The Meaning of Contractual Silence: A Field Experiment

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THE MEANING OF CONTRACTUAL SILENCE:
A FIELD EXPERIMENT

By Yair Listokin

ABSTRACT

The limited capacity of lawmakers to intuit the unstated wishes of contracting parties constitutes a daunting obstacle to the formulation of majoritarian default rules. This paper presents a field experiment that prices consumers' unstated understandings of contractual silence regarding warranty and return policies for a good. Used iPods were sold via auction on eBay.com with randomly varying return policies. Some iPods came with a satisfaction guaranteed policy, others with an explicit warranty that resembled the default warranty of merchantability, and still other iPods were sold "as is." Finally, a batch of iPods was silent regarding the return policy. Although the estimates are extremely imprecise, consumers appear to pay approximately the same price for iPods with silence regarding the return policy as they do for iPods with the explicit warranty that resembles the UCC default warranty. Silent iPods sell for less than iPods that are satisfaction guaranteed, and considerably more than iPods sold "as is"—though again a lack of precision precludes confident inferences. Consumers interpret silence in accord with silence's legal meaning; the UCC framer's "guess" about majoritarian warranty expectations is an empirically reasonable one.

1. INTRODUCTION

Much of contract law concerns the formulation of default rules—rules that apply when contract documents are silent. Parties are free to change these rules by contract. For example, the Uniform Commercial Code Section 2-314 states the warranty of merchantability as a default rule that applies when a contract for the sale of goods is silent on warranties. Section 2-316 explains that the warranty of merchantability can be altered by explicit terms in a sales contract.

1 Associate Professor of Law, Yale Law School. I thank the Oscar M. Ruebhausen Foundation for the funding that supported this field experiment. I thank Ian Masias for extraordinary research assistance, and Ian Ayres, Robert Daines, Henry Hansmann, Daniel Ho, Roberta Romano, Alan Schwartz and the Sow's Ear crew for helpful comments and suggestions. All errors are my own.
Most default rules aim to be majoritarian; the rulemakers intend the default rules to be the rules that would be included in the agreement if the parties had considered the issue (Scott & Kraus 2007, 89–93). If rulemakers can intuit people’s expectations when making an agreement, then they save contracting parties the cost of formalizing those expectations in writing. There are many obstacles to the formulation of majoritarian default rules. Perhaps the greatest obstacle is that rulemakers do not know what most parties implicitly intend when they form an agreement and instead are forced to guess the majoritarian rule (Schwartz and Scott 2003).

This paper provides evidence about consumers’ implicit understanding of contractual silence through the use of a field experiment. This empirical evidence is used to evaluate the quality of lawmakers’ guesses regarding consumer expectations.

Used Apple iPod Nanos were sold via auction to consumers on the eBay marketplace. The eBay format includes an item description section that frequently includes important contractual terms, such as the warranty of goods. Some randomly selected iPod auctions explicitly stated the warranty of merchantability in the warranty, taken from the UCC (“UCC iPods”). Other iPods were sold with all warranties disclaimed (“as is”), or with satisfaction guaranteed (“satisfaction guaranteed”).

A fourth set of iPods were sold with the warranty section silent. Legally, this silence means that the default UCC warranty applies. If consumers interpret contractual silence appropriately (from a legal perspective), then “silent” term iPods should sell for similar prices to explicit UCC warranty iPods. If consumer interpretations of silence are more favorable than the default rule, then silent iPods should sell for more than iPods with explicit UCC warranties, while if silence is interpreted as having a worse meaning than the UCC, then silent iPods should sell for less than explicit UCC warranty iPods. In other words, substantial differences between prices for silent iPods and explicit UCC warranty iPods would suggest that the framers of the UCC have chosen a default rule that does not comport with most consumers’ intuitive understanding of silence.

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2 Used iPods are not eligible for Apple’s manufacturer’s warranty.

3 The most popular version of the iPod; see http://www.apple.com/pr/library/2007/09/05nano .html.
Unfortunately, the results of the field experiment are quite imprecise, precluding confident statements about relative prices. (The price of iPods fluctuates a surprising degree from day to day.) Ninety-five percent confidence bounds for the estimates presented in this paper include impact estimates that would alter the conclusions presented here. Nevertheless, the field experiment provides suggestive evidence that consumers interpret contractual silence appropriately. The UCC framers’ best guess regarding consumer expectations is surprisingly accurate. Silent iPods sold for roughly the same price as legally identical iPods with the explicit UCC warranty sold during the same period. Silent iPods sell for over $3 less than otherwise identical satisfaction guaranteed iPods and for over $12 more than “as is” iPods. The field experiment results therefore suggest that the default rule for warranties roughly corresponds to the expectations of consumers; that is, the UCC rule is empirically majoritarian.

This paper is organized as follows. Section 2 discusses existing literature on the selection of default rules. Section 3 describes the design of the field experiment. Section 4.1 presents summary statistics from the field experiment and demonstrates that consumers read and price different warranty terms on eBay. Section 4.2 examines how consumers interpret contractual silence and discusses whether the UCC warranty rule constitutes a majoritarian default rule. Section 5 concludes.

2. SELECTING DEFAULT RULES

Contracts are inevitably incomplete. One of contract law’s primary roles consists of filling in the gaps of contracts with default rules. Traditionally, lawmakers sought “majoritarian” default rules that specify “what most parties would have contracted for had they written a complete contract” (Ayres & Gertner 1999). Choosing majoritarian rules can be justified economically. A majoritarian default rule saves the maximum number of parties from incurring “the time, trouble, and risk of error implicit in crafting their own contract terms” (Scott & Kraus 2007, 90). Doing what the parties probably wanted is also justified on a “consent” theory of contract, wherein contracts are enforced because the parties have agreed to enforcement.

4 While majoritarian default rules can be justified on economic grounds, other default rules, such as penalty defaults, can also be justified economically. See, e.g., Ayres & Gertner 1989; Bebchuk & Shavell 1991.
When a court is not certain what the parties agreed to—due to a gap—the majoritarian rule is the rule that is most likely the one that the parties implicitly agreed to (Barnett 1992).

While the appeal of majoritarian default rules is widespread, there is little empirical work seeking to identify parties’ implicit intent when contracts are silent. Instead, the selection of majoritarian rules primarily relies on theoretical treatments about what the parties should want. Many scholars express skepticism about lawmakers’ ability to divine parties’ unstated intentions (Schwartz & Scott 2003). They understandably prefer majoritarian default rules grounded in empirical realities. Thus, an introductory contract law casebook laments that “our judicial system is not organized in such a way as to make it possible for judges to commission” empirical studies of default rules and that “legal academics have little taste for such empirical investigations” (Scott & Kraus 2007, 106 fn68).

Although academic taste may be one reason for the paucity of empirical studies, another obstacle to empirically fashioned default rules is the difficulty of inferring parties’ implicit understandings. As a result, the limited evidence seeking empirically majoritarian default rules usually takes the form of finding that parties seldom opt out of a default rule. Researchers conclude that if most parties fail to opt out of a default rule, then they probably “like” the rule. This inference, however, is subject to several critiques. The pattern of alteration or non-alteration reflects transaction costs, the probability of a contingency occurring, and the importance of the contingency as well as the desirability of the default rule. Thus, non-alteration of a default rule may constitute implicit acceptance of a default rule, or it may indicate that an undesirable default rule is too costly to change, or covers a contingency so unlikely or unimportant that it is not worth changing. In addition, undesirable default rules can become sticky because a desire to opt out of a default rule constitutes a negative signal to the other party (Ben-Shahar & Pottow 2006). The cost of the negative signal may outweigh the benefits of changing a default rule. For all of these reasons, failure to opt out of a default rule provides only weak evidence that a default rule reflects what most parties would do in the absence of the rule.

This paper seeks a different means of empirically evaluating the interpretation of silence. Instead of examining opt-out rates, the paper

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5 For examples, see Lewis 1982; Schultz 1952.
compares silence with a number of explicit contractual options. If silence is treated the same way as some types of explicit language, then the paper posits that silence is implicitly understood to mean something similar to the explicit language that receives the same treatment. This technique has the benefit of being relatively unimpaired by the existence of unobservable transaction costs, probabilities of relevance, or importance.

The simplest means of implementing the study of silence would be to compare many types of contracts and determine if contracts that are silent on a given issue are treated similarly to contracts with some explicit terms. This procedure, however, suffers from omitted variable bias. Silence may be correlated with other items that are hard to control for. For example, unsophisticated vendors may have more gaps in their contracts than sophisticated vendors. In addition, unsophisticated vendors may sell their items for a lower price than sophisticated vendors. It would be wrong to conclude from this evidence that gaps in a contract are interpreted by consumers to be worse than any of the explicit terms offered by vendors. The lower price for the unsophisticated vendors may be caused by negative interpretations of silence, or it may be the result of a general lack of sophistication, of which silence is but one indicator. It is nearly impossible to appropriately control for the sophistication of a vendor.

Instead of following an observational approach, this paper relies on a field experiment. The field experiment, described in the next section, ensures that the only difference between silent terms and explicit terms is the difference in language. All other variables, such as the sophistication of the vendor or the look and feel of the website, are held constant.

3. EXPERIMENTAL DESIGN AND DATA: IPOD SALES ON EBAY

To make the field experiment as representative as possible, I sought to offer a widely sold good on a popular online marketplace. As a result, I sold used Apple iPod products. The eBay marketplace provides a thick market

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6 If the iPods were new, then Apple's manufacturer's warranty would apply. The manufacturer's warranty would trump the variation in warranties provided in the field experiment. The Apple warranty only applies to the "original end-user purchaser," see http://images.apple.com/legal/warranty/docs/ipodisight.pdf, so it does not apply to used iPods.
Table 1. Summary Statistics

<table>
<thead>
<tr>
<th>Measure</th>
<th>iPod Nano</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Price (standard deviation)</td>
<td>$88.86 (20.64)</td>
</tr>
<tr>
<td>Number of Bids (standard deviation)</td>
<td>37.51 (12.27)</td>
</tr>
<tr>
<td>Number of Items Sold</td>
<td>166</td>
</tr>
<tr>
<td>Number Sold with Silent Warranty</td>
<td>39</td>
</tr>
<tr>
<td>Number Sold with Explicit UCC Warranty</td>
<td>68</td>
</tr>
<tr>
<td>Number Sold “as is”</td>
<td>35</td>
</tr>
<tr>
<td>Number Sold with Satisfaction Guaranteed</td>
<td>24</td>
</tr>
</tbody>
</table>

Summary statistics, with standard errors in parentheses, for iPod Nanos sold on eBay from May 2008 through June 2009.

of buyers and sellers for Apple iPod products. From May 2008 through June 2009, I sold a total of 166 “iPod Nano 3rd Generation 8GB Black” on the eBay auction market (see Table 1 for complete summary statistics). At the beginning of the sales period this model was the most widely sold iPod product. The “Nanos” sold for an average of approximately $89, with a standard deviation of slightly above $20. The high standard deviation is caused by the variation in price over the course of the selling period as well as substantial variation from day to day. As Apple introduced new products, the average price of the Nanos that were sold went down.

eBay offers sellers a standard format and product description for selling iPods, and this description was used in the eBay offerings. Figures 1a through 1d display images of the iPod Nano offers with different “Return

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7 On October 2, 2009, there were over 1700 separate used iPods (of all models) offered on eBay.

8 While there are many used iPods offered on eBay at any given time, the number of auctions closing in a certain time frame for a specific model in a specific color is generally much smaller. If demand is restricted to these narrow submarkets, then selling several iPods in one submarket on one day could change market dynamics. To avoid this problem, no more than 3 iPods were sold on any given day, which explains the long selling period.

9 See www.ebay.com. The number of iPods was limited by funding and administrative constraints. I also sold over 100 iPod shuffles, the cheapest iPod offering. The shuffles were used to test the effects of small variations in language with more or less the same meaning. The small variations had no consistent impact. Indeed, the shuffle price varies more as a percentage of total price than the Nano does (though not in absolute dollar terms), making the shuffle sales almost useless for isolating anything but the largest price differences. For example, a small sample of shuffles with “satisfaction guaranteed” type terms sold for a lower price than shuffles sold with variants of “as is.”
Policies." Figure 1e displays the bottom segment of each offer, which was identical for all types of offers.\textsuperscript{10} All of the offers on eBay were identical with the exception of the "Return Policy Section." The text in the Return Policy Section was randomly varied. Of the 166 iPod Nanos sold, 39 were sold with the Return Policy Section left silent (no text in the return policy section), 68 were sold with an explicit version of the UCC, 35 with \textquotedblleft as is,\textquotedblright and 24 with \textquotedblleft satisfaction guaranteed.\textquotedblright

This experimental design assumes that consumers put a price on warranty terms and are willing to pay an additional amount for a superior warranty. This additional amount will be reflected in a higher winning auction price for a better warranty.\textsuperscript{11} The remainder of the paper also assumes that silence regarding warranty terms is "priced" by consumers in the following manner. Consumers translate the silence into some form of warranty, and the price consumers are willing to pay is related to this translation. If consumers think that silence means satisfaction guaranteed, then they will be willing to pay a price for an iPod with silent terms that is similar to the price they would pay for an iPod with an explicit satisfaction guarantee. If consumers are concerned about \textquotedblleft lemon\textquotedblright iPods and assume that silence means a warranty worse than the UCC, then they will require a discount in order to purchase an iPod with silent terms relative to an iPod with legally equivalent UCC terms.\textsuperscript{12}

This "legal" interpretation of price variation with respect to different contractual terms must be expanded to account for the selling environment. Disputes regarding iPod sales are unlikely to be resolved through the formal legal system. Instead, they are more likely to be resolved

\textsuperscript{10} Note that the terms in figure 1e appear immediately after the terms in Figures 1a–1d on eBay's website.

\textsuperscript{11} Consumers would be rational to take warranty terms seriously. Four buyers attempted to return their iPods. Those that had satisfaction guaranteed were able to return the goods without questions asked, while those with inferior warranties were restricted from returning according to the terms of the contract.

\textsuperscript{12} Note that if consumers interpret silence to mean \textquotedblleft lemon\textquotedblright and demand a discount for silence, then over time rational and completely informed sellers would always include an explicit warranty of merchantability rather than lose money selling a legally equivalent silent contract. There would be no iPods sold with silent warranties in equilibrium. The paper therefore tests the "deviation from equilibrium" effects of silent terms. This market dynamic effect presents another reason why observational studies cannot be relied upon to infer the interpretation of silence, because silence constitutes out of equilibrium behavior that is never observed. Field experiments, by contrast, allow researchers to observe the effects of out of equilibrium behavior.
through eBay's dispute resolution system\textsuperscript{13} or via a potential eBay buyer warranty.\textsuperscript{14} In both of these contexts, the formal legal rights of the disputants matter. The possibilities in dispute resolution will be framed by the legal rights of the parties.\textsuperscript{15} Similarly, eBay buyer protection also considers the legal rights of the parties through its limitation of buyer protection to contexts in which the "item you've received is significantly different than it was described." Part of the description of the item is the warranty. A good sold "as is" is not eligible for eBay reimbursement if it is extremely well worn.\textsuperscript{16} A good with satisfaction guaranteed is the most likely to receive eBay reimbursement (if the seller refuses to reimburse). Thus, the legal rights associated with iPod purchases have relevance in non-judicial environments, although the rights may be interpreted by parties outside the formal legal system.\textsuperscript{17}

Although the assumption that the legal value of silence is "priced" in the way just described is the most straightforward, it is subject to question. Instead of simply pricing silence in accord with what they think silence means legally, consumers may interpret silence as a signal of quality. For example, consumers may think that silence regarding a warranty is a signal of laziness and be reluctant to purchase from a lazy seller, even if they know that silence translates into a favorable warranty from a purely legal perspective. In this case, silence would have a negative price effect in spite of the consumer's appropriate legal interpretation of silence. Other signal-


\textsuperscript{14} For example, when a good is purchased on eBay using the PayPal payment service, "PayPal protects you [the consumer] when you don't receive an eBay item you've bought, or if an item you've received is significantly different than it was described." See PayPal buyer protection description, available at http://pages.ebay.com/paypal/buyer/protection.html.

\textsuperscript{15} See, e.g., Mnookin & Kornhauser 1978; Cooter, Marks, & Mnookin 1982.

\textsuperscript{16} Interview with Michael Jacobson, General Counsel, eBay Inc., August 7, 2008.

\textsuperscript{17} Although legal rights have important relevance in eBay's dispute service, they are not inviolable. One buyer of an "as is" iPod sought to return an iPod that did not work. When the buyer was rebuffed with reference to the "as is" term, the buyer requested dispute resolution. eBay dispute resolution ultimately ruled that the buyer was entitled to reimbursement of the sales price along with return of the iPod. This resolution would come as no surprise to eBay's General Counsel, who expressed the opinion that while "as is" goods may be of poor quality, they should "work" unless it is explicitly stated that they might not work or do not work. Interview with Michael Jacobson, August 7, 2008. Note that even in this case, however, the buyer would have found it much easier to get reimbursement through dispute resolution if the iPod had been sold with satisfaction guaranteed.
ing stories (such as silence signaling lack of guile in contract terms) may cause positive price effects in spite of perfect consumer knowledge of the legal meaning of silence.

In the field experiment described in this paper, the signaling "story" and the "legal" story are observationally equivalent. Differences in prices between silent terms and explicit terms may reflect different consumer translations of the legal implications of silence, or they may reflect consumer interpretations of the non-legal implications of silence. The paper emphasizes the "legal" angle because it is easier to interpret. However, the experimental results are of interest even if the reader prefers the non-legal interpretation. If consumers draw a negative or positive non-legal inference from silence, then legal policymakers should know this when forming default rules. Policymakers may want to adjust the legal rule to correspond to consumers' non-legal understanding of silence. Such a correspondence reduces the informational burden on consumers to learn the default rule, and allows unsophisticated consumers to "understand" silence more appropriately.

Another methodological complication concerns the long selling period. The price of the iPods sold changed considerably over this period, with a general downward trend reflecting the aging process of the particular model of iPods being sold. There are also idiosyncratic trends, such as the beginning or end of the holiday shopping period. In addition, the eBay reputation of the account used to sell the goods gained more credibility as more goods were sold. Finally, the distribution of contractual terms sold differed for different periods. A proportionally higher number of satisfaction guaranteed and silent iPods were sold later in the selling period than earlier. As a result, a simple comparison of mean prices across the different groups produces uninformative estimates, as the mean prices of satisfaction guaranteed and silent iPods are decreased because more of them were sold late in the selling period—when prices were generally lower.

I apply a number of methods to account for these factors causing variation in prices. In the primary specification, the price effect of different contractual terms is estimated by comparing the price of one iPod with

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18 While the terms were randomly assigned, the underlying probabilities of assignment were changed midway through the selling period, with the probability of an iPod being assigned to the silent group or the satisfaction guaranteed group increasing.
the price of the iPod with different terms that was sold nearest in time to the first iPod. This procedure is called nearest neighbor matching and controls for time effects on price. In alternative specifications, I control for time trends in price using "kernel matching" and linear regressions. These techniques ensure that price effects of contract terms are estimated using truly similar goods that differ only in contractual language. Standard errors for the matching procedures are estimated via bootstrapping methods. Standard errors for the regression analysis are determined using the Eicker-White heteroskedasticity-robust procedure (Rogers 1993, 19–23).

4. CONSUMER INTERPRETATIONS OF SILENCE

4.1. Results of the Field Experiment

Table 2 compares prices when there is silence regarding the warranty terms with prices when there are different types of explicit language. The results are extremely imprecise, precluding confident inferences. As a result, the results are more suggestive than conclusive. With this important caveat in mind, the price effects suggest that consumers interpret silence appropriately. There is almost no difference in price between iPods sold with silent warranty terms and legally identical iPods sold with explicit warranty terms. iPods with silent return policies sold for an average of $0.24 more than iPods with explicit UCC terminology. The estimate is extremely imprecise, however, with a standard deviation of $2.63. iPods with silent terms sold for a statistically and economically significant $12.06 more than otherwise identical iPods sold with "as is" terms. Consumers correctly interpreted silence regarding a warranty to mean something more favorable and valuable than an "as is" warranty. Again,

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19 A Gaussian kernel characterized the weight assigned to each observation in the match. See Deaton 1997.

20 Bootstrapped standard errors were estimated by randomly choosing 166 observations from the 166 in the sample (with replacement), estimating the treatment effects, and then doing the procedure again a total of 500 times. The resulting distribution of estimates was used for calculating standard errors. See Chernick 1999.

21 If a one-sided significance test is used, taking advantage of the fact that we have a priori reasons for thinking that "as is" should be an inferior warranty and sell for less, then the result is significant at the 2 percent level.
Table 2. Price Effects of Silence

<table>
<thead>
<tr>
<th>Measure</th>
<th>Treatment Effect (Nearest Neighbor Matching by date of sale) (2)</th>
<th>Treatment Effect (Kernel Matching by Date of Sale) (3)</th>
<th>Regression Analysis (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silence Relative to Explicit UCC Warranty</td>
<td>$0.242 (2.63)</td>
<td>$ -0.15 (2.41)</td>
<td>$ -0.04 (2.51)</td>
</tr>
<tr>
<td>Silence Relative to Money Back Guarantee</td>
<td>$ -3.17 (6.55)</td>
<td>$ -4.21 (4.42)</td>
<td>$ -3.74 (3.20)</td>
</tr>
<tr>
<td>Silence Relative to As Is Terms</td>
<td>$12.06* (5.90)</td>
<td>$4.71 (4.02)</td>
<td>$6.99* (3.17)</td>
</tr>
</tbody>
</table>

This table presents average price differences for iPod Nanos sold with silence regarding the warranty (figure 1d) relative to iPods sold using different explicit terms. In column 2, the price of each iPod with silent terms is compared to the price of the iPod with the relevant explicit terms that was sold on the date nearest to the date of sale for the silent iPod (nearest neighbor matching). In column 3, the price of each iPod with silent terms is compared to the price of iPods with the relevant explicit terms that were sold on dates nearest the silent iPod's sale. The closer two sales are to each other in time, the greater the weight placed on the difference in price (kernel matching with a Gaussian kernel). Column 4 presents the results of a heteroskedasticity consistent ordinary regression of sales price on a linear time control and dummy variables for explicit UCC law terms, satisfaction guaranteed terms, and "as is" terms. The omitted category was silence. Standard errors are in parentheses; * denotes significance at the 5 percent level.

however, the results are quite imprecise, with a standard deviation of over $5.

iPods with silent terms sell for an average of $3.17 less than otherwise identical iPods sold with a “satisfaction guaranteed” warranty. Because the standard deviation of this difference estimator is over $6, the difference in prices is far from 95 percent statistical significance. Nevertheless, it is noteworthy that the direction of the price effect is what would be expected. Satisfaction guaranteed is a better warranty than a warranty of merchantability. The satisfaction guaranteed warranty allows a consumer to return a good for any reason, not just for failure of the good to function appropriately. As a result, it is logical that satisfaction guaranteed iPods commanded a higher price than iPods with a silent warranty.

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22 Again, a one-tailed test might be more appropriate here, in which case the results would draw closer to significance at the 95 percent level.
To examine the robustness of the results, columns 3 and 4 of Table 2 examine the data using alternative specifications. Instead of using nearest neighbor matching, column 3 relies on kernel matching (with a Gaussian kernel) to compare silent terms with explicit terms that were sold at roughly the same date as the silent terms. Kernel matching does not exclusively compare each silent iPod with the explicit iPod of the relevant type that was sold nearest in time to the silent iPod. Instead, kernel matching places more weight on two iPods that are sold nearer in time and less weight on iPods that are sold in different periods. The results of the kernel matching procedure (column 3 of Table 2) are broadly similar to the results for the "nearest neighbor match." Silence receives roughly the same price as explicit UCC terms (a $0.15 disparity), a lower price (by roughly $4) than satisfaction guaranteed, and a higher price (by $4.75) than as-is iPods. The high standard errors of the estimates and the large change in the magnitude of the "as is" effect relative to silence both signal caution against overconfident interpretations of the results.

Column 4 of Table 2 presents a regression analysis of the impact of different contractual terms on prices. The regression includes dummy variables for explicit UCC law terms, satisfaction guaranteed terms, and "as is" terms. The omitted category was silence. The regression also includes a (linear) control for time trend, to account for the declining iPod price trend over the selling period.23 (Prices go down an average of $0.14 per day.) The results resemble the estimated price effects from the other specifications. There is almost no difference ($0.04) between silent prices and explicit UCC prices. Satisfaction guaranteed iPods sell for an estimated $3.73 more than silent iPods, though the difference in price is not statistically significant. iPods sold "as is" sold for approximately $7 less than silent iPods, with the estimate significant at the 95 percent level.

4.2. Interpretation

These results suggest that consumers interpret silence regarding warranties to mean something similar to the legal meaning of that silence. The price of legally identical offers with and without explicit statements of the law is nearly the same. Silence regarding the warranty is estimated to be less

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23 Non-linear time trends do not change the qualitative significance of the estimates, though the magnitude of the price difference between no warranty and silence is reduced to between 4 and 5 dollars, bringing the estimate below 95 percent significance.
favorable than satisfaction guaranteed and much more favorable than an explicit waiver of the warranty. Both of these interpretations of silence are also correct from a legal perspective; the default warranty is truly inferior to satisfaction guaranteed and superior to the absence of a warranty.

The similarity of the estimates for silence and its explicit legal equivalent are unlikely to be the result of consumer indifference. If consumers were indifferent to contractual terms because they simply did not read offers or because the contractual warranties were trumped by other warranties such as eBay’s PayPal warranty or eBay’s dispute resolution service, then we would expect none of the variations in contractual terms to have a considerable effect. But the “as is” variation has a very large effect—significant both economically and statistically. It is therefore unlikely that consumers are not reading or not caring. Instead, the best interpretation of the similarity in prices between silence and explicit terms and the difference in prices between silence and terms with different legal meanings is that consumers interpret silence more or less appropriately in this context. Legal policymakers’ guess regarding the majoritarian default warranty rule receives some empirical validation, though this conclusion is tentative because of the noisiness of the estimates.

Another possibility that is not supported by the data is that silent terms, while interpreted appropriately on average, may introduce greater uncertainty into pricing than explicit legal terms as consumers are puzzled by silence. In the regression analysis presented in column 4 of Table 2, the average distance between the predicted price from the regression analysis and the actual price (the regression residual) is no higher—actually lower, though insignificantly so—for iPods sold with silent terms than for iPods with explicit terms. Silent iPod prices are subject to the same unexplainable variation in prices as iPods with explicit terms.

The significant price difference between the “as is” warranty and the silent terms also suggests that recent studies asserting that consumers do not read contracts should not be exaggerated (Bakos, Marotta-Wurgler, & Trossen 2009). While it is true that in some contexts almost no consumers

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24 The availability of other warranties and dispute resolution mechanism may cause differences in prices with respect to legal warranties to be underestimated. While “as is” terms are significantly discounted by consumers, they may have been discounted to an even greater degree if the consumer’s only recourse were to the formal legal system.
read, it is clear that consumers do read and react to some elements of contractual offers, such as the warranty.

5. CONCLUSION

This paper demonstrates a new experimental methodology for determining the interpretation of contractual silence. Unlike previous observational studies, this methodology does not rely on opt-out rates to make inferences regarding the implied desirability of silent terms. Instead, the field experiment relied on pricing data to evaluate consumer interpretations of silence. While the results of the field experiment are extremely noisy, they suggest that consumers interpret silence regarding the warranty of an iPod in a legally appropriate fashion.

This result is encouraging. In the context under study, the intuitive guess about the "majoritarian" gap-filling rule that forms the basis for the UCC warranty bears a close relationship to consumers' actual understanding of silence as inferred by the field experiment. If this result can be replicated in other contexts, it will provide evidence that contractual default rules are truly "majoritarian" rather than reflecting the biased assumptions of legal elites.

REFERENCES


Figure 1a:

| Apple iPod Nano Third Gen. (8 GB, MB261LL/A) Digital Media Player (MA261LL/A) |
|-----------------------------------|-------------------|
| Model                             | Apple iPod Nano   |
| Product line                      | Third Gen. (8 GB, MB261LL/A) |
| Brand                             | Apple             |
| Color                              | Black             |
| Capacity                           | 8 GB              |
| Country                            | USA               |
| Condition                          | Used               |

**Description**

We warranty that this good is merchantable. See U.C.C. Section 2-314 for further details.

**Return Policy:**

We warranty that this good is merchantable. See U.C.C. Section 2-314 for further details.

**Addition Information:**

Additional information about Apple iPod Nano Third Gen. (8 GB, MB261LL/A) Digital Media Player (MA261LL/A):

**Product Description:**

The Apple iPod Nano is an MP3 player that can be used with various applications, such as text messages, and can also be used to take photos. It has a rechargeable battery, which can be charged using the power supply that comes with the device.

**Features:**

- **Playback:**
  - AAC, MP3, WMA, WAV, WMA PRO
- **Storage:**
  - 2 GB
- **Display:**
  - 2.5" LCD
- **Connectivity:**
  - USB 2.0
- **Battery:**
  - 220 mAh
- **Size:**
  - 48 x 30 x 9 mm
- **Weight:**
  - 90 g

**Additional Information:**

For more information, please visit the official Apple iPod Nano website at [Apple iPod Nano](https://www.apple.com/ipod/nano/).
Figure 1b:

**Description**

Apple iPod nano Third Gen. Black (8 GB, MB261LL/A) Digital Media Player (MA261LL/A)

**Return Policy:**

All Goods Sold As Is, With All Faults.

**Meet the seller**

* Email: [Auctions] (see email address).
  * Feedback: 100% Positive
  * Member since Jun 15, 2005 in United States
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2. Check how you're protected

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Return Policy:

Satisfaction is Guaranteed. If for any reason, within 30 days of the purchase, you are unhappy with the product we've sold to you, we will accept a return of the product, no questions asked, for a full refund.
Figure 1d:

Apple iPod nano Third Gen. Black (8 GB, MD261LL/A) Digital Media Player (MD261LL/A)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Right</strong></td>
<td>Apple iPod</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>Made in China</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>8 GB</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Black</td>
</tr>
<tr>
<td><strong>Test Date</strong></td>
<td>2010</td>
</tr>
</tbody>
</table>

Average Testing Time: 20 minutes

Product Description:
The Apple iPod nano 3rd Gen (8 GB) is a compact and stylish digital media player with a 2.5-inch color screen. It offers a wide range of features, including high-quality audio playback, video playback, and support for various media formats. The device is powered by a rechargeable battery, which provides up to 16 hours of playback time.

Features:
- **Digital Audio Options**: AAC, MP3, M4A, WAV, MP3 VBR, Ogg Vorbis
- **Screen Display**: 2.5-inch LCD
- **Audio Quality**: Linear mode, 320 kbps, AAC, M4A, WAV
- **Video Playback**: MPEG-4, H.264, MP4, MOV, AVI
- **Photo Viewing**: JPEG, GIF, PNG, BMP
- **Connectivity**: USB 2.0
- **Weight**: 0.061 lbs

Additional Features:
- **Photo Management**: Organize photos easily
- **Video Recording**: Capture and play back videos
- **Music Download**: Access songs and playlists

Specifications:
- **Dimensions**: 5.9 x 2.2 x 0.7 inches
- **Memory**: 8 GB
- **Battery Life**: Up to 16 hours

The device is designed for hassle-free mobile entertainment and is perfect for those who enjoy listening to music, watching videos, and taking photos on the go.
**Figure 1e:**

**Shipping and handling**

<table>
<thead>
<tr>
<th>Country</th>
<th>Service</th>
<th>Insurance</th>
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</thead>
<tbody>
<tr>
<td>US $8.00</td>
<td>US Postal Service Parcel Post*</td>
<td>Hour</td>
</tr>
<tr>
<td></td>
<td>Expedited delivery within 2-5 days after seller ships item</td>
<td></td>
</tr>
</tbody>
</table>

*Sellers are not responsible for service transit time. This information is provided by the carrier and excludes weekends and holidays. Note that transit times may vary, particularly during peak periods.

**Return policy**

Return policy not specified. Read item description for any restrictions to return policy.

**Payment details**

<table>
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<tr>
<th>Payment method</th>
<th>Preferred/Accepted</th>
<th>Buyer protection on eBay</th>
</tr>
</thead>
<tbody>
<tr>
<td>PayPal, Visa, MasterCard</td>
<td>Accepted</td>
<td>eBay Buyer Protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pay with PayPal and the full amount is covered. See Terms.</td>
</tr>
</tbody>
</table>

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*Note: The document contains tables, lists, and images related to eBay shipping and handling policies, return policy, and payment details.*