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DOES A SELLER'S ECOMMERCE REPUTATION MATTER? EVIDENCE FROM EBAY AUCTIONS*

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With internet commerce, a buyer cannot directly examine the product and so must rely upon the accuracy and reliability of the seller in deciding whether and how much to bid. In this setting, the seller's reputation can become an important factor in the bid. This paper examines the impact of the seller's reputation on the willingness of buyers to bid on items sold via internet auctions, using a 1999 mint condition U.S. $5 gold coin whose average price was $32.73. The empirical results show that the seller's reputation has a positive, statistically significant, but small impact on the price.

I. INTRODUCTION

DOES A SELLER'S REPUTATION matter in determining the price that buyers are willing to pay for the seller's product? Akerlof [1970] demonstrated that markets in which sellers cannot reliably signal product quality may experience market failure. However, it may well be that the past reputation of the seller can act as a mechanism by which information about the current behavior of the seller can be transmitted to buyers. In such a setting, a seller's reputation may well reduce information asymmetries, and thereby allow the market to function.

This issue has received much attention in the industrial organization literature. Theoretical models have typically generated a positive relationship between the reputation of the seller and the price (Klein and Leffler [1981]; Shapiro [1983]; Allen [1984]; Houser and Wooders [2000]), in large part because the seller's reputation is a proxy for quality characteristics that are unobserved prior to the transaction. Experimental analysis has tended to support the theoretical results (Camerer and Weigelt [1988]). However, empirical analysis of this issue has been quite difficult, due largely to difficulties in quantifying and measuring a seller's 'reputation'.[1] The growth of internet commerce in recent years has created an

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[1] See, however, Landon and Smith [1998], who find a positive relationship between reputation and the price of Bordeaux wines.

environment in which this issue can be tested empirically, and there are now several studies that use online-generated data to study the effects of the seller's reputation on the buyer's willingness to pay (Lucking-Reiley, Byran, Prasad, and Reeves [2000]; McDonald and Slawson [2000]; Houser and Wooders [2000]). In this paper we use data collected from internet-based auction websites, including the website's own index of the seller's reputation, to estimate the impact of reputation on the price of the seller's product, and we find that reputation has a positive, statistically significant, but small effect on the willingness of buyers to pay for the good.

Auction websites such as eBay.com, Yahoo.com, and Amazon.com are becoming more popular each day. According to eBay.com, its site has over 22 million registered users,[2] and a recent study of online auction websites by Lucking-Reiley [2000] estimates that the largest internet auction websites have experienced revenue growth rates of approximately 10 per cent per month during 1998 and 1999. The design of these auctions gives an opportunity to study the effects of the seller's e-commerce reputation on the price of the seller's good. Typically, auction websites assume no responsibility for items listed on their site, and simply act as auctioneer. Instead, the seller assumes the responsibility of describing the product, shipping it, and explaining the details of such things as delivery and payment methods. Importantly, in almost all instances the shipment occurs only *after* the payment is received.[3] The buyer thus assumes a risk when sending a payment. For instance, the seller may ship a damaged item, the item may have been incorrectly described in the auction, or the seller may not send the item at all.

However, most auction sites have set up a mechanism that allows the buyer to leave comments about the seller after the transaction is complete.[4] This feedback can be positive, neutral, or negative, and comes in the form of statements like 'It's been three months and the item hasn't arrived yet' or 'Excellent seller, thank you!' The auction site compiles these comments as the number of positive feedbacks minus negative feedbacks, and calls this number the seller's *Rating*. Both the rating and feedback comments are then available for future buyers. The seller's rating is actually displayed on top of each auction of that seller, and is easily visible to each visitor of the auction.[5]

[2] See the eBay press release on March 14, 2001, 'eBay to celebrate and reward half billionth listing'.

[3] For instance, in most auctions where personal checks are accepted, a 5 to 14 day waiting period is required for checks to clear.

[4] In fact, the seller can also make comments about the buyer.

[5] These comments are easily accessible in the feedback section for each member of eBay.com.

The existence of information used to construct *Rating* provides a convenient mechanism for estimating the impact of a seller's reputation on the price of products sold by the seller. This is the purpose of this paper. Using data collected from auctions on eBay.com, we estimate a reduced-form equation that relates various features of the good, the details of the auction, and several measures of the seller's reputation to the auction price of the good. We examine in particular a 1999 mint condition U.S. $5 gold coin whose average price was $32.73 in the period we analyzed. Our estimation results indicate that buyers are willing to pay more for a good the more favorable is the seller's reputation, a result that is robust across a variety of specifications. However, the impact of reputation is generally small.

II. THEORETICAL CONSIDERATIONS

There are several ways in which the effects of reputation on price can be examined. Perhaps the most intuitive approach is that of Houser and Wooders [2000]. They assume an auction with two types of sellers, *honest* and *dishonest*. The honest seller always delivers the promised good after receipt of the payment, while the dishonest seller never delivers the good. The seller's *reputation score* is simply the probability that the seller is honest, information that is publicly available. It is then straightforward to show that the expected utility of any buyer is an increasing function in the reputation of the seller, and the buyer is willing to pay more the higher is the reputation score of the seller.[6] Other approaches often generate a similar result (Klein and Leffler [1981]; Shapiro [1983]; Allen [1984]).

However, it is also possible to construct models in which reputation provides no information and is useless (McDonald and Slawson [2000]). Here, reputation is needed only to provide sellers with an incentive to provide high quality service. However, the reputation score itself provides little information about seller quality because in equilibrium all sellers will choose to be high quality.

The actual impact of reputation on selling price is therefore an empirical issue. In the next section we present our approach for estimating this impact.

[6] More precisely, Houser and Wooders [2000] show that in equilibrium, the buyer with the highest expected value of winning the auction wins the auction, and pays the expected value of the buyer with the second highest value. This expected value is given by $b_2 = r^S v_2$, where b_2 is the second-highest bid, r^S is the reputation score of the seller, and v_2 is the value of the good to the second-highest bidder.

TABLE I
DESCRIPTIVE STATISTICS

Variable	Mean	Standard Deviation	Minimum	Maximum
Price	32.727	3.094	26.000	50.000
Rating	452.742	765.896	3.000	3583.000
NegativeRating	0.956	1.569	0.000	13.000
Gold	274.598	4.907	269.900	289.100
Shipping&Handling	2.845	0.698	0.000	5.500
Insurance	0.802	0.399	0.000	1.000
Scan	0.809	0.394	0.000	1.000
CreditCard	0.804	0.397	0.000	1.000
ClosingTime	0.338	0.473	0.000	1.000
Length	6.629	2.494	3.000	10.000
SS	0.407	0.492	0.000	1.000
FSS	0.504	0.501	0.000	1.000

III. EMPIRICAL SPECIFICATION

Observations from the on-line auction website eBay.com were collected from May 19 to June 7 of 2000. In total, 450 observations were collected over the period, observations generated from 91 unique sellers. Table I provides descriptive statistics for the entire data set.

It may be useful to describe some of the relevant features of the eBay.com auction process that were in force at the time of our study.[7] The important features of this process are still in place, although it should be recognized that eBay's policies are continuously changing.

Any member of the eBay community can list an item for sale on the eBay website. To become a member, one must register with eBay. The registration process is very simple, and requires personal information such as name, telephone number, and email address (although eBay verifies only the email address). The auction is completely free to bidders, and eBay does not require any credit card information from bidders. Sellers are required to specify a method of payment for eBay auction fees, such as the use of a personal check or a credit card.

When listing an item, the seller is responsible for providing any description of the item (e.g., scanned pictures). The seller is required to specify such things as acceptable methods of payment, shipping services and costs, and the number of days that the auction will be active; currently, the seller can select a 3, 5, 7, or 10 day auction. The closing time of the auction is determined by the start time of the auction, with the auction closing at the time of the day at which it was listed. The seller is

[7] For a more detailed description of internet auction mechanisms, see Lucking-Reiley [2000].

also required to specify the opening bid, but only if the seller requires an opening bid higher than \$.01.[8]

Once the auction is listed on the eBay.com website, it can be viewed by anyone. However, only registered members of the eBay community are allowed to bid on the item. The viewer of the auction observes all of the information noted above; importantly, the viewer observes the *Rating* and feedback comments of the seller. All auctions listed on eBay are of English design, in which the highest bid becomes the closing price of the auction. Bidders who get outbid are notified through email, and have a chance to respond by increasing their bids.[9]

One of the problems with analyzing private auctions like the ones displayed on eBay.com is the heterogeneity of the product. People sell different products, and, even when the same general product type is offered for sale, the condition of the product often varies. Because there is no consistent method to measure product differences, any statistical approach may be problematic. However, identical products offered for sale by different sellers can be found. In particular, collectible coins of the same date and same grade can be considered a homogeneous product (e.g., a 1999 Georgia State quarter in mint condition).[10] The main difficulty with using identical items is finding enough observations, a problem that can be addressed if observations are collected over a long-enough time period. Such an approach creates a further difficulty, if there is a changing trend over this period in the behavior of coin collectors. However, the trend problem can be reduced by examining a bullion coin that has a small numismatic value and that derives the bulk of its value from the content of the bullion in it.

For these reasons, we collect information on a 1999 \$5 U.S. gold coin in mint condition. This coin has a small numismatic value, and derives the bulk of its value from its gold content. The average price (*Price*) of this

[8] The seller may also choose to specify a reserve price; if the seller chooses to do so, then the value of the reserve price will not be visible to any viewers of the auction, although the auction description will reveal information on whether the current high bid exceeds or falls short of the reserve price. If the reserve price is met, then the winning bidder and the seller are obligated to complete the transaction. If the winning bid does not exceed the reserve price, then neither of the parties is required to complete the transaction. Relatively few eBay auctions employ the reserve price mechanism, in part due to the additional fee charged by eBay for the inclusion of a reserve price. In our sample, none of the auctions used a reserve price.

[9] Note that eBay uses a proxy bidding method, in which any bidder can specify a maximum amount for his or her bid while eBay will only post a bid that is just a small increment above the current high bid. If other bidders submit bids, then eBay will continue bidding on behalf of the bidder with the maximum bid, until (if ever) the other bids exceed the maximum bid, at which point the maximum bidder will receive an email saying that his or her bid has been outbid.

[10] Coins have previously been used to study online auctions. Lucking-Reiley, Bryan, Prasad, and Reeves [2000] provide an excellent overview of online coin auctions.

coin was \$32.73 (in U.S. dollars), while its gold value was \$27.46 (based on the average gold price during the period of data collection). It is *Price* that is the dependent variable in our estimations.

As suggested by Landon and Smith [1998], Lucking-Reiley, *et al.* [2000], McDonald and Slawson [2000], and Houser and Wooders [2000], we assume that the price of the coin depends upon a vector of characteristics (X) that include the seller's reputation, the underlying value of the gold content of the coin, and the auction features.

Of primary interest is the impact of the reputation of the seller on the buyer's willingness to pay for the good. Reputation is measured by the overall rating of the seller (*Rating*), calculated by eBay as the number of positive feedbacks minus the number of negative ones left by unique users. *Rating* exhibits great variation. Its mean value is 452, but it ranges from a minimum value of 3 to a maximum value of 3583. We use the information contained in *Rating* to construct another reputational variable that focuses more precisely on the negative rating of the seller (*NegativeRating*), equal to the number of feedback responses that rate the seller as negative.[11]

Our expectation is that *Rating* will have a positive impact on the auction price, while *NegativeRating* will have a negative impact. However, as noted above, it is possible to construct a theoretical model in which the informational content of reputation is in equilibrium worthless. In addition, our measures of reputation are likely to be somewhat imperfect indicators, for several reasons: not every transaction results in a feedback comment, there is little economic motivation for buyers to provide feedback after a transaction has been completed, sellers can change their internet identities, there are no real standards to distinguish deliberate seller fraud from honest mistakes, the measures do not provide a complete indicator of seller quality, and sellers (and buyers) may attempt to manipulate the measures.[12]

Nevertheless, as emphasized in the earlier discussion, *Rating* and its breakdown into negative, neutral, and positive comments are fully observable by the bidders. Further, there is some informal evidence that the feedback mechanism is valued both by eBay.com and its users. In particular, eBay.com has recently gone to court to prevent other auction sites from using its reputation feedback, and comments from buyers in chatrooms suggest that buyers pay some attention to the feedback.

We include several variables that reflect the features of both the good and auction. The gold content of the coin is measured by the New York closing price of gold on the closing date of the auction (*Gold*). The New

[11] Recall that buyers are allowed to leave positive, neutral, or negative feedbacks.

[12] Note that bidders see all feedback indicators, while they do not see the total number of seller transactions.

York closing price of gold on the closing date of the auction is chosen rather than the price on any other day during the auction because items in the closing stage of the auction are given a higher priority and are placed on the top of their category page.

Auction characteristics include the shipping and handling charges charged by the seller (*Shipping&Handling*). Shipping and handling costs are included because the buyer seems likely to consider the total cost of the transaction, rather than only the cost of the product itself.[13] Differences in shipping and handling costs should be reflected (or capitalized) in the total price.

Many sellers include shipping insurance costs in the shipping and handling charges, and many also provide shipping insurance on the item. However, not all sellers include these insurance charges. This seller difference is adjusted by including the dummy variable *Insurance*, equal to one if insurance is provided and zero otherwise. Insurance is provided in slightly more than 80 percent of the auctions.

Inclusion of the scanned picture of the actual item offered for sale (*Scan*) may increase the buyer's willingness to bid on the item because a picture improves the description of the item. The acceptance of credit cards as a method of payment (*CreditCard*) speeds up the shipping of the item, and some bidders may be willing to pay a higher price to receive the item faster. Both variables are dummy variables, and in both cases roughly 80 percent of the auctions in our sample include scans or accept credit cards.

The length of the auction (*Length*) is included because a longer auction increases the number of potential buyers who may visit the site. Auctions offered on eBay.com can last 3, 5, 7 or 10 days. Further, the time of the day when the auction closes may have an impact on the selling price. More people may view auctions that close early in the evening than auctions that close early in the morning. Also, auctions tend to receive the most attention from bidders during the last four hours of the auction, and many auctions have no bids until the last 4 hours of the auction. During those last four hours, auctions are not only displayed on top of the page in their category, but they are also placed on the *Going, Going, Gone* page of eBay.com, a page that only lists auctions closing within the next four hours. To investigate these issues, we include the dummy variable *ClosingTime*, equal to one if the auction's closing time is between 3 pm and 7 pm Pacific time and zero otherwise. We also include the dummy variable *FSS*, which equals one if the auction closes on Friday, Saturday, or Sunday, and zero otherwise; alternatively, in some specifications we include the dummy variable *SS*, equal to one if the auction closes on Saturday or Sunday and zero otherwise.

[13] The product is identical, and all sellers use the identical method of shipping (the U.S. Postal Service).

We estimate a wide variety of specifications. Model I includes only *Rating* and *NegativeRating* (plus a constant); other models introduce the additional variables defined above. In all of these models the dependent variable is *Price* (entered in linear form), the reputational variables are entered in logarithmic form, and the other continuous variables are entered in linear form. Other specifications test the robustness of the estimation results to these functional forms.

All specifications are estimated using Tobit maximum likelihood estimation with variable but known cutoffs.[14] Some auctions have a specified starting bid (or opening price) and receive no bids at all, in which case the true price is below the starting bid and its precise value is unknown; these starting bids can vary from auction to auction. There are 117 observations that are left-censored, in the total sample of 450 observations. As a result, we face a censoring problem with different cutoff points, and the Tobit method ensures unbiased and consistent estimates. Defining Y_i^* as the unobserved index variable for observation i with cutoff value C_i, and Y_i as the observed random variable, then

$$Y_i^* = X_i\beta + \varepsilon_i \tag{1}$$

$$\begin{aligned} Y_i &= Y_i^* && \text{if } Y_i^* > C_i \\ Y_i &= C_i && \text{otherwise} \end{aligned} \tag{2}$$

where β is the vector of coefficients on X_i and ε_i is the error term, assumed to be normally distributed with zero mean and constant variance σ^2. The standard log-likelihood function l, or

$$l = -\frac{1}{2}\sum_{Y_i>C_i}\left[\left(\frac{Y_i - X_i\beta}{\sigma}\right)^2 + \log(2\pi\sigma^2)\right] + \sum_{Y_i<C_i}\log\Phi\left(\frac{C_i - X_i\beta}{\sigma}\right) \tag{3}$$

is maximized over all i observations, where Φ is the cumulative standard normal distribution function.

IV. ESTIMATION RESULTS

Table II reports the estimation results from several different specifications, with t-statistics in parentheses.[15] Consider first the impact of the seller's

[14] See Amemiya [1984] for detailed discussions of this estimation method.

[15] As discussed by Amemiya [1984], the estimated coefficient β_i for independent variable X_i gives the impact of the independent variable on the unobserved index variable Y_i^*, or what might be termed the willingness to pay for the auction item. The impact of X_i on the actual observed variable Y_i (or, equivalently, $Price_i$) is given by

$$\frac{\partial E[Y_i|X_i]}{\partial X_i} = \beta_i\Phi\left(\frac{\beta' X_i}{\sigma} + C_i\right),$$

where $E[\,]$ is the expectation operator. We focus in the text upon the impact on the willingness to pay.

Table II
Estimation Results[a]
(t-statistics in parentheses)

Independent Variable	I	II	III	IV	V	VI	VII
Ln(*Rating*)	0.420	0.217	0.202	0.223	0.244	0.262	0.261
	(4.728)	(2.171)	(1.977)	(2.134)	(2.330)	(2.503)	(2.501)
Ln(*NegativeRating* + 1)	−0.687	−0.371	−0.321	−0.370	−0.478	−0.503	−0.511
	(3.421)	(1.766)	(1.463)	(1.639)	(2.055)	(2.159)	(2.205)
Gold		0.068	0.067	0.066	0.069	0.074	0.074
		(3.552)	(3.510)	(3.469)	(3.594)	(3.820)	(3.871)
Shipping&Handling		−0.524	−0.534	−0.548	−0.556	−0.543	−0.545
		(3.134)	(3.193)	(3.262)	(3.320)	(3.247)	(3.272)
Insurance		0.364	0.391	0.363	0.402	0.463	0.465
		(1.412)	(1.506)	(1.386)	(1.540)	(1.757)	(1.777)
Length		0.064	0.056	0.050	0.058	0.052	0.054
		(1.707)	(1.429)	(1.257)	(1.461)	(1.317)	(1.353)
CreditCard			0.206	0.154	0.162	0.105	0.126
			(0.768)	(0.564)	(0.595)	(0.384)	(0.464)
Scan				0.236	0.300	0.395	0.381
				(0.921)	(1.167)	(1.498)	(1.472)
ClosingTime					0.411	0.458	0.487
					(1.911)	(2.113)	(2.283)
FSS						0.317	
						(1.581)	
SS							0.395
							(2.019)
Constant	29.933	12.934	13.129	13.216	12.305	10.488	10.390
	(6.371)	(2.480)	(2.521)	(2.540)	(2.368)	(1.973)	(1.979)
Log-likelihood	−730.243	−718.526	−718.232	−717.808	−715.989	−714.741	−713.596
Observations[b]	450	450	450	450	450	450	450

Notes:
[a] The dependent variable is *Price*, or the U.S. dollar price of a mint condition 1999 U.S. \$5 gold coin.
[b] 117 observations are left-censored.

reputation. As expected, the coefficient on *ln*(*Rating*) is positive and statistically significant across all models, with a coefficient size that varies little by model. Also, *ln*(*NegativeRating* + 1) has a consistently negative impact on the willingness to bid on the auction item, and is significant at the 90 percent level or better in most of the models. These results give empirical support to the notion that a seller's reputation affects a buyer's willingness to pay for auction items.

The potential impact of reputation on the willingness to pay is noticeable but small. To illustrate, the average estimated coefficient on *ln*(*Rating*) in the Table II models is 0.26. This value suggests that a seller who improves the *Rating*, doubling it from 452 to 904, would on average experience an increase in the willingness to pay, but only by 18 cents. A seller who allows the *Rating* to decline by half would suffer a fall of only 18 cents; even if the *Rating* falls all the way to 1, the willingness to pay would decline by only $1.59. Similarly, an improvement in a seller's *NegativeRating* will also raise the willingness to pay, but again the impact is relatively small.[16] Using the average estimated coefficient on $ln(NegativeRating + 1)$ in Table II, a seller who halves the mean *NegativeRating* from 0.96 to 0.48 would see an increase of 13 cents in the willingness to pay. Conversely, a seller who allows the *NegativeRating* to increase from zero (the minimum observed *NegativeRating)* to 13 (the maximum) would see a reduction of $1.22. Note that these results are unaffected by adding a reputation variable that measures the relative frequency of negative responses.[17]

Other variables have expected signs and are generally statistically significant. The price of gold (*Gold*) has a positive and statistically significant coefficient whose value indicates that a 1 percent increase in the price of gold generates a roughly 0.7 percent change in the willingness to pay for the coin.

The coefficient on shipping and handling charges is negative and significant. Its magnitude suggests that each dollar increase in shipping and handling costs reduces the willingness to pay by approximately 55 cents. Note that this coefficient is less than one, so that these costs are not completely capitalized in the price. As expected, the presence of insurance increases the willingness to bid on the item. However, *Insurance i*s only marginally significant (at the 8 percent level) in Model VI.

The presence of a photo image of the coin increases the willingness to bid on the coin, although the coefficient on *Scan* is not significant. This result is plausible because the presence of a visual description of a perfectly homogeneous product does not offer much additional or useful information about the product. Similarly, the acceptance of credit cards has a positive but insignificant coefficient, a result that is of some interest because the acceptance of credit card use increases the seller's costs of transaction.

Auctions that close during peak periods generate a higher price of the auction item. However, the length of the auction and the date upon which

[16] Remember that a decrease in *NegativeRating* represents an improvement in the seller's reputation, while an increase shows a deterioration in the reputation.

[17] For example, the estimation results when a variable is included that measures the relative frequency of negative responses are

$$\underset{}{Price} = \underset{(57.749)}{39.126} + \underset{(3.648)}{0.383}\ ln(Rating) - \underset{(2.189)}{0.572}\ ln(NegativeRating + 1)$$

$$- \underset{(0.676)}{12.262}\ ln[(NegativeRating + 1)/Rating]$$

where numbers in parentheses are t-statistics.

it finishes do not have a significant impact on the auction price. These combined results are consistent with the hypothesis that buyers pay most attention to an auction during its closing stages (*ClosingTime*), regardless of how long the auction has been going (*Length*) or what day the auction closes (*FSS*). These results are different from those of Lucking-Reiley *et al.* [2000], who find a significant positive relationship between the length of the auction and the price. However, they use a rarer, and more heterogeneous good (collectible Indian-head penny coins minted in different years), and the length of the auction seems likely to have a greater impact on such commodities because only a few coins with specific characteristics (e.g., mint mark, year, grade) are available at any time. In contrast, the 1999 $5 U.S. gold coin is more common and more homogeneous, and an itemized search results in many auctions available to buyers at specific instances. Consequently, buyers may limit their searches to auctions that are due to close shortly, and not browse through several pages of itemized search results.

It should be noted that these estimation results are largely unaffected by alternative functional forms for the continuous variables. For example, using the variables in Model VI of Table II, the signs and significance levels of all explanatory variables are unaffected by entering *Price* in logarithmic form; similarly, entering all continuous (dependent and independent) variables in logarithmic form does not affect the results. In particular, the two measures of the seller's reputation have a consistent, even though small, impact on the auction price in all specifications.[18]

V. CONCLUSIONS

This study demonstrates that a seller's ecommerce reputation is a determinant, though not a major determinant, of the price the seller receives in internet auctions. In the absence of other, more direct, sources of information about a product, an internet buyer must rely upon the

[18] For example, the estimation results when all continuous variables are entered in logarithmic form are:

$$\underset{}{ln(Price)} = \underset{(17.349)}{2.798} + \underset{(3.226)}{0.010}\, ln(Rating) - \underset{(-2.282)}{0.016}\, ln(NegativeRating + 1)$$

$$- \underset{(-3.048)}{0.033}\, ln(Shipping\&Handling) + \underset{(1.703)}{0.014}\, Insurance + \underset{(3.669)}{0.596}\, ln(Gold)$$

$$+ \underset{(1.697)}{0.012}\, ln(Length) + \underset{(0.334)}{0.003}\, CreditCard + \underset{(1.394)}{0.011}\, Scan + \underset{(2.206)}{0.014}\, ClosingTime + \underset{(1.602)}{0.010}\, FSS$$

where numbers in parentheses are *t*-statistics.

accuracy of the seller's product description and the reliability of the seller's product delivery in deciding whether and how much to bid for the good. Put differently, the seller's reputation becomes one consideration in the buyer's willingness to bid on the auction item. Our empirical results show that a seller with a better reputation can expect to receive a higher price for the auction good. However, although reputation is a statistically significant determinant of the auction price, its impact tends to be small.

Recall that it is possible to construct theoretical models in which a seller's reputation has either a positive or zero impact on the buyer's willingness to bid (e.g., Houser and Wooders [2000] versus McDonald and Slawson [2000]). Our estimation results offer some support to models in which a buyer's bid increases with the seller's reputation. However, although the relationship between price and reputation is positive, the impact is also small. This result may well be due in part to the relatively inexpensive nature of the item used in our analysis (e.g., an average price of $32.73), as well as to its relative homogeneity (e.g., a 1999 mint condition U.S. $5 gold coin). The magnitude of the effect of the seller's reputation on the price seems likely to increase with both the value and the heterogeneity of the item. In the former case, the size of the loss from encountering a disreputable seller will increase; in the latter case, a buyer will be more dependent on the seller's reputation in determining the exact nature of the item that is being sold.

In this regard, new website auction sellers may find it difficult to compete with existing sellers who have established a positive reputation. Further, in the absence of a mechanism that allows ratings to be transferred across sites, a seller who has a high rating with a particular on-line auction website may face a cost in switching to other on-line auction websites. 'Reputation' obviously provides some benefits to consumers searching the internet for items upon which to bid. However, such 'reputation' may also impose some costs on consumers, if the development of reputation by on-line auction sites acts as a barrier to entry for new on-line auction sites and gives monopoly power to already established on-line auction websites.

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