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## Does Disclosure Matter?

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# Does Disclosure Matter?

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November 23, 2010

## Abstract:

Disclosure has long been the preferred regulatory approach to curtail one-sided standard form contract terms. Examples include the Truth in Lending Act, the new “ALI Principles of the Law of Software Contracts,” and many other proposals which await Congressional approval. The appeal of disclosure is that it is relatively low cost, improves consumer decision-making and preserves consumer choice. For disclosure to be effective, however, it must increase readership and understanding of contracts to a meaningful rate, and, conditional on readership, contract content must be relevant to purchase decisions. This paper tests both these necessary conditions. We follow the clickstream of 47,399 households to 81 Internet software retailers to measure contract readership as a function of disclosure. We find that making contracts more prominently available does not increase readership in any significant way. In addition, the purchasing behavior of those few consumers who read contracts is unaffected by the one-sidedness of their terms. The results suggest that mandating disclosure online should not on its own be expected to have large effects on contract content.

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\* Associate professor of law. I am grateful to participants at the AALS section on Commercial Law and Related Consumer Law, Boston University Law and Economics Workshop, U. of Illinois College of Law and Economics Workshop, New York University Law and Economics Workshop, Bureau of Consumer Protection at the Federal Trade Commission, Conference on Empirical Legal Studies, Barry Adler, Oren Bar-Gill, Yannis Bakos, Omri Ben-Shahar, Albert Choi, Kevin Davis, Richard Epstein, Clay Gillette, Lewis Kornhauser, Roberta Romano, Jeff Wurgler, and Ben Zipursky for helpful comments. Mangesh Kulkarni provided excellent research assistance.

## 1. Introduction

The majority of consumer transactions are governed by standard form contracts. Boilerplate allows sellers to offer one-size-fits-all agreements to a broad base of consumers without having to negotiate terms such as warranties and dispute resolution clauses individually. This makes mass-marketing of goods and services possible. But boilerplate also has its problems. The focus of concern in this paper is on the fact that, anecdotally at least, consumers rarely read fine print. And when consumers do not consider contract terms into their purchase decisions, sellers will have insufficient incentives to offer terms consumers do, in fact, want, instead offering more biased terms.<sup>2</sup>

Regulators typically have preferred increased disclosure as the policy instrument in these circumstances. Congress' 1968 Truth in Lending Act (TILA) was created to increase consumer protection in credit transactions by mandating disclosure of key lending terms, among others.<sup>3</sup> The 1975 Magnuson-Moss Warranty Act, requires standardized language and disclosures if sellers of consumer products want to offer warranties. The Securities and Exchange Commission (SEC) administers a large number of disclosure regimes to protect investors and preserve the proper functioning of the securities markets.<sup>4</sup> Most recently, the American Law Institute approved the *Principles of the Law of Software Contracts* with the goal of encouraging courts and legislatures to adopt rules to harmonize the law of software contracts.<sup>5</sup> The drafters of the *Principles* opt for regulation of disclosure rather than regulation of terms to correct the problems created by imperfect information. Additional disclosure regulations are later discussed.

Disclosure can be beneficial because to the extent that consumers respond to disclosure, it improves decision-making, preserves consumer choice, and relies on the market to achieve

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<sup>2</sup> Howard Beales, Richard Craswell, & Steven C. Salop, The Efficient Regulation of Consumer Information, *J. Law & Econ.* 21(3) 491-539 (1981). See also Steven C. Salop, Information and Monopolistic Competition, 66 *Am. Econ. Rev.* 240 (1976).

<sup>3</sup> 15 U.S.C. 1601. In fact, the central element of the current consumer protection in financial services is disclosure. See Adam Levitin, The Consumer Financial Protection Agency, Pew Financial Reform Project, Briefing Paper #2, 2009.

<sup>4</sup> See, e.g., SEC 1933 Act, 15 U.S.C. § 77a; Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745 (2002); Streamlining Disclosure Requirements Relating to Significant Business Acquisitions, Securities Act Release No. 33-7355 (Oct. 10, 1996).

<sup>5</sup> American Law Institute, *Principles of the Law of Software Contracts* (March 16, 2009) [hereinafter ALI, *Principles*].

regulatory goals instead of costly and ill-informed intervention by regulators.<sup>6</sup> It has been argued that “[i]nformation remedies are most likely to be the most effective solution to information problems. They deal with the cause of the problem, rather than its symptoms, and leave the market maximum flexibility.”<sup>7</sup>

Despite its pervasiveness theoretical appeal, disclosure regulation has been criticized as ineffective due to a belief that disclosure is unlikely to affect purchasing behavior, either because most consumers will still not read or because they will not understand terms.<sup>8</sup> Advocates of disclosure, however, reply that disclosure regimes can be beneficial even if they don’t affect the behavior of most consumers. As long as these regimes increase the number of informed consumers to a critical mass, disclosure will be effective because sellers in sufficiently competitive markets will have an incentive to cater to the needs of these informed buyers and thus confer benefits to the non-readers as well.<sup>9</sup>

The “informed minority” argument has been used broadly to resist non-disclosure intervention.<sup>10</sup> Disclosure regimes theoretically facilitate the existence and creation of an informed minority. Reducing search costs facilitates comparison shopping, which increases the number of informed buyers.<sup>11</sup> For instance, the drafters of the aforementioned ALI’s *Principles* favor disclosure regulation with the goal that disclosure will promote the emergence of an informed minority.<sup>12</sup> The draft includes a series of provisions aimed to increase contract disclosure by directing sellers to present their contracts in a “reasonably accessible” manner and to make notice and availability of terms conspicuous before purchase.<sup>13</sup>

Disclosure regimes thus maintain their promise if they can create the requisite informed minority in consumer markets. Whether increased disclosure can indeed accomplish this is entirely an empirical question. Bakos *et al.* (2009) find that only about one in 1,000 online

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<sup>6</sup> Howard Beales, Richard Craswell & Steven Salop, Information Remedies for Consumer Protection, *Am. Ec. Rev.* 71(2) 410-413 (1981).

<sup>7</sup> *Id.*

<sup>8</sup> See e.g., William Whitford, The Functions of Disclosure Regulations in Consumer Transactions, *Wisc. L. Rev.* 400 (1973); Richard Epstein, The Neoclassical Economics of Consumer Contracts 92 *Minn. L. Rev.* 803 (2008)

<sup>9</sup> *Id.* at 431. Alan Schwartz & Louis Wilde, Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis, 127 *U. Pa. L. Rev.* 630 (1979).

<sup>10</sup> Schwartz & Wilde, *id.* Michael Spence, Consumer Misperceptions, Product Failure and Producer Liability, *Review of Economic Studies* (1977); Steven Salop & Joseph Stiglitz, Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion, 44 *Rev. Econ. Stud.* 493, 494 (1977).

<sup>11</sup> See Whitford, *supra* note 8 at 431; Schwartz & Wilde; ALI *Principles*, *supra* note 5.

<sup>12</sup> ALI *Principles* *supra* note 5 at 117.

<sup>13</sup> ALI *Principles* Section 2.02(c)(1).

software shoppers chose the read the relevant contract, the End User License Agreement (EULA). This number is too small to constitute an informed minority, at least in the market for software.<sup>14</sup>

The current paper is the first large-sample study of whether increased disclosure results in increased readership of contract terms. We track the visits of 47,399 households to the sample software retailers over a period of one month utilizing clickstream data. Then, we examine whether potential buyers of software are more likely to voluntarily access EULAs when such contracts are made more accessible. For each household in our panel, we track the exact sequence of web pages (URLs) accessed in a given company, including those that correspond to license agreements, as well as the time spent on each URL. For each software retailer, we measure the EULA accessibility as the number of mouse-clicks it takes to access the EULA from the most natural path to purchase.

The first main finding is that increasing contract accessibility does not, in fact, result in an economically significant increase in readership. Increasing contract accessibility by one mouse-click increases contract readership by at most 0.05%. We estimate that even mandating assent (in the form of a clickwrap where consumers are required to click on “I agree” next to the terms) would yield a number of informed consumers insufficient to create an informed minority, because even with prominent disclosure, readership, as conservatively estimated as including all consumers that access the EULA page for at least one second, remains less than 0.5%.

We also measure whether those few shoppers who indeed read the contract are swayed by what they read, a second necessary condition for the “informed minority” theory of economically efficient boilerplate. We use the methodology in Marotta-Wurgler (2008) to determine the relative buyer-friendliness of each individual contract. We find that shoppers do not respond to what they see in the EULA because they are equally likely to purchase a product *regardless* of how buyer-friendly it is. Either people don’t spend enough time reading the EULA, they don’t understand the terms well enough to incorporate them in their purchase decision, or both. Given that shopping for terms is so cheap online, we conclude that what is costly is not the cost of contract *access* but rather the cost of *reading*. The policy implication of these findings is that

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<sup>14</sup> Yannis Bakos, Florencia Marotta-Wurgler & David R. Trossen, Does Anyone Read the Fine Print? Testing a Law and Economics Approach to Standard Form Contracts, NYU Law and Economics Research Paper No. 09-40 (2009).

mandating increased contract disclosure will require costly changes by a majority of sellers, but on its own will probably have no detectable effect on consumer behavior.

Section 2 of the paper provides an overview of the literature and disclosure regulations and proposals. Section 3 describes the methodology. Sections 4 and 5 describe our main results. Section 6 offers conclusions and implications.

## **2. Disclosure as a Mechanism to Prevent Market Failure**

### **2.1. Overview**

In most consumer transactions buyers are faced with the task of shopping among a variety of product and service attributes. Many of these include warranties, details of product use, and remedies for product failures, which are often presented to consumers in the form of pre-printed standard form contracts. Despite their pervasiveness, the use of boilerplate has led academics and policy makers to question their desirability and enforcement. The concern is that because buyers rarely read or understand fine print sellers will impose unfair or unwanted terms.<sup>15</sup> The result is that consumers are unable to take decisions in their own best interest. A number of studies suggest that some markets might not be functioning optimally due to imperfect information or due to consumers' bounded rationality.<sup>16</sup>

Regulators have available a variety of instruments to respond to this sort of situations. The most intrusive interventions involve regulating terms and mandating standards.<sup>17</sup> The least intrusive call for mandating or increasing information disclosure to reduce consumers' costs of becoming informed and enable them to make purchase decisions with full information. In theory,

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<sup>15</sup> Alan Schwartz & Louis Wilde, *Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis*, 127 U. Pa. L. Rev. 630 (1979); Michael Spence, *Consumer Misperceptions, Product Failure and Producer Liability*, *Review of Economic Studies* (1977); Steven Salop & Joseph Stiglitz, *Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion*, 44 *Rev. Econ. Stud.* 493, 494 (1977).

<sup>16</sup> See e.g., Bakos et al., *supra* note 14 (finding that roughly 1% of online software shoppers choose to read EULAs of software sold online); Stefano DellaVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119(2) *Q. J. Econ.* 353-492 (2004) (noting that profit-maximizing firms exploit consumers' time-inconsistent preferences and naïve beliefs by designing contract terms that exploit these shortcomings); Oren Bar-Gill, *Seduction by Plastic*, 98 *Nw U. L. Rev.* (2004) (arguing that credit card issuers offer terms that take advantage of consumers' biases and inability to factor all the relevant costs of credit card borrowing); Oren Bar-Gill, *Bundling and Consumer Misperception*, 73 *U. Chi. L. Rev.* 33 (2006); Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 *Q. J. Econ.* 505 (2006).

<sup>17</sup> For instance, the state of Ohio passed a bill imposing a 28% interest rate cap on payday loans (House Bill 545).

and if effective, disclosure is preferable because it tends to be considerably cheaper, preserves consumer choice, and encourages sellers to compete on the basis of the information disclosed.<sup>18</sup>

Disclosure regimes have been adopted in a wide range of consumer contexts. Current (and proposed) consumer protection measures are often based on disclosure regimes.<sup>19</sup> The Securities Act of 1933, the Securities Exchange Act of 1934, the Investment Company Act of 1940, and the Sarbanes-Oxley Act were enacted to ensure that investors in securities markets are provided with pertinent financial information regarding the securities being offered for sale.<sup>20</sup> In consumer credit markets, TILA requires mandatory and standardized disclosure of terms and cost of the loans.<sup>21</sup> Similarly, The Truth in Savings Act mandates clear and uniform disclosure of interest rates and fees related to deposit accounts to encourage competition and informed consumer decision making.<sup>22</sup> In the consumer products context, the Magnuson-Moss Warranty Act requires that sellers who warrant their products do so in a standardized way and in clear language.<sup>23</sup> The Nutritional Labeling and Education Act (NLEA) requires food producers to attach detailed nutrient content labels to the food products that they sell.<sup>24</sup>

A very recent example of disclosure regulation can be found in the American Law Institute's newly approved *Principles of the Law of Software Contracts*. The *Principles* seek to make contracts more readily accessible to consumers. Specifically, Section 2.02 provides safeguards for transactions involving mass market retail transactions by directing a series of seller "best practices" with respect to disclosure that, if followed, ensure enforcement of a seller's terms. One provision requires software vendors, both online and brick-and-mortar, to

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<sup>18</sup> See Beales et al. supra note 6. See also Whitford supra note 8; Howard Beales, Richard Craswell & Steven C. Salop, *The Efficient Regulation of Consumer Information*, 24 J. L. & Econ. 499 (1981).

<sup>19</sup> Adam Levitin, *The Consumer Financial Protection Agency*, Pew Financial Reform Project, Briefing Paper #2 (2009).

<sup>20</sup> The SEC has stated that "[t]he laws and rules that govern the securities industry in the United States derive from a simple and straightforward concept: all investors, whether large institutions or private individuals, should have access to certain basic facts about an investment prior to buying it, and so long as they hold it. To achieve this, the SEC requires public companies to disclose meaningful financial and other information to the public. This provides a common pool of knowledge for all investors to use to judge for themselves whether to buy, sell, or hold a particular security. Only through the steady flow of timely, comprehensive, and accurate information can people make sound investment decisions." At <http://www.sec.gov/about/whatwedo.shtml>.

<sup>21</sup> 15 U.S.C. 1601.

<sup>22</sup> 12 U.S.C. 4301.

<sup>23</sup> 15 U.S.C. 2301.

<sup>24</sup> The Nutrition Labeling and Education Act (Public Law 101-535) (1990).

post the terms of their license agreements in a “reasonably accessible” manner on their website.<sup>25</sup> This asks that sellers establish an online presence and would by definition eliminate the use of “pay now, terms later” (PNTL) contracts in which buyers are able to access the contract only after purchase.<sup>26</sup> The Principles ask that notice and availability of terms should be conspicuously available via a hyperlink before purchase “so that a transferee cannot help but see the notice.”<sup>27</sup> Finally, sellers who sell their software through their corporate website must require buyers to click on “I agree” next to a scroll box with the text of the license.<sup>28</sup>

If contract readership remains unaffected by increased contract access, however, mandating increased disclosure would be ineffective and even be harmful. First, consumers would continue to make purchasing decisions without fully considering terms. Second, courts might be led to mistakenly believe that sellers’ terms are the product of well-functioning market mechanisms and be more lenient in policing abusive terms.<sup>29</sup> Third, in the software context, required disclosure in the form of clickwraps might be costly to sellers if the additional steps in the checkout process results in loss of revenue, as anxious shoppers lose their patience by having to click through many pages to check out.<sup>30</sup> These recommendations would generate significant and costly changes to current software seller disclosure practices, because about half of the contracts currently offered are PNTLs or browswraps (which are hyperlinks usually located at the bottom of a webpage).

Critics have expressed doubts about the ability of disclosure regimes to generate significant increases in the number of informed consumers. Salop and Stiglitz and Schwartz and Wilde responded to these critiques by introducing the “informed minority argument,” which yields a competitive outcome even if the majority of consumers remains uninformed. When

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<sup>25</sup> Principles Section 2.02(c)(1). The comments state that “[t]ransferors should adopt the best practices of subsection (c) to ensure enforcement of the form...” At 125. It should be noted that even terms that comply with Section 2.02(c)(1) would be subject to a claim that the terms are unconscionable or against public policy.

<sup>26</sup> The drafters write that “[t]o ensure enforcement of their standard form, software transferors should disclose terms on their website prior to a transaction and should give reasonable notice of and access to the terms upon initiation of the transfer, whether initiation is by telephone, Internet, or selection in a store.... Transferees should be able to return the software only if opening the package is the only way to see the terms accompanying the package.” Id at 116-7.

<sup>27</sup> Principles Section 2.02(c)(2). See also comments at 129.

<sup>28</sup> Principles Section 2.02(c)(3).

<sup>29</sup> Robert Hillman, On-Line Boilerplate: Would Mandatory Website Disclosure of E-Standard Terms Backfire? 104 Mich. L. Rev (2006); Omri Ben-Shahar, The Myth of the “Opportunity to Read” in Contract Law, Eur. Rev. of Contract L., 5(1) (2009).

<sup>30</sup> Ronald Mann & Travis Siebeneicher, Just One Click: The Reality of Internet Retail Contracting, 108 Colum. L. Rev. (2008).

consumers have homogeneous preferences regarding contract terms and sellers are unable to discriminate between informed and uninformed consumers, a market can yield a competitive equilibrium if enough informed consumers shop for the competitive price and terms.<sup>31</sup> As long as disclosure regulation helps create an “informed minority” of buyers for which sellers are willing to compete, sellers will be disciplined.<sup>32</sup>

Still, 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.<sup>33</sup> Mann notes that disclosure is likely to be ineffective at improve consumer decision-making in the credit card context.<sup>34</sup> Ultimately, whether disclosure regimes work to generate a requisite informed minority is an empirical question.

## 2.2. Prior Empirical Evidence

Prior empirical evidence on the effectiveness of disclosure regimes varies across and within particular contexts. In the financial context, Choi *et al.* find that subjects who were required to choose among four S&P 500 index funds failed to choose the ones with lowest fees given that those would be the ones who would perform best on a net fee basis. This behavior persisted even after subjects were given prospectuses that included more transparent fee summary sheets.<sup>35</sup> In another set of experiments, Beshears *et al.* find that shortened SEC disclosures have only modest improvements in portfolio choice.<sup>36</sup> In a recent study that finds that older and younger adult borrowers tend to make poor financial choices, Agarwal *et al.* rely on

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<sup>31</sup> Salop & Stiglitz, *supra* note 10. The authors also mention that “[o]n the other hand, by shopping at high-priced stores, the uninformed inflict an external diseconomy on the informed; these informed must gather costly information to obtain the lower price.”

<sup>32</sup> See Whiftord *supra* note 8; Hillman *supra* note 29. See also Schwartz & Wilde, *supra* note 10.

<sup>33</sup> Ben-Shahar, *supra* note 29. See also Omri Ben-Shahar & Carl Schneider, *The Failure of Mandated Disclosure*. U of Chicago Law & Economics, Olin Working Paper No. 516 (2010).

<sup>34</sup> Ronald Mann, “Contracting” for Credit, 104 Mich. L. Rev. 899 (2006). See also Richard Epstein 92 Minn. L. Rev. 803 (2008).

<sup>35</sup> Choi, James J., David Laibson, & Brigitte C. Madrian, *Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds*, NBER Working Paper (2008).

<sup>36</sup> Beshears, John, James J. Choi, David Laibson, and Brigitte C. Madrian, *How Does Simplified Disclosure Affect Individuals' Mutual Fund Choices?* NBER Working Paper (2008). For similar findings, see Choi, James J., David Laibson, and Brigitte C. Madrian, *Plan Design and 401(k) Savings Outcomes*, 57 Nat. Tax J. 275 (2004); Choi, James J., David Laibson, and Brigitte C. Madrian, *Are Empowerment and Education Enough? Underdiversification in 401(k) Plans*, 36 Brookings Papers on Economic Activity 151 (2005).

their own as well as others' evidence to suggest that disclosure is unlikely to improve financial decision-making.<sup>37</sup>

Recent research has noted that disclosure regimes are likely to be effective only if the information disclosed becomes “embedded” in everyday decision-making and corrects consumers' misperceptions.<sup>38</sup> There is some support for this view. Bertrand and Morse find that the effectiveness of disclosure regimes on payday borrowing varied across borrowers and that the regimes that are likely to be more effective are those that take into consideration borrowers' cognitive biases. Disclosure could thus be used as a tool to “de-bias” individuals, at least those that responded to the information.<sup>39</sup> In a series of interviews and consumer testing, Lacko and Pappalardo find that current mortgage disclosures fail to convey important information to all borrower types, but that improved disclosures are more effective in conveying information, at least with regard to more complex loans.<sup>40</sup>

In the food retail context, Zhe and Leslie find that the introduction of standardized hygiene quality grade cards required to be displayed in restaurant windows in Los Angeles caused restaurant grade inspection scores to increase, increased the sensitivity of consumer demand to hygiene scores, and decreased hospitalizations due to food borne illnesses.<sup>41</sup> Bollinger *et al.* study the effect of calorie consumption at Starbucks after New York City mandated calorie postings in chain restaurants. They find that the average caloric intake per transaction decreased by a modest 6%.<sup>42</sup>

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<sup>37</sup> See Sumit Agarwal & John C. Driscoll & Xavier Gabaix & David Laibson, *The Age of Reason: Financial Decisions Over the Lifecycle*, NBER Working Paper (2009) and references cited therein.

<sup>38</sup> See David Weil, Archon Fung, Mary Graham, & Elena Fagotto, *The Effectiveness of Regulatory Disclosure Policies*, 25(1) *J. Pol. An. & Mgmt.* 155 (2005); Oren Bar-Gill, *The Behavioral Economics of Consumer Contracts*, 92 *Minn. L. Rev.* 749 (2008) (advocating disclosure regimes that provide information that corrects consumers' misperceptions).

<sup>39</sup> Marianne Bertrand & Adair Morse, *Information Disclosure, Cognitive Biases, and Payday Borrowing*, U. of Chicago Graduate School of Business Working Paper (2010).

<sup>40</sup> James Lacko & Janis Pappalardo, *Improving Mortgage Disclosures: An Empirical Assessment of Current and Prototype Disclosure Forms*, Federal Trade Commission Bureau of Economics Staff Report (2007). See also Whitford, *supra* note 8 for a review of empirical literature demonstrating the questionably modest success of TILA.

<sup>41</sup> Ginger Zhe Jin & Phillip Leslie, *The Effect of Information on Product Quality: Evidence From Restaurant Hygiene Grade*, 118 *Q. J. Econ.* 402 (2003). But see Clifford Winston, *The Efficacy of Information Policy: A Review of Achon Fung, Mary Graham, and David's Full Disclosure: The Perils and Promise of Transparency*, 46(3) *J. Econ. Lit.* 704 (2008) (noting that national trends indicated a decrease in foodborne illnesses in the time period analyzed).

<sup>42</sup> Bryan Bollinger, Phillip Leslie, & Alan Sorensen, *Calorie Postings in Chain Restaurants*, NBER Working Paper (2010).

In the food product market, Mathios examines the effect of NLEA on the salad dressing market and finds a statistically significant decrease in sales in dressings with the highest fat contents after the passing of the act.<sup>43</sup> Fung, Graham, and Weil cite a number studies that show that consumers sometimes fail to understand or misinterpret labels, however, rendering disclosure regimes less effective.<sup>44</sup>

### 2.3. Other Perspectives

While this paper focuses on disclosure regimes, it is important to note that there are other market mechanisms that may induce sellers to behave competitively even if consumers don't read. For instance, sellers who are concerned by reputation might have an incentive to offer optimal terms or product quality. There is some evidence of these market mechanisms in some contexts. For example, Jin and Leslie find that when consumers are uninformed about restaurant hygiene, restaurants that belong to a chain have higher hygiene scores than independent restaurants due presumably to the reputational effects of chain affiliation.<sup>45</sup>

Others have argued that imperfect information might not pose a big problem because sellers in competitive markets will have an incentive to disclose information voluntarily and advertise to gain a competitive advantage, at least in some scenarios. Milgrom hypothesizes that when buyers are sophisticated, sellers in competitive markets will have sufficient incentives to provide verifiable information.<sup>46</sup> Mannering and Winston find that consumer adoption of cars equipped with airbags in the 1990s was facilitated by media coverage as well as friends' accounts of their experiences with airbags.<sup>47</sup> Zettelmeyer, Morton, and Silva-Risso estimate that consumers who use Internet car-referral services when purchasing a car pay an average of 2%

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<sup>43</sup> Alan D. Mathios, *The Impact of Mandatory Disclosure Laws on Product Choices: An Analysis of the Salad Dressing Markets*, 43 *J. L. & Econ.* 183 (2000).

<sup>44</sup> See Archon Fung, Mary Graham & David Weil, *FULL DISCLOSURE: THE PERILS AND PROMISE OF TRANSPARENCY* (Cambridge U. Press, 2007) and studies cited therein.

<sup>45</sup> Ginger Zhe Jin & Phillip Leslie, *Reputational Incentives for Restaurant Hygiene*, 1 *Am. Econ. J.* 237 (2009). See also Abhit V. Banerjee & Duflo, *Reputation Effects and the Limits of Contracting: A Study of the Indian Software Industry*. 115(3) *Q. J. Econ.* 989 (2000).

<sup>46</sup> Paul Milgrom, *What the Seller Won't Tell You: Persuasion and Disclosure in Markets*, 22(2) *J. Econ. Pers.* 115 (2008). But see Gaibaix & Laibson, *supra* note 16.

<sup>47</sup> Mannering, Fred, and Clifford Winston, *Automobile Air Bags in the 1990s: Market Failure or Market Efficiency?* 38(2) *J. L. & Econ.* 265 (1995).

less, or about \$450 less, per car and argue that price reduction is due to information provision by the referral service.<sup>48</sup>

When buyers are naïve and product attributes are not as salient as price or are not extensively reported by the media, however, buyers might indeed be imperfectly informed. This situation is particularly plausible in the standard form contract setting, explaining why many of disclosure mandates have been considered.

### **3. Does Disclosure Matter? An Empirical Approach**

Given the various existing and proposed information disclosure regulations and the potential effects on sellers, it is important to investigate whether a policy of increased standard form contract disclosure can create an informed minority of buyers capable of disciplining the market. Indeed, it would seem to be a prerequisite to regulation. Yet, there has been surprisingly little study of the effectiveness of increased standard form contract disclosure on product markets. This paper examines the effect of contract accessibility on readership in the market for software sold online.

Our approach is to study the browsing and shopping behavior of online consumers. We track the shopping behavior of Internet visitors to 81 software retailers who sell their products through their corporate website and who make their EULAs available somewhere on their site. We examine the rate at which shoppers choose to become informed about the EULAs that govern the featured software. We then measure whether consumers are more likely to access EULAs when they are more prominently displayed.

The market for online software products is a particularly good setting to examine the potential effectiveness of increased contract disclosure policies. First, the EULA includes important non-price features, such as rights and restrictions that dictate the manner in which the software product can and cannot be used. EULA terms have been heavily litigated in the recent

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<sup>48</sup> Fiona Scott Morton, Florian Zettelmeyer & Jorge Silva-Risso, 49(4) *J. Ind. Econ.* 501 (2001). See also Joshua Wright, *Behavioral Law and Economics, Paternalism, and Consumer Contracts: An Empirical Perspective*, 2(3) *NYU J. L. & Lib.* 2 470 (2007) (citing empirical evidence that questions the need to intervene in markets to correct for behavioral biases).

years and continue to be at the center of many disputes.<sup>49</sup> Second, as mentioned earlier, the ALI has recently approved the new *Principles of the Law of Software Contracts*. These were drafted under the assumption that the mass market for software is not functioning well. There is some support for this, as Bakos *et al.* find that there is no informed minority in the online software market in the present circumstance, leaving the door open for a market failure due to imperfect information. Knowing whether increased contract disclosure is actually capable of creating an informed minority of software buyers is thus crucial for evaluating the desirability of this approach. Finally, several recent debates on legal reform and the role of disclosure regulation in standard form contracts focus on electronic contracts in general and software contracts in particular.

To empirically estimate whether increased contract disclosure is associated with increased readership, we begin by classifying visitors to the company websites in our sample into those who have an intent to shop and those who visit the sample companies for other reasons. For instance, some visitors might visit a particular software retailer to find out how to fix a problem of a copy they already own, or to watch commercials. We follow the approach in Bakos *et al.*, described below, to distinguish shoppers from non-shoppers.<sup>50</sup> We also distinguish the fraction of shoppers who purchase a product from those that do not and classify them into buyers and non-buyers. We use initiation of a secure checkout process to identify buyers. Finally, we measure the number of visitors who read EULAs. That is, we estimate the number of readers and nonreaders among visitors classified as buyers and shoppers. We identify readers as those who access a EULA page for more than one second. This gives an upper bound to the number of people who effectively read contracts, as some might click on the pages accidentally, or some might spend too little time on them to have meaningfully understood their terms.

### 3.1. Data and Sample Construction

Our clickstream data set represents the browsing behavior of 92,411 U.S. households for January 2007 and was introduced by Bakos *et al.* These data were collected by a major online research company that tracks the Internet browsing behavior of a representative panel of U.S.

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<sup>49</sup> See, e.g., *M.A. Mortenson Co. v. Timberline Software Corp.*, 998 P.2d 305 (Wash. 2000); *Davidson & Assoc. v. Internet Gateway*, 344 F. Supp. 2d 1164, 1178 (D. Mo. 2004); *Altera Corp. v. Clear Logic, Inc.* 424 F.3d 1079 (9<sup>th</sup> Cir. 2005); *Blizzard v. BDN*, 422 F.3d 630 (8<sup>th</sup> Cir. 2005).

<sup>50</sup> Bakos *et al.* *supra* note 14.

households who have agreed to install in their computers a software program that tracks the URL addresses of every page visited by each household during its Internet sessions. The installed software tracks the exact sequence of web pages visited and the time spent on each page.

The panel of households was selected to be demographically and geographically balanced and representative of the population of U.S. households with Internet access.<sup>51</sup> Each household is assigned a unique anonymous identifier which is used to track its web browsing activity and classify it into different “sessions.” The information captured includes the URL of each page visited, the time that URL was accessed, the time spent on that page, whether that page was within a secure (i.e., encrypted) connection, the web server delivering the web page, and a unique identifier for the company or division owning that web server. The company also collects additional information, including detailed demographic information about the households.

We construct our sample by selecting those user visits to online software retailers that sell their products on their corporate website and that make their contracts available somewhere on their site either prior or during the checkout process. We use the data provider’s classification of markets to identify visits only to software companies. We then exclude those vendors who offer their products for free (i.e., freeware providers), vendors who do not sell their product via their corporate website, peer-to-peer software providers, and web hosting companies. We wish to compare the effect of disclosure on readership on comparable firms. We include only companies with at least 50 unique visitors who viewed at least two pages during their visit. Our interest is in users with intent or potential intent to purchase, or “shoppers,” and users that view only a single page are less likely to have such intent. We identified 81 companies that satisfied the above conditions.<sup>52</sup>

For each of these companies we obtained the URLs of all EULAs available on the company’s website regardless of where they are located. Some companies make their EULAs available to visitors prior to purchase by posting them somewhere in their website. Others present their EULAs during the checkout process and require buyers to click on “I agree” either next to a hyperlink that directs a user to the terms of the contract or underneath a text box with

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<sup>51</sup> See Bakos et al., *id.*, for a detailed description of the data collection process.

<sup>52</sup> 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.

the EULA terms in it. All these companies are part of the sample, although, as explained below, the subset that presents terms in a text box is best analyzed separately.

While the sample includes a wide range of firms, it is probably best characterized in terms of the tens of thousands of company visits that we track. Each of these represents an opportunity to access a EULA and thus forms the essential unit of observation.

### 3.2. Company and Product Characteristics

Following Bakos *et al.*, we collect company and product information that might affect a shopper's propensity to become informed about EULA terms. We obtain information about each company's annual revenue, year of incorporation, and public or private status. These data are from Hoovers.com, Yahoo! Finance, in some cases, direct communications with the companies.

Panel A in Table 1 reports summary statistics for the company characteristics. The average revenue of the 81 sample companies is \$1.52 billion with a standard deviation of \$6.85 billion, numbers driven by a few large firms. Median revenue is \$6 million. The mean age of these companies, measured as 2010 minus the year of incorporation, is 16.7 years (median is 14). Twenty seven percent of sample companies are publicly traded.

We collect various product characteristics. We record the characteristics of the "flagship" product per company. If a company offers only one product, as is the case with many small and medium-sized firms, we select that one product. For larger companies, we select the product that is the most popular or that accounts for the largest fraction of sales. If such information is not available, we record the product most prominently featured by the vendor. The reason is that as a result of their relatively large fraction of sales, shoppers might be most inclined to become informed about the terms associated with these products. We thus record the price of those products. For robustness, we also collect information about the median price of all other products offered by each seller. We note whether the featured product is a single- or multi-license agreement, or whether it is targeted for software developers, as that affects price. We also note whether the sellers offer trial versions of the product, and whether the product is targeted to business users or the general public. Lastly, we classify each product into one of 150 software product categories, e.g. graphics or spreadsheets, based on the characterizations of software products available at Amazon.com.

Panel B reports summary statistics product characteristics. Sixty-eight percent are targeted to members of the general public. The average price of the featured products is \$394 and the median is \$58. The average price for the median price of all products within each website is \$352 and the median of that price is \$49. Finally, 84% of the sample sites offer a trial version of their featured product or of the product in our sample, and 78% offer trial versions for most of their products.

### 3.3. Contract Accessibility

Our goal is to measure the number of shoppers that become informed about EULA terms as a function of how accessible each contract is. We therefore collect *all* the EULA URLs that are available on a company's website. As noted above, many firms only sell one product and thus only make available online the EULA that governs the use of that product. Other firms sell many products that are all governed by a single EULA posted on their website, and others post different EULAs for different products. Finally, some firms post the EULAs for all their current and past versions of all their products. We record every EULA posted. We found 240 unique URLs corresponding to EULAs for our sample companies.

A key variable is a EULA's accessibility. We follow the methodology developed of Marotta-Wurgler (2009) and measure contract accessibility as the number of mouse-clicks it takes to access the EULA from the most natural path to purchase.<sup>53</sup> This is a surprisingly straightforward process, as most companies attempt to make it easy for consumers to navigate through their sites and purchase their products.

For example, consider a buyer who wishes to purchase a given antivirus software product from a certain vendor. The buyer will select the product and proceed to check out. Imagine that before he is allowed to enter his credit card information, the buyer must agree to the product's EULA by clicking on "I agree" below a scroll box that contains the standard terms (i.e., the seller presents the terms in a clickwrap format). Because the EULA is directly on the most natural click path for purchasers and requires no extra clicks to find, it has a access score of 0. If the seller had required the buyer to click on "I agree" but invited buyers to access the EULA by clicking once more on an adjacent hyperlink, the access score would have been 0.5. This is because although

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<sup>53</sup> Florencia Marotta-Wurgler, Are "Pay Now, Terms Later" Contracts Worse for Buyers? Evidence From Software License Agreements, 38(2) J. L. Stud. 309 (2009).

the buyer must actively acknowledge the existence of a contract, he must also click once to see its terms. These two types of contract presentation alert buyers of the EULA by specifically forcing them to acknowledge agreement to their terms. The distribution of contract accessibility by company is reported in Table 2. As of the time of the data collection process, three of the companies in the sample, or 3.7% of sellers, place text boxes with the terms over the “I agree” button, and 22, or 27.16% of sellers, present them in hyperlinks that must be clicked to see the terms.

The rest of the companies in the sample make their contracts available in their websites but require buyers to voluntarily seek them out. For instance, Symantec presents all its product licenses at 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 homepage, entitled “license agreements,” provides links to the EULAs of Symantec products. Thus it takes a buyer one click from the main page 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. Table 2 shows that 12, or 14.81% of sellers, make their EULAs available two clicks away. In contrast, 34, or 42% of sellers, place their license only 1 click away. The remainder places their licenses three, four, or even six clicks away from the direct purchase path.

### 3.4. Defining Shoppers and Shopping Visits

We are interested in observing the behavior of visitors who have an intent to shop. Our data provider reports all the Internet browsing activity of our visitors so we can’t know for sure which fraction of the visitors to the sample retailers have an intent to shop. We begin by restricting our analysis to visitors with potential intent to purchase by excluding visits that do not access servers dedicated to shopping or purchasing activities. We then follow the approach in *Bakos et al.* to identify shopping-oriented visits more precisely. We discuss it briefly below.

We define a “user visit” as all page views (URL accesses) from a company’s website within a single user “session.” A widely used approach in the clickstream literature is to identify shoppers by focusing on the intensity of a company visit. Users with intent to purchase are more

likely to view several pages in the retail side of the company's website.<sup>54</sup> We follow this approach to separate casual browsers from shoppers.

Our broadest definition of a shopping visit is one with at least two page views in a given company's website.<sup>55</sup> Our more restrictive definition includes all visits with least five page views. This definition is more likely to exclude casual browsers. Our most restrictive definition of shopper is one that includes only those visitors who have selected a product and initiated a checkout or payment in a given session. We identify these visitors by using the initiation of the checkout process. While knowing that a user started a checkout or payment process provides no guarantee that the transaction was completed, it indicates that a transaction was at least contemplated. This last definition of shopping visit is overly restrictive, as it excludes those that do not result in the initiation of a checkout process.

While there is no perfect measure to identify shoppers, the three measures described above establish the shopping intent of a session with increasing strictness. As our definitions of a shopping visit become stricter, we expect that estimates of whether increased disclosure can create an informed minority become more conservative, so the actual number is likely to lie somewhere between the three estimates that our methodology provides.

Once we identify shoppers, we define a "company visit" in two different ways. The narrowest definition considers a single visit as a period of web browsing activity separated by at least 30 minutes of inactivity. A user can thus have multiple visits to a given company in a day, a week, or a month. Our data provider uses this definition, as do several papers in the literature.<sup>56</sup> We refer to all page views from a unique company's website within a single user session as a "company visit" by that user. While useful, this definition might be too narrow, as online visitors consider their purchase decisions over time and visit a company on multiple occasions, over the span of several days, before completing a purchase.<sup>57</sup> Johnson *et al.* (2004) show that repeated

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<sup>54</sup> See Randolph E. Bucklin & Catarina Sismeiro, A Model of Web Site Browsing Behavior Estimated on Clickstream Data, *J. of Marketing Res.* Vol. XL, 249-267 (2003); Wendy W. Moe & Peter S. Fader, Dynamic Conversion Behavior at e-Commerce Sites, *Mgmt. Sci.* 50 (2004); Catledge, Lara D. and James E. Pitkow, Characterizing Browsing Behaviors on the World Wide Web, *Computer Networks and ISDN Systems*, 27 (6) (1995), 1065-73.

<sup>55</sup> This approach is generally followed in the literature that uses clickstream data. See Bakos *et al.*, *supra* note 14 for a detail account and a list of references.

<sup>56</sup> See Moe & Fader, *supra* note 55.

<sup>57</sup> 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).

visits to a company within a month typically correspond to the same shopping cycle. We thus adopt an alternative definition of company visit by aggregating of the number visits to a unique company in a given month. Again, our goal is to establish a range such that the actual average shopping visit will lie somewhere in the middle of these two definitions.

### 3.5. Demographic Data

We gather information about shoppers and shopping households that may affect their likelihood of becoming informed about standard terms. We collect information pertaining to the age and gender of the head of the household, household income, household size, and the presence of children.

The number of unique visitors in the sample under the broadest definition of shopping visits (at least 2 page views) is 47,399. The average age of the household head of the visitors in this group is 46.4 (standard deviation is 13.8), and median age is 46. Average income for heads of households is \$60,654 with a standard deviation of \$39,722. Median income is \$37,500. Half of the heads of household are male. The average number of household members is 2.8 (median is 3) and 41% report having live-in children.

The number of unique visitors falls to 35,000 when a visit is defined as at least 5 page views. The characteristics of the members of this group are similar to the above. Finally, the number of unique visitors that selected a product for purchase and began the checkout process is 2,352. The users in this subsample are again similar to those others.

## 4. **Are More Accessible Contracts More Likely to be Read?**

Our analysis in this section focuses on the company/shopping visits in which the user accessed a EULA to companies with different degrees of contract accessibility. We identify these visits by matching the URLs corresponding to all the EULAs we collected to the clickstream of URLs accessed by users during their company visits and by recording the accessibility score for

the EULAs posted by firm.<sup>58</sup> We compute descriptive statistics of company visits and EULA accesses by contract accessibility under the three alternative definitions of a visit with intent to purchase, and follow with regressions that examine the effect of contract accessibility on contract access with control variables.

#### 4.1. EULA Reading and Disclosure

The goal of our study is to measure whether the proportion of shoppers desire to become informed about EULA terms is related to contract accessibility. For this reason, this portion of the analysis includes only visits to companies where EULA access is possible but optional (i.e., we exclude the companies with a EULA access score of 0 because all shoppers who begin the purchase process are presented with the text of the EULA, thus preventing us from observing the effect of disclosure on contract readership).

The results in Tables 3 and 4 summarize the characteristics of visits to companies with different EULA accessibility scores, measured either as uninterrupted sessions (Table 3) or visits by unique users, aggregating all the monthly sessions (Table 4). Each table presents data for each definition of a company/shopping visit. We separate visits according to the EULA accessibility score of each company. For each definition of company visit, we report the number of visits to companies with different EULA accessibility scores and the average and median number of page views. The three right-most columns 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. These last two measures should give us an indication of the shopper's intent or level of interest in accessing a EULA URL.

Consider Panel A in Table 3, which looks at uninterrupted session/visits by visitors who clicked on at least 2 pages during a sample company visit. By focusing on the second, third, and fourth columns we see that are 11,184 visits to companies that make their contract available via a clickwrap (or have a 0.5 accessibility score), including repeat visits. For these companies, the average number of pages visited is 8.5 and the median number of pages visited is 4. Companies that place their EULA 1 click away from the main path to purchase were visited 24,619 times. The mean number of page views during these visits is 6.6 and a median of 3. Companies with

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<sup>58</sup> Most firms have consistent sites and thus have the same accessibility score for all their products' EULAs. Very few firms make their EULAs available multiple times. In those cases, we record the lowest (i.e., most accessible) score.

EULAs 2, 3, and 4 clicks away have 16,769, 74,225, and 3,873 visits respectively. The average number of page views for each of these is 10.8, 15.2, and 5.2, respectively. The median number of page views is 5, 7, and 3, respectively. Finally, the company with a EULA that is 6 clicks away had 1,059 visits. The average number of pages viewed was 3.9, and the median was 3.

The right half of the table focuses on visits where a EULA was accessed. Recall that we want to see whether increased contract accessibility is related to a significant increase in contract access. Let's focus on the *least* accessible contracts first by looking at the bottom rows first. Companies with EULA access scores of 6 and 4 had no EULA visits out of a total of 4,392 opportunities, an outcome consistent with the view that these contracts are just too hard to find. When accessibility increases to EULAs being 3 clicks away from the main path to purchase, there are 13 voluntary accesses of EULAs out of 74,225, constituting 0.02% of all visits. EULAs that are 2 clicks away were accessed in only 1 out of 16,769 visits, constituting less than 0.01% of all visits. More accessible EULAs, or those that are just 1 click away, were accessed in 26 of 24,619 visits, constituting 0.11% of all visits. These preliminary results show that despite tiny increases in readership with EULA access, EULA readership remains extremely low. Indeed, the most salient EULAs in this group, those that are presented in a hyperlink next to an "I agree" clickbox, are accessed only 8 out of 11,184 visits, for a rate of 0.07%.

For users in this group, the median time spent on EULAs that are 3 clicks away was 35 seconds. Shoppers spent a median time of 44 seconds for EULAs that were 2 clicks away and 29 seconds on those 1 click away. Clickwrap EULAs were viewed for a median time of 61 seconds. As noted in Bakos *et al.*, the average EULA length is about 2,300 words long. Spending one minute or less on these contracts thus makes it unlikely that shoppers became meaningfully informed after having accessed them.

Panel B in Table 3 looks at visits to companies with different contract accessibility scores when a shopping visit is defined as having accessed at least 5 pages in a company website. The second column shows that the number of visits to each type of company has decreased for this narrower definition of shopping visit, as expected. The number of EULA visits and the time spent on the contract page about double similar those found under the previous definition of shopping visit for all contract accessibility types. The absolute level of the visits remains very small, however.

Panel C presents information about company visits for those shoppers who placed a product in a shopping cart and began a checkout process. The number of company visits in this group is much smaller than those in the previous two, consistent with prior evidence of online conversion rates around 2%. The pattern of visits to EULAs by accessibility also is slightly different under the strictest definition of a shopping visit. Under this definition of a shopping visit, there are no visits to the company with a EULA accessibility score of 6. There are no sessions with EULA visits for those companies that place their EULA 4, 3, and 2 clicks away. Shoppers visit EULAs that are 1 click away in 4 out of 3,157 visits (0.13% of all visits). They visit EULAs in 2 out of 381 visits (or 0.52% of all visits) when the EULA is 0.5 clicks away. Interestingly, under this definition of a shopping visit, *all* shoppers who visit companies with a 0.5 EULA access score are made aware of the EULA because the checkout process requires them to explicitly agree to it. Still, even under this definition of a shopping visit, the number of shoppers who chose to become informed about the EULA is about 1 in 500. This suggests that increased disclosure is virtually unable to induce shoppers to study the terms, even when all such shoppers are given notice by being required to click “I agree” to such terms.

Shoppers under this definition spent more time on EULAs than those under the previous two: but given that only six buyers accessed EULAs these estimates are not very useful. Aggregating all monthly sessions of an individual user into single company visits (shown in Table 4) leads to similar results. For all cases the total number of visits is reduced as multiple visits by individual users are combined. Not surprisingly, the number of visits for the most inclusive definition of a visit, at least two page views, is reduced by about half (from 11,184 to 6,100), indicating that this category captures a nontrivial number of casual browsers with little intent to shop. The overall results of Table 4, however, indicate that the impressions from Table 3 are robust to the precise definition of company visits. Ultimately, the highest fraction of readers among retail shoppers across all shopper and session definitions is 1.46%, but this amounts to only 3 out of the 205 buyers that are forced to acknowledge the existence of the EULA.

We now focus on what are among the best disclosed EULAs by analyzing the time spent on EULAs where the sellers present their EULAs in a text box next to a box that shoppers

must agree to most commonly during the checkout process.<sup>59</sup> We can only measure the time spent on these pages, as all shoppers who decide to purchase a product are presented with the text of the EULA, whether they want to see it or not. Several of the companies that choose this mode of presentation also require the shopper to write their name, billing address, and credit card information in the same page where the EULA text appears.<sup>60</sup>

In the case of uninterrupted sessions, there were 7,296 (unreported) visits to firms with EULAs with an access score of 0 under the broadest definition of shopping visit. The median number of pages visited was 4. Out of these 7,296 visits, 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 (but not necessarily completed) a checkout process. The average time spent on the page containing the EULA was 116.5 seconds (standard deviation of 147.6) and the median time was 65 seconds. Given that these companies require shoppers to enter personal information *as well as* agree to the EULA the information-providing steps likely account for the majority of the time spent on this page.

When shopping visits are defined as visiting at least 5 pages in a company, the number of visits to these companies drops to 3,269 (unreported). Out of these, 470, or 14.4% visit the EULA page. The average time spent on these is 120.4 seconds (standard deviation of 150.2 seconds) and the median time was 68 seconds.

Finally, limiting our consideration to visits with shoppers that began a checkout process, the number of company visits drops to 643 (unreported). Given that the EULA is presented either during registration or at some point during the checkout process, it is not surprising that 302 out of the 643 company visits (or 47%) also had a EULA visit. The 53% of visits that do not have a EULA view reflect situations where shoppers began a checkout or registration process but did not get far enough to access the EULA URL. The average time spent on these pages was 146 seconds (standard deviation of 159) and the median time spent was 90 seconds.

The results are similar when visits are aggregated at the monthly level. The number of visits under the broadest definition of a shopping visit drops to 4,524 and 10.7% of these visits include a EULA visit. The median time spent on EULA pages was 71 seconds. When shopping

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<sup>59</sup> One company in this group, McAfee, also presents the EULA when shoppers want to register with the firm and create user profile.

<sup>60</sup> 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.

visits are defined as visiting at least 5 pages, there are 2,479 unique company visits, and 18% of these include a EULA visit. The median time spent on these EULAs was 72 seconds. Finally, there are 543 company visits under the most restrictive definition of a shopping visit. Of these, 296, or 55%, have EULA visits. The median time spent on EULA pages was 94 seconds. The general conclusion still holds: no matter how prominently EULAs are disclosed, the large majority of shoppers don't read them.

The small fraction of consumers accessing EULAs suggests a high cost of finding and reading the EULA and reading the terms relative to the perceived benefits. Given that contract readership does not increase significantly with increased disclosure, the primary cost lies not in locating and accessing EULAs but rather in reading and assessing contract terms. Contracts might be too long or hard to understand, or consumers may not care enough about the terms to incur the cost of reading them (in expectation). The bottom line for policy is that mandating disclosure is unlikely to have a major impact on the fraction of consumers becoming informed.

#### 4.2. Results of EULA Access Reading as a Function of Disclosure

Table 5 explores the results of Tables 3 and 4 more thoroughly by reporting linear probability regressions.<sup>61</sup> The dependent variable equals 1 if a visitor accessed a EULA page and 0 otherwise. The independent variables of interest are Contract Accessibility, which measures the number of clicks it takes to access the contract, and “Clickwrap,” a dummy indicating whether the contract requires the shopper to click on “I agree” next to a hyperlink with the EULA. (We exclude from this part of the analysis companies with accessibility scores of 0 because the license is *always* presented in a scroll-box during the checkout process, thus preventing us from measuring whether alerting consumers of the license results in increased readership.) The regressions include company, product, and shopper controls, as described in Table 1 and Section 3.5, and errors are clustered at the shopper level.<sup>62</sup> The first three specifications use the uninterrupted session definitions of a shopping visit and the latter three aggregate visits to sample by shoppers on a monthly basis.

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<sup>61</sup> We report OLS results for ease of interpretation. Logit regressions yield very similar inferences.

<sup>62</sup> 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.

We find that increased contract access is indeed significantly associated with increased readership for all specifications and definitions of a shopping visit in a regression context that includes control variables. As discussed below, despite the statistical significance, increases in the probability of access are unlikely to result in significant increases in the fraction of informed shoppers. This can also be seen from Tables 3 and 4, which show that the absolute number of informed shoppers is extremely low even when contracts are readily accessible.

Moreover, the regressions in Table 5 show that after accounting for the variables captured by our controls, for the less restrictive definitions of a shopper (as having 2 or 5 pageviews) *mandating* assent has if anything a small negative effect on contract readership.<sup>63</sup> In the case of the strictest shopper definition, mandating assent is perfectly correlated with reducing distance from 1 to 0.5, and thus the entire effect is captured by this increase in accessibility. In that case the effect of mandated assent on readership is small, positive, and statistically insignificant.

This result further confirms the view that mandating assent is unlikely to increase contract readership. A possible explanation for this finding is that even though this type of EULA is conspicuously placed on a page, it often appears only at the end of the transaction during the checkout process, which is initiated after a shopper has already decided to purchase. Shoppers who could in theory be part of the informed minority, accessing the EULA terms as part of their consideration of a product for purchase, might find it too costly to select a product and begin a checkout process just to access the license. In that sense, a license that is 1 or even 2 clicks away from the home page of the company might be more “accessible” even if not deliberately presented to all shoppers. Similarly, once a shopper has decided to purchase a product and has started a checkout session without taking into consideration the EULA terms, she might no longer care about the EULA at that point. This might also explain the small amount of time spent on EULAs accessed presented during the checkout process. Alternatively, shoppers might not care enough about EULA terms to read them regardless of how accessible they are.<sup>64</sup>

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<sup>63</sup>Bakos et al., *supra* note 14, 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. We create a dummy variable that equals one if the company markets products that are in our judgment likely to be repeat purchases. We find no relationship between the nature of the use of the software and users’ propensity to access EULAs.

<sup>64</sup> This might be particularly true for low-price products. However, even when we restrict the sample to products that cost \$500 or more, EULA readership remains low. The most expensive products in the sample cost several thousand dollars, so it’s hard to attribute low EULA readership to the value of the good for products in this range. Note also

The analysis in Table 5 shows that while increasing accessibility increases readership, and mandating disclosure may either increase or decrease readership, the overall effects are small. Specifically, the regressions in Table 5 show that controlling for factors related to product, company and shopper characteristics, for the least restrictive definition of shopping sessions as containing a minimum of 2 page views (column 1), readership increases by only 0.04% for each click of increased accessibility for the EULA while it is reduced by 0.15% if assent is mandated. These values stay practically unchanged when sessions are aggregated at the monthly level (column 4).

When shopping sessions are defined as containing a minimum of 5 page views (column 2), readership increases by 0.19% for each click of increased accessibility for the EULA and is reduced by 0.42% if assent is mandated. These values change only marginally (to 0.11% and 0.35% respectively) if sessions are aggregated at the monthly level (column 5).

When shopping sessions are defined as requiring the initiation of a checkout session, mandating assent is perfectly correlated to increasing accessibility from a distance of 1 to a distance of 0.5. Column 3 shows this results in a 0.17% increase in readership, or 0.22% if sessions are aggregated at the monthly level (column 6).

Bakos *et al.* estimated the minimum of fraction of readers necessary to support an informed minority equilibrium. In the absence of mandated assent and with conservative assumptions about the cost of providing favorable contract terms, they found that the fraction of shoppers that access EULAs is one or two orders of magnitude less than what would be required to support an informed minority equilibrium. This conclusion was robust to all definitions of shopping session. The analysis in the current paper offers no evidence that increased accessibility or mandated assent *per se* can induce sufficient readership of EULAs to support an informed minority equilibrium. In the settings where increased accessibility and/or mandated assent result in higher EULA access, the size of the effect is too small to provide much support to an informed minority equilibrium.

Even disregarding the impact of our controls, 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%

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that EULA terms have been heavily litigated in the past. See Marotta-Wurgler, *supra* note 53 and references cited therein.

(3 out of 205), and note this is under definitions of sessions, shoppers, and readership all tilted toward finding evidence for an informed minority. If this was a snapshot of an informed minority equilibrium, it would mean that the cost of the terms offered in an average EULA is under 1.5% of the average product price in our sample. As explained in detail in Bakos et al., this is certainly less than the typical cost of providing maintenance and support (“M&S”), which in turn is only one of the terms commonly offered in the EULAs of our sample companies.

#### 4.3. Becoming Informed by Other Means

Perhaps consumers become informed about terms by consulting relevant websites, such as Consumer Reports, blogs dedicated to exposing sellers with bad terms, or specialized news outlets that might discuss the content of standard form contract terms.<sup>65</sup> Bakos *et al.* explore this possibility and due to its relevance we summarize the results here. They obtain a list of the 25 most trafficked sites likely to have information about EULA terms. Next, they review the particular pages accessed by their sample shoppers in each of these 25 sites to determine whether they sought information about EULA terms or product quality. They find that in only 3 out of 148,552 sessions with at least 2 pages accessed, shoppers accessed EULA information in consumer review sites and less than 100 shoppers accessed news pages with even general information about particular software products, not necessarily the products they were shopping for. It is unlikely that shoppers are becoming informed by obtaining EULA information from other Internet sources. In any case, even if it were the case that shoppers consulted websites to become informed, this would not affect our conclusion that increased contract disclosure is unlikely to product any meaningful change in behavior.

Another possibility of becoming informed without reading is by relying on sellers’ reputations when deciding whether to purchase a product. Indeed, Bakos *et al.* find moderate support for this possibility; buyers are slightly more likely to access the EULAs of smaller companies who might not be as well-known to consumers. But even if sellers are constrained by reputation, it remains the case that mandating contract disclosure will not change consumer behavior. Sellers might or might not be disciplined by reputational concerns, but they are not being disciplined by the informed minority mechanism that increased disclosure hopes to create.

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<sup>65</sup> See Shmuel I. Becher & Tal Zarsky, “E-Contract Doctrine 2.0: Standard Form Contracting in the Age of Online User Participation,” *Mich. Telecomm & Tech. L. Rev.* 4(2) (2008).

## 5. Do People Act on What they Read?

This section of the paper explores the empirical existence of the second condition necessary for effective disclosure regulation: that people who read contracts act on what they read. This is also important for the design for effective regulation, for if consumers don't understand terms or act in a way that maximizes their own interests, regulators might consider regulating the manner in which information is conveyed. This can be done by requiring simpler language or highlights of the key terms, for instance.

We examine whether consumers who read contracts are more likely to purchase a product when, all else equal, the contract is relatively more buyer-friendly. We use the methodology in Marotta-Wurgler (2008) to determine the relative buyer-friendliness of each individual contract.<sup>66</sup> For each of contract that was accessed by consumers, we evaluate 23 common terms that allocate rights and risks between buyers and sellers, including terms that relate to acceptance of the license, scope, restrictions on transfer, warranties and disclaimers of warranties, limitations of liability, maintenance and support, and conflict resolution. We measure the relative buyer-friendliness of these terms against the relevant default rules, Article 2 of the Uniform Commercial Code. These default rules govern contracting parties' relationships should the EULA fail to specify a term that is relevant to the dispute. For each of these 23 terms that is more pro-buyer than the default rule, we assign a plus 1 point score. For each term that is relatively more seller-friendly than the default rule, we assign a minus 1 point score. For each term that is missing or matches the default rule, we assign a 0 score. We then add all these scores up and obtain a general "Overall Bias" index. While crude, this methodology does not require us to obtain information about buyers' preferences and is objective. The assumption is that, all else equal, buyers would prefer terms that give them more rights than the default (e.g. more warranty protection or maintenance and support). We also relax the assumption that all terms matter equally to buyers by breaking the Overall Bias Index into seven sub-indexes based on particular sets of terms.

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<sup>66</sup> Florencia Marotta-Wurgler, What's in a Standard Form Contract? An Empirical Analysis of Software License Agreements, 4 J. Emp. L. Stud. 677 (2007).

## 5.1. Summary Statistics

Table 6 lists each term tracked in the EULA and how it is scored for purposes of measuring buyer vs. seller bias. There seven broad categories of terms. The second column lists the range of scores attainable for each sub-index. Negative scores capture pro-seller terms and positive scores capture pro-buyer terms. Zero scores indicate neutral terms or, in case the term is not discussed in the particular contract, terms that would correspond to the default rule. The table indicates the theoretical and observed ranges for each term in the sample of read contracts and the mean score for each term.

Of the 232 contracts in this subsample, only 12 were accessed by at least one shopper in the month of study. The maximum number of times that a given contract was accessed was 63. Table 6 reports that the overall bias for the read contracts was -8, meaning that the EULAs had on average a total of 8 terms that were more pro-seller than the relevant default rules. The overall bias ranges from -12, the most seller friendly, to -2, the most buyer friendly. It also reports the bias and range for each subset of terms. Table 7 shows the distribution of bias of the accessed contracts.

## 5.2. Regressions of Purchase Behavior as a Function of Contract Bias

We now study whether shoppers are more likely to purchase a product when, all else equal, EULA terms are relatively more pro-buyer. Table 8 reports linear probability regressions where the dependent variable is a dummy that equals 1 if the shopper began a secure checkout session and 0 otherwise.<sup>67</sup> The relevant independent variable is the overall bias index. Higher values indicate pro-buyer bias; lower values indicate pro-seller bias. Product controls include dummies for whether the product is oriented to members of the general public or businesses, whether the product is offered on a subscription basis, and the natural log of the median price of all products offered by the company. Other controls include the time spent on the EULA (measured in seconds) and the number of pages accessed during the company visit, exclusive of the EULA page. Company controls include the natural log of revenue and company age. Shopper controls include dummies indicating gender and the natural log of income.

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<sup>67</sup> Logit regressions yield similar inferences.

The first two specifications use the uninterrupted definition of a company visit. Under both the broad (at least 2 page views in a company visit) and the intermediate (at least 5 page views) definitions of a shopping visit, there is almost no relationship between EULA bias and the probability that a product will be purchased. The coefficient on “Bias Index” shows that a contract that is one unit more buyer friendly is associated with a 7% *lower* probability of purchase. In unreported results, this falls to 3% when all of the controls are removed. The two right-most specifications use the monthly aggregate definition of a company visit. The results are similar. A EULA that is one point relatively more-buyer friendly is, again, associated with an 7% lower probability that a product will be purchased. The conclusion is that EULAs readers don’t seem to respond to what they (appear to have) read; if anything, the results are opposite. Given that it is not economically sensible that readers prefer biased terms, the statistical significance of these coefficients are likely driven by estimation error. For present purposes, our conclusion is simply that there is no evidence that readers respond to terms in a direction consistent with an informed minority.

We consider the possibility that consumers care only about a particular set of terms and examine the relationship between index sub-category bias and the probability that a product will be purchased. Under all specifications (unreported), we find that there is generally no relationship between contract term bias and the probability that a product will be purchased. There are two exceptions. Terms related to limitations of liability and warranties present a negative and statistically significant relationship between contract bias and probability of purchase. For each group, making the terms one term more pro-buyer decreases the probability of purchase by 9%, so even with regard to these particularly important terms consumers don’t respond to what they read.

## **6. Summary and Implications**

Most transactions involving goods and services are governed by standard form contracts. Their use is particularly pervasive in online commerce. Regulators have long been concerned that most consumers don't read boilerplate—recent empirical evidence confirms this—and don't know the rights and obligations they are assuming in the transaction. In light of this reality, regulators typically try to maximize the ability of competitive forces to keep sellers in check by

requiring that boilerplate be disclosed prominently. An important example is the new *Principles of the Law of Software Contracts*, which includes provisions increasing contract accessibility in mass market software transactions.

To be effective, such disclosure regimes must accomplish two things. First, they must increase the number of informed consumers, and thus the number of potential comparison shoppers. Second, conditional on reading, consumers must react to what they read.

This paper is among the first to empirically assess these two critical conditions, presumably because they are extremely hard to test. However, the nature of our data make it possible. Our data track the detailed browsing behavior of tens of thousands of households. We focus on the market for software sold online. In this setting, which is a fortuitous choice in light of the new *Principles*, the relevant boilerplate in that transaction is the EULA; the degree of boilerplate readership can be proxied for by the active choice and time spent on the EULA web page; the content of the EULA can be proxied for using recently developed techniques; the prominence of disclosure can be measured through an examination of the structure of the seller's website; and, finally, buying behavior can be observed. Finally, as online comparison shopping is cheap and easy, we have in a sense conservatively biased the test toward a finding in favor of the forces of competition over boilerplate.

Our first finding is that increasing contract accessibility does not result in an economically significant increase in readership. Increasing accessibility by one mouse-click is associated with a higher rate of readership by about 0.05%. We calibrate a simple model which indicates that even if all EULAs were displayed in the most accessible manner, i.e., by mandating assent in the form of a clickwrap, the number of informed consumers would remain much smaller than that plausibly required to create an "informed minority" of shoppers that could potentially put meaningful economic pressure on sellers offering onerous terms.

Our second finding is that those very few shoppers who actually read EULAs are equally likely to purchase a product *regardless* of how buyer-friendly is the EULA. That is, shoppers in our setting simply don't react to what they read, as they either don't pay much attention to the contract terms or don't understand them well enough to affect their purchase decision. This would seem to further indicate that the small number of readers is, effectively, even smaller than the number that clicks on the EULA.

It is useful to be precise about the potential regulatory implications of these findings. We do not attempt to provide evidence on whether the market for EULA terms suffers from a market failure—whether the terms offered are one-sided to a degree that buyers would be concerned if they were to understand them. Sellers could be constrained by reputation or the fear of litigation. What we show is that one of the oft-cited economic mechanisms that limits the opportunity for advantage-taking is, the "informed minority" competition-based approach, is simply too weak to make any difference in this setting. Similarly, we cannot show *why* consumers choose not to read contracts, regardless of how accessible they are. We note, however, that consumers fail to read contracts for a wide range of product prices. These contracts have also been litigated in the past.

Regulatory approaches such as that proffered by the *Principles* should be examined critically in light of the evidence of this paper. Disclosure per se will result in little increase in readership or economic pressure on sellers, but it will certainly increase costs to sellers, not so much the direct cost of changing a website but the cost of lost business as a result of complicating the checkout process.

More generally, a policy concern raised by the paper's findings is that the mere existence of disclosure regimes might lead courts to believe that market mechanisms indeed work, and thus to give insufficient attention to the potential for abusive terms. To that point, while the context of our study is a specific market and thus one can reasonably be cautious in assuming the results hold for other markets, we note that search and access costs are so low online that increased contract disclosure would seem even more likely to be ineffective in increasing shopper attention offline contexts as well.

**Table 1. Company and Product Characteristics**

NOTE—Means and standard deviations are based on a sample of 81 software retailers that sell their products online and were visited by over 50,000 Internet visitors. Firm data, including total revenue, public versus private status, and years since incorporation, were obtained primarily from Hoover’s company directory, Yahoo Finance, and direct correspondence with the company. Age refers to the number of years since incorporation, measured as of 2010.

	<b>N</b>	<b>Mean (s.d)</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>
<b>Panel A. Company Characteristics</b>					
Revenue (Millions \$)	81	1,520 (6,850)	0.1	6	51,100
Age (years)	81	16.7 (9.98)	2	14	57
Public Company	81	0.27 (0.45)	0	0	1
<b>Panel B. Product Characteristics</b>					
Consumer Product	81	0.68 (0.47)	0	1	1
Price (\$)	81	394.8 (1,025)	10	58	5,29
Median Price (\$)	81	352 (1,015)	1	49	5,000
Trial (featured product)	81	0.84 (0.37)	0	1	1
Trial (most products)	81	0.78 (0.42)	0	1	1

**Table 2. Contract Accessibility**

NOTE— Summary of where companies locate EULAs on their websites. Contract accessibility is measured by counting the distance in number of clicks the contract is away from the most natural clickstream to purchase the product, starting from the company’s homepage. A distance of 0 indicates that the EULA is displayed directly to the buyer. A distance of 0.5 indicates that the buyer is required to acknowledge the EULA, but the contract itself is not displayed without another click. Distances of 0 and 0.5 are described as Forced because the buyer is forced to either see the EULA or acknowledge its existence.

<b>Contract accessibility (in clicks from path of purchase)</b>	<b>N</b>	<b>Frequency (%)</b>
0	3	3.70
0.5	22	27.16
1	34	41.98
2	12	14.81
3	7	8.64
4	2	2.47
5	-	-
6	1	1.23
Total	81	100.0
Mean distance	1.28	-

**Table 3. Accessibility and Readership. Visits Measured as Uninterrupted Sessions**

NOTE— Summary statistics of visits to companies with different degrees of contract accessibility, 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 the number of clicks it takes to access the contract from the most obvious path to purchase. An accessibility score of 0.5 refers to 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.” A score of 1 indicates that the contract is one click away, etc. The second column reports the number of visits to companies according to their contract accessibility. The third and fourth column 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.

<b>Contract accessibility (in clicks from path of purchase)</b>	<b>N of company visits</b>	<b>Mean N of pg. acc. per company visit (s.d.)</b>	<b>Median N of pg. acc. per company visit</b>	<b>N of EULA visits (% of company visits)</b>	<b>Mean length of EULA access in seconds (s.d.)</b>	<b>Median length of EULA access in seconds</b>
<b>Panel A. At Least 2 Pages Accessed During Visit</b>						
0.5	11,184	8.5 (23.6)	4	8 (0.07)	139.6 (223.8)	61
1	24,619	6.6 (22.7)	3	26 (0.11)	42.8 (37.9)	29
2	16,769	10.8 (17.2)	5	1 (0.01)	44 (0)	44
3	74,225	15.2 (30.1)	7	13 (0.02)	55.5 (54.3)	35
4	3,873	5.2 (11.5)	3	0 (0)	-	-
5	-	-	-	-	-	-
6	1,059	3.9 (4)	3	0 (0)	-	-
<b>Panel B. At Least 5 Pages Accessed During Visit</b>						
0.5	4,513	17.1 35.4	9	7 (0.16)	150.4 (239.5)	58
1	8,110	14.6 (38.3)	8	23 (0.28)	44.4 (4456)	27
2	9,185	17.5 (21.0)	11	1 (0.01)	44 (0)	44
3	49,079	21.5 (35.4)	11	13 (0.03)	55.5 (54.3)	35
4	1,160	11.2 (19.7)	7	0 (0)	-	-
5	-	-	-	-	-	-
6	235	8.6 (6.5)	6	0 (0)	-	-

<b>Panel C. At Least 1 Secure Checkout Page Accessed During Visit</b>						
0.5	381	13.7	6	2 (0.52)	372 (444.1)	372
1	3,157	8.6 (29.6)	4	4 (0.13)	90 (68.1)	76.5
2	1,111	25.3 (30.3)	15	0 (0)	-	-
3	105	24.2 (41.4)	10	0 (0)	-	-
4	112	7.1 (8.9)	4	0 (0)	-	-
5	-	-	-	-	-	-
6	0	-	-	0 (0)	-	-

**Table 4. Accessibility and Readership. Visits Measured as Monthly Aggregates**

NOTE— Summary statistics of visits to sample companies measured as the aggregate monthly sessions to each sample company by individual users. 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 the number of clicks it takes to access the contract from the most obvious path to purchase. An accessibility score of 0.5 refers to a contract that can only be accessed by clicking on a hyperlink next to a box that requires the user to click on “I agree.” A score of 1 indicates that the contract is one click away, etc. The second column reports the number of visits to companies by contract accessibility. The third and fourth column 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 mean and median time.

<b>Contract accessibility (in clicks from path of purchase)</b>	<b>N of company visits</b>	<b>Mean N of pg. acc. per company visit (s.d.)</b>	<b>Median N of pg. acc. per company visit</b>	<b>N of EULA visits (% of company visits)</b>	<b>Mean length of EULA access in seconds (s.d.)</b>	<b>Median length of EULA access in seconds</b>
<b>Panel A. At Least 2 Pages Accessed During Visit</b>						
0.5	6,100	15.6 (57)	4	8 (0.13)	139.6 (223.8)	61
1	17,118	9.5 (38.2)	4	26 (0.15)	47.7 (40.5)	29.5
2	7,148	25.3 (61.0)	8	1 (0.01)	44 (0)	44
3	34,995	32.3 (98.3)	11	12 (0.03)	60.1 (58.0)	35.5
4	3,204	6.3 (14.9)	3	0 (0)	-	-
5	-	-	-	-	-	-
6	807	5.2 (6.4)	3	0 (0)	-	-
<b>Panel B. At Least 5 Pages Accessed During Visit</b>						
0.5	3,011	29.0 (79.0)	11	7 (0.23)	150.4 (239.5)	58
1	7,093	19.1 (58.1)	9	23 (0.32)	44.6 (39.1)	29
2	4,645	37.5 (72.8)	15	1 (0.02)	44 (0)	44
3	27,454	40.4 (109.6)	17	12 (0.04)	60.1 (58.0)	35.5
4	1,220	12.2 (22.9)	7	0 (0)	-	-
5	-	-	-	-	-	-
6	285	9.8 (9.1)	7	0 (0)	-	-

<b>Panel C. At Least 1 Secure Checkout Page Accessed During Visit</b>						
0.5	205	79.7 (165.9)	27	3 (1.46)	283.3 (349.5)	106
1	1,730	19.9 (64.7)	6	4 (0.23)	90 (68.1)	76.5
2	851	60.2 (88.4)	31	0 (0)	0 (0)	0
3	98	80.1 (155.5)	17	0 (0)	0 (0)	0
4	107	11.4 (20.5)	5	0 (0)	-	-
5	-	-	-	-	-	-
6	0	375.2 (676.7)	104	-	-	-

**Table 5. Effect of Contract Accessibility on Readership**

NOTE— Linear probability regressions. Product controls include dummies for whether the product is oriented to members of the general public or businesses, whether the product is offered on a subscription basis, and the natural log of the median price of all products offered by the company. Distance measures the number clicks it takes to access a EULA from the purchase path. Smaller distances mean that EULAs are more accessible. “Clickwrap” is a dummy indicating that the prospective buyer is required to acknowledge the existence of a EULA by clicking on “I agree” next to a hyperlink with the text of the EULA (that is, it includes companies with a 0.5 access score only). Company controls include the natural log of revenue, and whether the company is publicly traded. Shopper controls include dummies indicating gender, the natural log of income.

<b>Dependent Variable: EULA access</b>						
	<b>Uninterrupted sessions</b>			<b>Monthly aggregate sessions</b>		
	<b>At Least 2 Pages</b>	<b>At Least 5 Pages</b>	<b>At Least 1 Secure CP</b>	<b>At Least 2 Pages</b>	<b>At Least 5 Pages</b>	<b>At Least 1 Secure CP</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>
Distance	-0.0004*** (0.0001)	-0.0019*** (0.0003)	-0.0034** (0.0014)	-0.0054*** (0.0001)	-0.0010** (0.0003)	-0.0043** (0.0017)
Clickwrap	-0.0015*** (0.0004)	-0.0042*** (0.0012)	0.0001 (0.0036)	-0.0015** (0.0006)	-0.0034** (0.0013)	0.0066 (0.0081)
Product Controls	Yes	Yes	Yes	Yes	Yes	Yes
Company Controls	Yes	Yes	Yes	Yes	Yes	Yes
Shopper Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	131,729	72,282	4,886	69,372	43,708	2,991
R <sup>2</sup>	0.0017	0.0031	0.0073	0.0022	0.0037	0.0093

**Note:** \* = denotes significance at 0.1 level, \*\* at 0.05 and \*\*\* at 0.01

**Table 6. Overall and Sub-Index Bias of Accessed EULAs in the Sample**

NOTE— The table lists all 23 terms that comprise the Overall Bias index, the seven categories of related terms for the EULAs that were read by shoppers in the sample, and how each term is scored for purposes of measuring the overall buyer vs. seller bias of the contract. The second column lists the range of scores attainable for each sub-index. 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.

<b>Sub-Index (N of terms in each category)</b>	<b>Bias Measurement Range</b>	<b>Observed Range</b>	<b>Mean</b>
<b>Acceptance of License (1)</b>			
Does license alert consumer that product can be returned if she declines terms? 1 = yes, 0 = no	[0, 1]	[0, 1]	0.6
<b>Scope of License (4)</b>			
Does definition of “licensed software” include regular updates such as enhancements, versions, releases, etc.? 1 = yes, 0 = no			
Are there license grant restrictions? 0 = no, -1 = yes;	[-3, 1]	[-3, 0]	-1.7
Can licensee alter/modify the program? 0 = yes, -1 = no;			
Can licensee create derivative works? 0 = yes, -1 = no			
<b>Transfer of License (2)</b>			
Are there limitations on transfer? 0 = yes, -1 = no	[-2, 0]	[-2, 0]	-1.6
Can licensee transfer the software to an end user who accepts the license terms without licensor’s prior permission? 0 = yes, -1 = no			
<b>Warranties and Disclaimers of Warranties (6)</b>			
Are there express warranties? 1 = yes, 0 = no			
Is there a limited warranty stating that software is free from defects in materials and workmanship or that the software will work according manual specifications in force for a limited period? 1 = yes, 0 = no			
Is there a limited warranty stating that the media of software distribution and documentation are free from defects in force for a limited period? 1 = yes, 0 = no	[-3, 3]	[-2, 1]	-1.1
Is the disclaimer in caps, bold, or otherwise conspicuously presented? 0 = yes, -1=no			
Disclaims IWM and IWFPP or contains “AS IS” language? 0 = no, -1 = yes			
Disclaims warranty that software will not infringe on third parties’ intellectual property rights? 0 = no, -1 = yes			
<b>Limitations on Liability (6)</b>			
Who bears the risk of loss? 0 = licensor, -1 = licensee	[-6, 0]	[-6, -1]	-3.8
Who bears the performance risk? 0 = licensor, -1 = licensee			
Disclaims consequential, incidental, special, or foreseeable damages?			

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0 = no, -1 = yes

Are damages disclaimed under all theories of liability (contract, tort, strict liability)? 0 = no, -1 = yes

What is the limitation on damages? 0 = none or greater than product price, -1 = less or equal than product price

Is there an indemnification clause? 0 = no, -1 = yes

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**Maintenance and Support (1)**

Does base price include M&S for 31 days or more? 0 = no, 1 = yes	[0, 1]	[0, 1]	0.1
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**Conflict Resolution (3)**

Forum specified? 0 = no, -1 = yes

Law specified? 0 = no, -1 = yes, and different from forum state	[-3, 0]	[-2, 0]	-1.1
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Who pays licensor's attorney fees? 0 = paid by losing party or no mention, -1 = paid by licensee

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<b>Overall Bias Index</b>	<b>[-17, 6]</b>	<b>[-12, -2]</b>	<b>-8.0</b>
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**Table 7. Bias of Accessed EULAs in the Sample**

NOTE— The table describes the distribution of the relative buyer-friendliness of those contracts that were accessed by sample users, as measured by the EULA Bias Index. More negative scores capture relatively more pro-seller terms.

<b>EULA Bias Index Score</b>	<b>N of Contracts</b>	<b>Frequency (%)</b>
<b>(Most pro-seller)</b>		
-17	0	0
-16	0	0
-15	0	0
-14	0	0
-13	0	0
-12	1	8
-11	1	8
-10	2	17
-9	2	17
-8	3	25
-7	1	8
-6	0	0
-5	0	0
-4	0	0
-3	0	0
-2	2	17
-1	0	0
0	0	0
+1	0	0
+2	0	0
+3	0	0
+4	0	0
+5	0	0
+6	0	0
<b>(Most pro-buyer)</b>		
<b>Total</b>	<b>12</b>	<b>100</b>
<b>Mean Bias</b>	<b>-8</b>	

**Table 8. Buying as a Function of Contract Bias**

NOTE— Linear probability regressions. Product controls include dummies for whether the product is oriented to members of the general public or businesses, whether the product is offered on a subscription basis, and the natural log of the median price of all products offered by the company. The variable measuring contract bias is the EULA Bias Index. Higher values indicate pro-buyer bias; lower values indicate pro-seller bias. Other controls include the time spent on the EULA (measured in seconds) and the number of pages accessed during the company visit, exclusive of the EULA page. Company controls include the natural log of revenue, and whether the company is publicly traded. Shopper controls include dummies indicating gender, the natural log of income. Standard errors are clustered at the shopper level.

	Uninterrupted sessions		Monthly aggregate sessions	
	At Least 2 Pages (1)	At Least 5 Pages (2)	At Least 2 Pages (3)	At Least 5 Pages (4)
Bias Index	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)
Time spent on EULA	0.001*** (0.0002)	0.001*** (0.0002)	0.001*** (0.0002)	0.001*** (0.0003)
N of pages visited	0.008 (0.006)	0.008 (0.006)	0.1** (0.004)	0.1** (0.005)
Product Controls	Yes	Yes	Yes	Yes
Company Controls	Yes	Yes	Yes	Yes
Shopper Controls	Yes	Yes	Yes	Yes
N	63	57	61	56
R <sup>2</sup>	0.33	0.33	0.38	0.37

Note: \* = denotes significance at 0.1 level, \*\* at 0.05 and \*\*\* at 0.01