transaction.

<table>
<thead>
<tr>
<th>Contract Accessibility</th>
<th>N</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clickwrap</td>
<td>25</td>
<td>30.86</td>
</tr>
<tr>
<td>Browsewrap</td>
<td>56</td>
<td>69.14</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 2. Clickwraps vs. Browsewraps: Visits Measured as Uninterrupted Sessions

NOTE—Summary statistics of visits to companies with clickwraps and browsewraps, measured as uninterrupted sessions. Results are presented for three different definitions of a company/shopping visit: two or more pages accessed, five or more pages accessed, and visits where a shopper placed a product in a shopping cart and began a secure checkout process. The first column indicates contract accessibility, measured as either a browsewrap (i.e., a contract posted in a hyperlink one to several clicks away from the most obvious path to purchase that requires active search by the shopper), or a clickwrap (i.e., a contract that can only be accessed by clicking on a hyperlink, but next to a box that requires the user to click on “I agree”). The second column reports the number of visits to companies according to their contract accessibility. The third and fourth columns report the average and median number of pages visited during a company visit. The fifth reports the number of visits where the visitor accessed a EULA. The remaining columns report the average and median time.

<table>
<thead>
<tr>
<th>Contract accessibility (Clickwrap vs. browse-wrap)</th>
<th>N of company visits</th>
<th>Mean N of pg. acc. per company visit (s.d.)</th>
<th>Median N of pg. acc. per company visit</th>
<th>N of EULA visits (% of company visits)</th>
<th>Mean length of EULA access in seconds (s.d.)</th>
<th>Median length of EULA access in seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A. At Least 2 Pages Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>11,184</td>
<td>8.5 (23.6)</td>
<td>4</td>
<td>8</td>
<td>139.6 (223.8)</td>
<td>61</td>
</tr>
<tr>
<td>Browsewrap</td>
<td>120,545</td>
<td>12.4 (26.9)</td>
<td>5</td>
<td>40</td>
<td>46.9 (43.1)</td>
<td>29.5</td>
</tr>
<tr>
<td><strong>Panel B. At Least 5 Pages Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>4,513</td>
<td>17.1 (35.4)</td>
<td>9</td>
<td>7</td>
<td>150.4 (239.5)</td>
<td>58</td>
</tr>
<tr>
<td>Browsewrap</td>
<td>67,769</td>
<td>19.9 (34.0)</td>
<td>10</td>
<td>37</td>
<td>46.8 (44.74)</td>
<td>29</td>
</tr>
<tr>
<td><strong>Panel C. At Least 1 Secure Checkout Page Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>381</td>
<td>13.7 (30.6)</td>
<td>6</td>
<td>2 (0.52)</td>
<td>372 (444.1)</td>
<td>372</td>
</tr>
<tr>
<td>Browsewrap</td>
<td>4,485</td>
<td>13.11 (30.6)</td>
<td>5</td>
<td>4 (0.09)</td>
<td>90 (68.1)</td>
<td>76.5</td>
</tr>
</tbody>
</table>
Table 3. Clickwraps vs. Browsewraps: Visits Measured as Monthly Aggregates

NOTE—Summary statistics of visits to companies with clickwraps and browsewraps, measured as monthly aggregates. Results are presented for three different definitions of a company/shopping visit: two or more pages accessed, five or more pages accessed, and visits where a shopper placed a product in a shopping cart and began a secure checkout process. The first column indicates contract accessibility, measured as either a browsewrap (i.e., a contract posted in a hyperlink one to several clicks away from the most obvious path to purchase that requires active search by the shopper), or a clickwrap (i.e., a contract that can only be accessed by clicking on a hyperlink, but next to a box that requires the user to click on “I agree”). The second column reports the number of visits to companies according to their contract accessibility. The third and fourth columns report the average and median number of pages visited during a company visit. The fifth reports the number of visits where the visitor accessed a EULA. The remaining columns report the average and median time.

<table>
<thead>
<tr>
<th>Contract accessibility (in clicks from path of purchase)</th>
<th>N of company visits</th>
<th>Mean N of pg. acc. per company visit (s.d.)</th>
<th>Median N of pg. acc. per company visit</th>
<th>N of EULA visits (% of company visits)</th>
<th>Mean length of EULA access in seconds (s.d.)</th>
<th>Median length of EULA access in seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A. At Least 2 Pages Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>6,100</td>
<td>15.6</td>
<td>4</td>
<td>8</td>
<td>139.6</td>
<td>61</td>
</tr>
<tr>
<td>(57)</td>
<td>(57)</td>
<td>(0.13)</td>
<td></td>
<td></td>
<td>(223.8)</td>
<td></td>
</tr>
<tr>
<td>Browsewrap</td>
<td>63,272</td>
<td>23.66</td>
<td>7</td>
<td>39</td>
<td>51.4</td>
<td>30</td>
</tr>
<tr>
<td>(79.3)</td>
<td>(79.3)</td>
<td>(0.06)</td>
<td></td>
<td></td>
<td>(45.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Panel B. At Least 5 Pages Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>3,011</td>
<td>29.0</td>
<td>11</td>
<td>7</td>
<td>150.4</td>
<td>58</td>
</tr>
<tr>
<td>(79.0)</td>
<td>(79.0)</td>
<td>(0.23)</td>
<td></td>
<td></td>
<td>(239.5)</td>
<td></td>
</tr>
<tr>
<td>Browsewrap</td>
<td>40,697</td>
<td>35.3</td>
<td>14</td>
<td>36</td>
<td>49.5</td>
<td>29.5</td>
</tr>
<tr>
<td>(96.9)</td>
<td>(96.9)</td>
<td>(0.09)</td>
<td></td>
<td></td>
<td>(45.5)</td>
<td></td>
</tr>
<tr>
<td><strong>Panel C. At Least 1 Secure Checkout Page Accessed During Visit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clickwrap</td>
<td>205</td>
<td>79.7</td>
<td>27</td>
<td>3</td>
<td>283.3</td>
<td>106</td>
</tr>
<tr>
<td>(165.9)</td>
<td>(165.9)</td>
<td>(1.46)</td>
<td></td>
<td></td>
<td>(349.5)</td>
<td></td>
</tr>
<tr>
<td>Browsewrap</td>
<td>2,786</td>
<td>34.0</td>
<td>10</td>
<td>4</td>
<td>90</td>
<td>76.5</td>
</tr>
<tr>
<td>(79.1)</td>
<td>(79.1)</td>
<td>(0.14)</td>
<td></td>
<td></td>
<td>(68.1)</td>
<td></td>
</tr>
</tbody>
</table>