

Appendix 1: Data Collection

The method of data collection was to locate as many auction sites as possible on the World Wide Web, and visit them to collect data of interest to auction theorists. My research assistants and I exhausted the list of auctions turned up by the search engines at <http://www.yahoo.com> and <http://www.snap.com>, as well as those at the Internet Auction List at <http://www.internetauctionlist.com>, and also added any additional auction sites we found elsewhere. Perhaps not surprising to those who use the Internet regularly, we found many of the listed sites to be no longer operational by the time we visited (between September and November, 1998). Many of the listings turned up by search engines and catalogs under “auction” are, of course, not Web-based auctions per se, but rather Web pages that discuss more traditional auctions where bids are executed in person or via the postal service. For purposes of this study, I define an “Internet auction” as being an auction that accepts bids via the Internet (usually through a Web-based form, but occasionally via email). After excluding defunct sites¹ and non-Internet auctions, we found a total of 142 Web-based auction sites for our survey. A complete list of these sites and their Internet URLs can be found in Appendix 2.

All of the data described here come from the Web pages of the auction sites. Most sites described their auction formats in detail in a “bidding rules” section; some failed to do this explicitly, so we attempted to infer the rules by watching auctions as they progressed and as they finished. In order to estimate the dollar volume of transactions per month at each site, we

typically counted up the number of auctions currently taking place on the site (a task sometimes facilitated by automated descriptive statistics provided by the site). Next, we took a sample of auction listings (typically between 50 and 100) which had already closed,² and used this sample to estimate both the mean revenue per auction and the mean number of days per auction.

From these figures, we could estimate the approximate transaction revenues per day and per month.

Some sites make it easier than others to estimate revenues. The eBay site is a particularly good source of data, making available the results of all completed auctions from the past month, including bid histories which indicate the prices at which each bidder dropped out. On eBay, we were able to take a sample of all closed auctions, use that sample to estimate the mean revenue per closed auction, and scale by the number of items closing per day (this figure being available on the site) in order to compute a monthly revenue estimate. On other sites, the task was not so simple: sometimes completed auctions were unavailable, so we had to estimate the results using the auctions which were about to close. Sometimes it was difficult to estimate how many items were available on the site. Sometimes it was difficult even to tell whether a particular auction had actually resulted in a sale or not. Some of our samples of prices or of quantities per month may have been unrepresentative, particularly at sites where the volume of transactions fluctuated significantly over time.³ Because of the difficulty of the task and the

¹ Quite a few Web sites appeared to be fully functional auctions, but had no items listed, and very little detail about the rules of bidding. These sites were excluded from our survey as well.

² Sometimes the site did not allow viewing of closed auctions. In these cases, we sampled items which were within a few minutes of closing, and assumed that this would give us the approximate final price.

³ For ease of data collection we usually took our sample of prices from auctions closing at a given point in time (sometimes a period of time as short as ten minutes). If auction revenues fluctuate significantly over the course of a day, week, or month, then our estimates of mean revenues could be inaccurate. I choose,

potential vagaries of the data, our goal was modest: to provide estimates of revenues that would be accurate to within an factor of ten. Any estimated standard errors from our samples would likely be underestimates of the amount of uncertainty, so I prefer to state that the revenue estimates in this survey are accurate only to within an order of magnitude. For the top ten sites, we expended more effort, so those estimates are likely accurate to within $\pm 50\%$.

therefore, not to present standard errors for our estimates, believing it to be more honest to give the subjective but conservative order-of-magnitude estimates of error. (For example, on one week we estimated Patriot Auctions' revenues to be approximately \$9,650, while two weeks later the number of auctions (and revenues) were estimated to be nearly 10 times greater.)

Appendix 2: List of Surveyed Auction Sites

Auction Site	URL
4a Travel	http://www.4a.com/auction
AB!C Absentee Auctions	http://nas.net/~draaks/anindex.html
ABC Live Auction	http://www.abcliveauction.com
ABQ	http://www.abq.com
Advantage Auction	http://advantageauction.com
Affiliated Computer Auction	http://remarketing.com/auction/index.html
American Fine Arts On-Line	http://www.afaol.com
American Image gallery	http://www.diamondlightphotos.com
Antebellum Covers	http://www.antebellumcovers.com
Antique Canada	http://www.antiquecanada.com
Antique Country	http://www.antiquecountry.com
Antique Photo.Com	http://antiquephoto.com
Art Auction	http://www.artauction1.com
Arte Ptrimivito	http://www.arteprimivito.com
AucitonX	http://www.auctionx.com
Auction 2000	http://www.auction2000.net
Auction Bidding	http://auction-bidding.com/main.cfm
Auction Hoss Town	http://www.auctionhosstown.com
Auction Inc.	http://wwcd.com
Auction InfoCom	http://auction.infocom.net
Auction MCW	http://www.auctionmcw.com
Auction Nation	http://www.auctionnation.com
Auction Network	http://auction-network.com
Auction Port	http://auctionport.com
Auction Sales	http://ai.wwcd.com/auction/wof/index-wwcd.html
Auction Texas	http://auctiontexas.com
Auction Universe Inc.	http://auctionuniverse.com
Auction Ware	http://auctionware.com
Auction Works	http://auctionworks.com
Auction-123	http://auction-123.com
AuctionAddict.com	http://auctionaddict.com
AuctionNet	http://auction.net/electronic
Auctions U-Auction-It	http://uauction.com
AuctionVine	http://Auctionvine.com
AutographAuction	http://autographauction.com
Autographs & More	http://autografs.com
Awardmasters	http://www.awardmasters.com
B2B Auction	http://b2b-auction.com
Basketball Bonanza	http://basketballbonanza.com
bid n ask	http://bidnask.com
Bid.com	http://www.bid.com
BidAway	http://bidaway.com
Biddernet.com	http://biddernet.com
Biddington's	http://biddingtons.com
BidnBuy	http://www.bidnbuy.com
Boxlot Online Auction	http://boxlot.com/index.html
Buffalo Bid	http://www.buffalobid.com

Carousel Auction	http://carousels.com
CityAuction	http://cityauction.com
Coin Universe	http://auction.coin-universe.com
Collectors Auction	http://www.collectorsauction.com
Cool Auctions	http://www.coolauctions.com
Cyber Auctions	http://www.cyber-auctions.com
Cyberhorse	http://www.cyberhorse.com
Cyberswap Auction House	http://www.cyberswap.com/7z7i2aNd
Dallas Gold & Silver Exchange	http://www.dgse.com
Dan's Online Auction	http://abg.com/antiques/index.html
Dargate	http://www.dargate.com
Dealerauction	http://www.dealerauction.com
Dealsdeals	http://www.dealsdeals.com
Double J Sports & Auctions	http://doublejsports.com
Down-Jersey	http://www.down-jersey.com
drblank Engineering Textbook Auction	http://www.drblank.com/coeta.htm
eBay	http://www.ebay.com
Egallery	http://www.egallery.com
Encore E-Z Auction	http://www.encoreauction.com
Fair Auction	http://www.fairauction.com
Fair Market	http://www.fairmarket.com
Fast Parts	http://www.fastparts.com
Fidelity Pacific	http://www.fidpac.com
First Auction	http://www.firstauction.com
Galaxy Gold	http://galaxygold.com
Global Auction Online	http://global-auction.com/index.htm
Going, Going Sold	http://www.going-going-sold.com
GoingGoingGone	http://www.goinggoinggone.com
Golden Age	http://www.goldnage.com
Golfbids	http://www.golfbids.com
Golfclub Exchange	http://www.golfclubexchange.com
Golfweb Auction	http://www.golfweb.golfaction.com
Haggle	http://www.haggle.com
Hollywood Auction	http://travel.to/hollywood
Interactive Auction Online	http://www.iaoauction.com
Intermodal Exchange	http://www.intermodalex.com
John Morelli Auctioneers	http://abcauction.com
Just Glass	http://www.justglass.com
Keybuy	http://www.keybuy.com
Klik-Klok	http://www.klik-klok.com
LabX	http://www.labx.com
LightningAuction	http://www.lightningauction.com
Live Auction	http://www.liveauctiononline.com
Live to Play	http://www.livetoplay.com
Livebid	http://www.livebid.com
Mackley & Company	http://mackley.com
Manion's Auction	http://www.manions.com
Mile High Comics	http://www.milehighcomics.com
Miles of History Civil War Auction	http://www.collectorsnet.com/miles/auction/index.html
National Auction Properties Inc.	http://auctionz.com/index.shtml

Nauk's Vintage Records	http://78rpm.com
NetMarket	http://netmarket.com
New Spirit Jewelers & Crystal Gallery	http://wehug.com
Northerbys	http://www.northerbys.com
Numisma Mynthandel	http://www.web.idg.no/numisma
One Web Place	http://www.onewebplace.com
Online Auction Warehouse	http://auctionwarehouse.com
Onsale	http://www.onsale.com
Pacific Book Auction	http://www.nbn.com/~pba/index.html
Patriot Auctions	http://www.patriotauctions.com
Paulus Swaen	http://www.swaen.com
PC Buyer	http://www.pcbuyer.com
Peddleit	http://www.peddleit.com
Peter Johnson	http://www.pjcurrency.com
Pinocchio Productions Inc.	http://member.aol.com/PinocProd/auction.html
Playle's Postcard Auction	http://www.playle.com
Quixell	http://www.quixell.com
Rotman Collectibles	http://www.wgcd.com/rotman
Roy Reynolds Coins	http://members.aol.com/coins96/auction.htm
Sandafayre	http://www.sandafayre.com
Sceoppa.Com	http://sceoppa.com
Sell and Trade	http://www.sellandtrade.com
Sporting Auction	http://www.sportingauction.com
Sports Auction	http://SportsAuction.com
Stamps, Coins and Phonocards Auction	http://www.actcom.co.il/unistamps
Stein Auction	http://www.steinauction.com
Surplus Auction	http://surplusauction.com
Target Auction	http://www.usbusiness.com
The Sporting News Auction	http://auctions.sportingnews.com
Then and Now Auction	http://www.thenandnow.com
Timeshare Resales International	http://www.tri-timeshare.com/AUCTIONS/Auctions.htm
Travel to Hollywood	http://www.travel.to/Hollywood
Travelbids	http://www.travelbids.com
Travelfacts Auction	http://bid4travel.com
Trinity Minerals Company	http://www.trinityminerals.com/auction/auction.htm
U Auction	http://www.uauction.com
UBID	http://ubid.com
Universal Studios	http://unistudiosauction.com
Up 4 Sale	http://www.up4sale.com
US Auctions	http://www.usauctions.com
Virtual Nostalgia Auction Company	http://vnostalgia.com
Wall of Fame	http://ai.wgcd.com/auction/wof/index-wgcd.html
Wine Cellar Auction	http://
winebid.com	http://winebid.com
World Wide Auction	http://wwauction.com
WW-Sales	http://www.ww-sales.com