

Reputation in online interaction: The RentACoder case

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Presentation prepared for the KNAW colloquium "Trust and cooperation in online interaction", May 2-4 2005

Reputation safeguarding online interaction

- Online interaction typically comes with issues of trust and cooperation
 - ... which may lead to a situation where online interaction leads to more opportunistic behavior than offline interaction
 - ... or to much less online interaction because the anticipated problems deter individuals from interacting online
- One way to (try to) overcome the trust and cooperation problems is by using a reputation system (each actor rates the other actor after a transaction has taken place)

Basic question: Does that work? And how can we understand that it does (or doesn't)?

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Some concerns regarding field studies of reputation systems

- Almost completely "eBay-based", disregarding differences between auction sites:

→ between reputation systems (such differences can and are only tested experimentally)

→ Hardly any evidence on auctions with different mechanisms (eBay is strictly public [high] bid)

→ effects of reputation are not that consistent, often absent, and if not absent small in size

Another issue: using eBay data does not allow for direct measurement of the preferences of buyers

It seems that the main use of reputation is on the "trust in system" level

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Another empirical test of the value of reputation: RentACoder.com

The screenshot shows the RentACoder.com website. At the top, it says "...as seen in BusinessWeek THE WALL STREET JOURNAL". Below this is a banner for "How Software Gets Done" with an image of a hand holding a suitcase. The main content is divided into two columns: "Software Buyers" and "Software Coders".

Software Buyers: Need a program created? Receive bids from our pool of 98,937 registered coders. Review work histories and resumes online, and then conduct business stress-free using our "Safe Project Escrow" (tm).
[How Does It Work for Buyers?](#)
[Request bids on your project or question](#)

Software Coders: Earn cash with your high tech skills on 1589 currently open bid requests. Then subscribe to our newsletter and receive daily bid requests from our 37,455 registered buyers.
[How Does It Work For Coders?](#)
[Register and be notified of new projects!](#)

Newest Bid Requests: From 1589 open bid requests.
[Web Based Order Entry System](#)
 By Zister on Apr 29
 Max Bid: Open to fair
[Put this ticker on your site](#)

Quotes:
 "I had a tricky software problem I couldn't solve... [and] I found something online called Rent A Coder. ... I found a good programmer in five minutes."
 THE WALL STREET JOURNAL
 June 3rd, 2002
[...Other quotes...](#)

Returning Users ([Lo-res home page](#))
 Buyers: [My Bid Requests](#) | [My buyer financials](#)
 Coders: [My Bids](#) | [My coder financials](#)

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RentACoder and reputation

- At RentACoder you hire a programmer (a 'coder') to do some programming work
- Coders can bid for jobs, and the buyer can decide to whom he gives the job
- After completion of the job, the coder and the buyer rate each other on a scale from 0 to 10, where 10 is excellent and 0 is terrible.
- Question: what is the value of a reputation when it comes to being chosen as a coder?

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Kinds of projects

- Very small business project: < 100 US\$
- Small business project: >= 100 US\$
- Medium business project: >= 500 US\$
- Large business project: >= 5000 US\$

- Personal project/homework help
- Unsure of project price
- Unknown

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Example personal projects / homework

Simple Java Servlet programming Messages (1 ratings)	Personal Project / Homework Help Java, JSP	Bidding open Max bid: \$15.00 (USD)	53 since Apr 30, 2005 2:04:03 PM EDT
<p>Hi all i need a Java Servlet that implements a trivial sort of weblog that presents categories where user can add their comments. The basic features are simple, except we add the requirement that the servlet resist user errors with the brow ... (see bid request for full description)</p>			
Lola TRRS (0 ratings)	Personal Project / Homework Help Microsoft Windows, Testing / Quality Assurance, Computer Platforms, Web Services, Other (Database)	Bidding open Max bid: \$20.00 (USD)	35 since Apr 30, 2005 7:05:31 AM EDT
<p>What I really want is small Forum system: -HTML form for inserting data(post message) with a Servlet,-Data must be stored in XML file.-All data must be in the same xml any time the user insert-Reply Form data also saved in the same xml file ... (see bid request for full description)</p>			
Navigate obstacle course gustak (0 ratings)	Personal Project / Homework Help Language Specific, C++ / C, Requirements, Computer Platforms, Other (Windows), 3d Modeling, Other (Emergency)	Bidding open Max bid: \$40.00 (USD)	41 since Apr 30, 2005 5:38:32 AM EDT
<p>The aim of this project is to navigate a shape provided (rhombus,capsule or lens shape) through an obstacle course. The shape should move from a provided starting location (x,y,theta) to a provided stopping location (x1,x2,theta1). The obstacle course will ... (see bid request for full description)</p>			
20 Simple Java Questions ashhead Butt (1 ratings)	Personal Project / Homework Help Microsoft Windows, Language Specific, Java, Computer Platforms, Other, Misc, Linux	Bidding open Max bid: \$50.00 (USD)	318 since Apr 30, 2005 12:23:29 AM EDT
<p>I have some 20 Simple Java questions that i have to do as an assignment.</p>			

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Example very small business projects

PHP Script Utility Application webn1 (7 ratings)	Very Small Business Project: under \$100(USD) C++ / C, Visual Basic, PHP, Delphi, Other (Web)	Bidding open Max bid: \$75.00 (USD)	75 since May 1, 2005 3:45:32 AM EDT
<p>PHP Script Utility Application</p> <p>I need a small PHP application made that can import</p> <p>an HTML webpage and find PHP code, highlight it, then go find any PHP code line breaks and fix them so the HTML page can be exported back and saved ... (see bid request for full description)</p>			
Flash Header Design id45 (1 ratings)	Very Small Business Project: under \$100(USD) Web, Flash, Graphics / Art / Music, Artwork, Logo Design	Bidding open Max bid: \$80.00 (USD)	67 since May 1, 2005 3:28:05 AM EDT
<p>We need a flash header designed for our new website layout that is in the progress of being designed. The layout can be seen here: http://www.justpressplay.net/trials/The header would be done in flash and the dimensions would be 430 x (see bid request for full description)</p>			
AIM sn creator a2b2c2d (1 ratings)	Very Small Business Project: under \$100(USD) Web, Language Specific, PHP, Other (Web)	Bidding open Max bid: Open to fair suggestions	42 since May 1, 2005 3:27:43 AM EDT
<p>I am looking for an AIM screenname maker written in PHP. I already have code that can be used as a start that works with IP. Currently I use multiple IP's and put in the initial request to set the cookies and get the security image. I display all the s ... (see bid request for full description)</p>			

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Example small business projects

<p>matlab image Processing mozens (0 ratings)</p>	<p>Small Business Project: \$100(USD) and above Other</p>	<p>Bidding open Max bid: \$150.00 (USD)</p>	<p>4 since Apr 29, 2005 9:41:41 AM EDT</p>
<p>the particles which occupy the specific number of pixels should be deleted(thresholding). This specific number will be determined later by me. after this operation, the remaining particles should be detected independent from each other in binary image. ... (see bid request for full description)</p>			
<p>Database Project - Completing pinkMilkshake (2 ratings)</p>	<p>Small Business Project: \$100(USD) and above Web, Database, Web Services, SQL Server</p>	<p>Bidding open Max bid: Open to fair suggestions</p>	<p>14 since Apr 29, 2005 9:41:00 AM EDT</p>
<p>Good Day, I am looking for an experienced coder to finish a project that was started by someone else. Our coder is too busy to finish the project. This is a ASP project in VB.NET you can view the project on http://reestimate.sytes.net ... (see bid request for full description)</p>			
<p>MATLAB SIMULATION(1) kbanuso (1 ratings)</p>	<p>Small Business Project: \$100(USD) and above Computer Platforms, Embedded Systems</p>	<p>Bidding open Max bid: \$100.00 (USD)</p>	<p>7 since Apr 29, 2005 9:37:44 AM EDT</p>
<p>Pls see attached and tell me if you can do this. Pls no time wasters Thanks</p>			
<p>full color railway images needed Wassertal (4 ratings)</p>	<p>Small Business Project: \$100(USD) and above Graphics / Art / Music, Artwork, Graphics</p>	<p>Bidding open Max bid: Open to fair suggestions</p>	<p>5 since Apr 29, 2005 9:37:20 AM EDT</p>
<p>I need for my company website 20 full color images of the main theme railway/railroad of the 19th century (say about 1820-1870). These images should include trains, stations, people, track, buildings and nature and various combinations ... (see bid request for full description)</p>			

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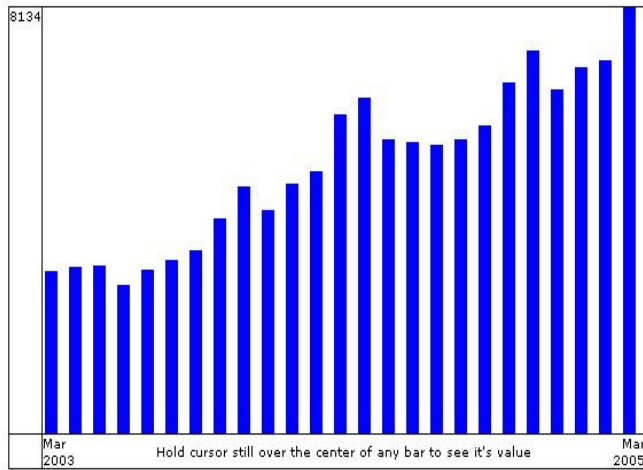
Example large business projects

<p>ebay clone Jhorne EL (39 ratings)</p>	<p>Large Business Project: \$5,000(USD) and above Database, Language Specific, PHP, ASP, SQL Server, MySQL, ASP .NET</p>	<p>Bidding open Max bid: Open to fair suggestions</p>	<p>375 since Apr 19, 2005 5:27:22 AM EDT</p>
<p>ok , im looking for a COMPLETE ebay clone , with ALL categories and sub cateogies that ebay has (minimum) .all features that ebay has must be in that clone + admin whihc we ofcourse cant see .im looking for people that allready has ... (see bid request for full description)</p>			
<p>eHarmony Clone New York Desions (0 ratings)</p>	<p>Large Business Project: \$5,000(USD) and above Database, Computer Platforms, Security, MySQL, Access, Embedded Systems, Wireless , Hardware, Project Management, Technical Management</p>	<p>Bidding open Max bid: Open to fair suggestions</p>	<p>178 since Apr 18, 2005 9:47:04 PM EDT</p>
<p><P align=center>"The Marital Match Making System"I need a "Marital Match Making System" thats functions just like http://eharmony.com.I need a Match Making Crawl ... (see bid request for full description)</p>			
<p>Port Visual Foxpro Electronic Claim Translator from Visual foxpro to C# dot ... bobt (0 ratings)</p>	<p>Large Business Project: \$5,000(USD) and above Microsoft Windows, Database, Documentation / Writing, Computer Platforms, SQL Server, Other (Database)</p>	<p>Bidding open Max bid: \$7,000.00 (USD)</p>	<p>281 since Apr 18, 2005 1:00:09 PM EDT</p>
<p>We have a current application written in Visual Foxpro with the use of Visual ProMatrix Rapid application tool. It translates medical claims from the NSF format to ANSI 837P. It has a nice user interface and uses macro substitution from tables to do tra ... (see bid request for full description)</p>			
<p>Re-design of website tradematrix (0 ratings)</p>	<p>Large Business Project: \$5,000(USD) and above Web</p>	<p>Bidding open Max bid: \$10,000.00 (USD)</p>	<p>596 since Apr 15, 2005 6:28:09 AM EDT</p>
<p>We are looking to redesign our current website http://www.tradeportal.com The project scope is to duplicate the following website http://www.optio.com ... (see bid request for full description)</p>			

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From the RentACoder site

How many projects are successfully completed each month on Rent A Coder?



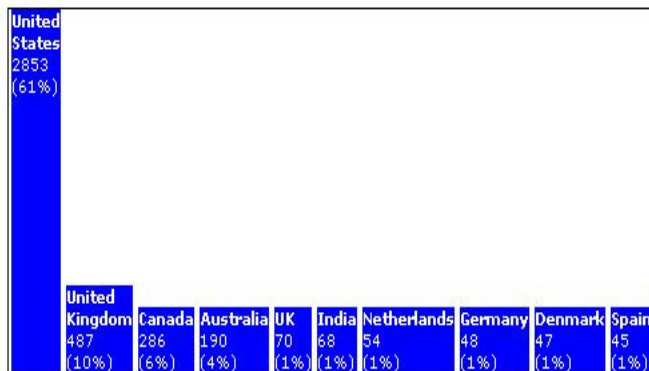
Average Monthly Growth Rate: 7.45%
Average Yearly Growth Rate: 89.43%

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People connecting to coders across the globe

Which countries are the biggest buyers and coders on the site?

Top 10 Buyer Countries last month
03/2005



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An example job

Educational project: Axelrod's counting optimal alliance partners
 Bid Request Id: 116371

Bookmark in my "To Do" list

Posted by: [csniders \(4 ratings\)](#)
 (Software buyer rating 10 😊)

Non-action Ratio: [Very Good - 0.00%](#)

Buyer Security Verifications: [Good](#)

Approved on: Jan 21, 2004 5:43:13 PM EDT

Bidding Closes: Feb 4, 2004 5:23:15 PM EDT

Viewed (by coders): 70 times

Deadline: 7 days

Phase: ~~Cancelled~~

Max Accepted Bid: Bidding is closed

Project Type: [Very Small Business Project: under \\$100\(USD\)](#)

Bidding Type: [Open Auction](#)

Or:
 Private auction
 One-on-one project enhancement
 Direct payment/bonus
 Bulletin board

Deadline: # of days after acceptance of bid

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I get two bidders ... (note: ratings recent!)

Messages Summary

All monetary amounts on the site are in United States dollars.
 Rent a Coder is a closed auction, so coders can only see their own bids and comments. Buyers can view every posting made on their bid requests.

Bidding Closes At: Feb 4, 2004 5:23:15 PM EDT

Max accepted bid: Open to fair suggestions
2 bids have been posted
 ranging from \$58.00 (USD) - \$60.00 (USD)

Display format: Compact


Show invitations that were sent to sellers that have not yet responded.
 Show bidders that I've hidden.

Date	Name	City / Country	Rating Avg. / # of Ratings	Coder Ranking	Posts	Last Bid	My Notes	Hide / Unhide
1/21/2004 6:09:51 PM	SenzaciosNegves	In Baia Mare, Romania	9.67 (Excellent) out of 82 ratings.	Ranked #616 out of 99,061 (higher than 9.37% of their peers).	View 1 message(s) Reply	\$58.00	View or Accept	
1/21/2004 6:11:01 PM	Mauhuur	In Protvino, Russian Federation	4.71 (Average) out of 7 ratings.	Ranked #98,004 out of 99,061 (higher than 1.06% of their peers).	View 15 message(s) Reply	\$60.00	View or Accept	

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The suggestion by SenzaciosNegyes ...

By [SenzaciosNegyes](#) with 82 ratings averaging 9.67 (Excellent) 
From Baia Mare, Maramures in Romania ([see local date/time](#))
Posting # 1,274,764 on Wednesday Jan 21, 2004 6:09:51 PM EDT

Bid Amount: \$58.00 (USD )

Hi,
we are experienced C/C++ programmers.
We have fully understood the specification and we are sure that we will meet your requirements.

You will get a clean code, well documented.

We will finish this project in 2-3 days

We mean business! :)

Ready to start working,
The guys at SenzaciosNegyes

 [Reply](#)

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The offer by Mauhuur...

... is no longer online, but ran as follows:

- Mauhuur had training in theoretical physics
- Responded to the problem at hand and knew about a paper about this issue that I had not mentioned
- Wrote perfect English

... I chose Mauhuur

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The subsequent procedure (at that time):

- I confirm to RentACoder and the bidders that I choose Mauhuur
- RentACoder acknowledges this
- I pay RentACoder the agreed amount (RentACoder takes 15% of that for itself, 85% goes to the coder)
- RentACoder gives coder and buyer each other's email, but encourages communication through their site
- For larger projects, weekly status reports by the coder are mandatory [RentACoder mails both coder and buyer if reports are missed]
- If delivered before deadline → buyer confirms that the software was delivered as promised → RentACoder pays the coder / coder rates buyer / buyer rates coder [rating on a scale from 1 to 10]
- If not delivered before deadline → RentACoder pays the coder / coder rates buyer if all is well. If not, mediation is offered (if not working, arbitration is offered (about 10% of cases))

In my case:

Mauhuur did not deliver, I asked for arbitration and won. I got (all) my money back.

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The data

- Friendliness worked ...
- Data on all public auctions in the period Jan2001 - Jan2005

	All auctions		Auctions with winbid>=20	
	Number	%	Number	%
2001	1,426	4.64	1,064	4.73
2002	5,102	16.61	3,555	15.80
2003	10,071	32.79	7,337	32.60
2004	13,877	45.18	10,361	46.04
2005	240	0.78	189	0.84
<hr/>				
Total	30,716	100.00	22,506	100.00

- We disregard all auctions with winning bids < 20US\$

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Size of the jobs

In the data:

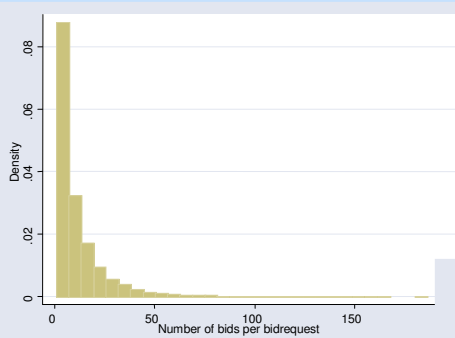
[Excl.] winning bid <20	:	27%
winning bid <100	:	44%
winning bid >=100 & <500	:	25%
winning bid >=500 & <5000	:	4%
winning bid >=5000	:	0% (13/30,000)

30,716 cases: 10,701 buyers,

22,506 cases: 8,427 buyers,

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Number of bids per bidrequest

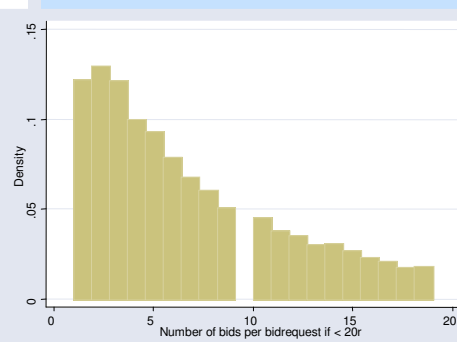


Average = 11

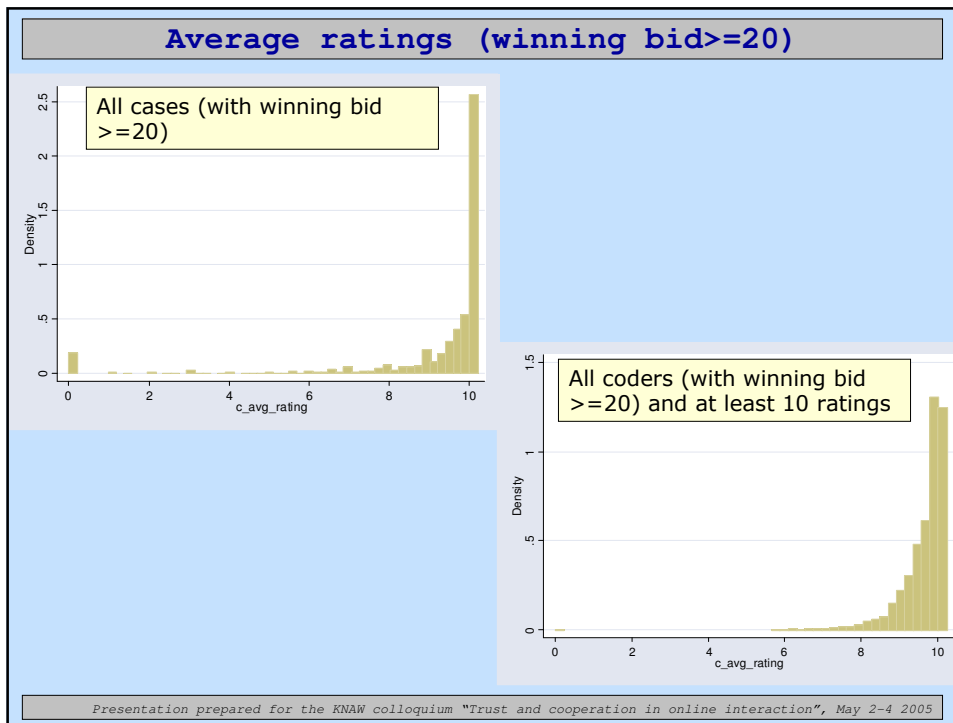
Only 1 bid in 10% of the cases

NOTE:

82% of the coders that ever made a bid, have never been chosen



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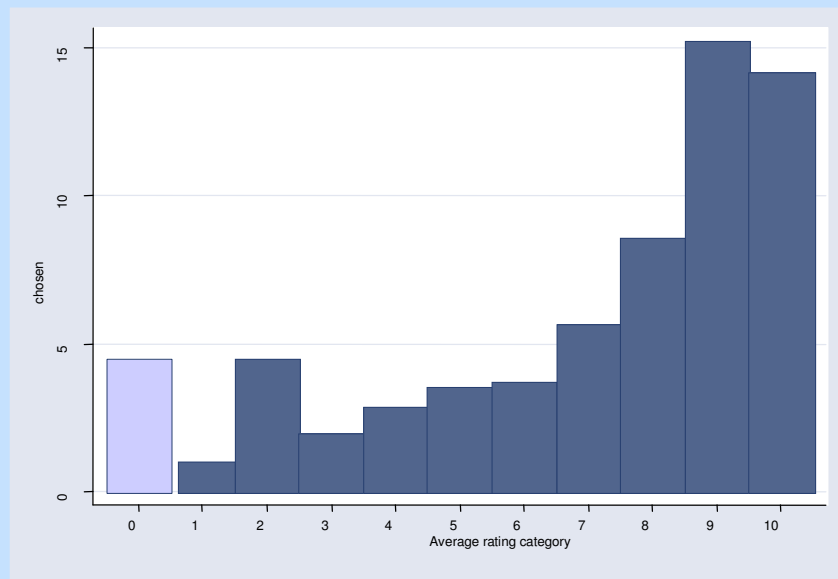
More summary statistics:

Probability of being chosen:
[note: uncontrolled probabilities]

• On average	=	5.6 %
• If bid is not lowest	=	4.5 %
• If bid is lowest	=	9.6 %
• For a unique coder who has done business with buyer before	=	59.5 %
• For a coder with mean(rating) < 3	=	4.5 %

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Percentage of being chosen, by ratingcategory



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What we have and don't have ...

HAVE

- Amount bid
- Buyer and coder have done business before (dummy + number of times)
- Coder has a reputation (dummy)
- Number of valid ratings (note: RentACoder intervenes!)
- Average rating of coder
- Range of rating coder
- Coder and buyer are from same country (dummy)
- Coder length of biographical info
- Coder uses picture

HAVE NOT

- Number and result of arbitrations (not in supplied data [yet])
- History of buyer (# jobs; in data but not done yet)

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Conditional logit regression

```

BidrequestId  BuyerID  Bid  CoderId  Chosen  ...
-----
123           3       50   345      0      ...
123           3       60   679      1      ...
123           3       65   498      0      ...
123           3       95   111      0      ...
-----
124           8      100   321      1
124           8      120   450      0
124           8      150   886      0
-----
...

```

(making use of the fact that we know that there is precisely one value <chosen==1> within a bidrequest)

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Conditional logit on 'chosen'

```

Conditional (fixed-effects) logistic regression  Number of obs  =  249860
                                                Wald chi2(10)  =  6121.81
                                                Prob > chi2    =  0.0000
Log pseudolikelihood = -37545.572              Pseudo R2     =  0.1243

```

(standard errors adjusted for clustering on buyerid)

```

-----
              |
              chosen |      Coef.      z      P>|z|
-----+-----
      Amount bid |    -0.003    -15.27  0.000
  Have worked together (dummy) |    1.734     18.76  0.000
  Have worked together (number) |    0.146      2.43  0.015
    Coder has a reputation |   -2.996    -12.98  0.000
    Number of ratings |    0.009     18.98  0.000
    Average rating |    0.416     17.82  0.000
    Range of rating |   -0.007     -1.30  0.195

      Same country (dummy) |    0.442     18.69  0.000
    Length of coder bio |   5e-06      0.77  0.443
    Picture in coder bio |    0.199     11.62  0.000
-----

```

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Stability of results (z-values in grey)

DIFFERENT ANALYSES						
Variable	A	B	C	D	E	F
amount	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	-15.32	-15.11	-15.27	-14.23	-12.40	-15.27
pastdum	1.55	1.72	1.73	1.61	1.48	1.74
	14.59	19.05	18.76	15.57	13.63	18.78
past	0.20	0.16	0.15	0.16	0.12	0.15
	2.49	2.77	2.43	2.44	1.84	2.43
Has reputat.	A: without coder characteristics, all bids					-2.99
# valid rat.	B: A, but with winbid>=20					-12.96
Average rat.	C: B, but with coder characteristics included					0.01
Range rat.	D: C, but with number of bids <=20					18.95
Same country	E: C, but with number of bids <=10					0.42
Length bio	F: C, with interaction <time x average rating>, ns					17.80
Picture incl	Other checks include: datecompleted>closing date of bidding					-0.01
<timeXrating>	[Note: all pseudo-R2's around 0.14]					-1.31
			11.62	9.62	7.88	0.44
						18.66
						0.00
						0.79
						0.20
						11.62
						n.s.

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Categories per rating average

Conditional (fixed-effects) logistic regression N=178249, Pseudo-R2=0.13
(standard errors adjusted for clustering on buyerid)

choice	Coef.	z	P> z
amount	-.0023084	-13.55	0.000
pastdum	1.943981	14.51	0.000
past	.0372691	0.41	0.684
c_has_repu	-.8233385	-1.63	0.103
c_nvalid_r~g	.0110333	16.34	0.000
Rating1	-.7926359	-0.96	0.337
Rating3	-.3669137	-0.60	0.552
Rating4	.2802455	0.33	0.743
Rating5	.1619447	0.22	0.829
Rating6	.5967442	1.08	0.282
Rating7	.7743874	1.49	0.136
Rating8	1.18546	2.31	0.021
Rating9	1.694226	3.33	0.001
Rating10	2.107496	4.16	0.000
Rating11	-.1376539	-3.96	0.000
c_range_ra~g	-.0484786	-7.26	0.000
samec	.4412328	15.14	0.000
c_biolength	.0000142	1.87	0.062
c_picture	.1857385	8.68	0.000

Rating0 = (average rating ==0)

Rating1 =
(average rating >0) &
(average rating <1)

Etc ...

Rating11 = (average rating ==10)

→ An average rating larger than 7 is better than no rating; an average rating that is 7 or lower is worse than no rating.

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Analyses split by height of winning bid

Variable	base	20-100	100-1000	>=1000	[z-scores in grey]
Amount bid	-0.00	-0.03	-0.00	-0.00	
	-15.27	-54.92	-30.00	-3.65	
Have worked together (dummy)	1.73	1.71	1.70	4.12	
	18.76	15.40	9.03	2.03	
Have worked together (number)	0.15	0.14	0.26	-1.43	
	2.43	2.04	1.98	-0.91	
Coder has reputation	-3.00	-3.01	-3.31	-6.39	
	-12.98	-9.76	-8.57	-2.52	
Number of ratings	0.01	0.01	0.01	0.03	
	18.98	14.30	14.90	4.94	
Average rating	0.42	0.42	0.46	0.77	
	17.82	13.42	11.78	3.02	
Range of rating	-0.01	0.00	-0.01	-0.05	
	-1.30	0.58	-0.98	-0.88	
Same country (dummy)	0.44	0.45	0.49	0.59	
	18.69	14.06	12.84	3.37	
Length of coder bio	0.00	0.00	0.00	0.00	
	0.77	1.63	3.26	2.64	
Picture in coder bio	0.20	0.21	0.24	0.13	
	11.62	8.86	8.76	0.87	
N	2.5e+05	1.3e+05	1.1e+05	5502.00	
r2_p	0.12	0.20	0.16	0.16	

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Results / conclusion

- On RentACoder there is an effect of reputation: coders with a higher reputation get chosen more often (even at the expense of price).
- Coders from the same country as the buyer are also more often chosen
- The size of the effect is such that the advantage of being from the same country is worth an extra point in average rating score
- Including a picture helps, it is worth about half a point increase in rating

Presentation prepared for the KNAW colloquium "Trust and cooperation in online interaction", May 2-4 2005

New developments in the reputation system

4/20/2005: New rating features

"Check out our new rating features! Have you ever been afraid to rate another party honestly for fear of retaliation? If so, then you don't any more. The new "blind period" (rated are public only after both buyer and coder have rated) rules protect you completely from this problem.

And have you ever wanted to respond to a rating placed by someone on your profile because you felt it wasn't accurate? Now you can rebut a rating on any completed project (your rating must be ≥ 4). To do so, just click the new 'rebut' link next to the rating in your profile!"



Ian Ippolito, CEO of RentACoder

Presentation prepared for the KNAW colloquium "Trust and cooperation in online interaction", May 2-4 2005

Questions remaining

- Theoretically: why does this seem to work so much better than eBay? (is this just a data issue?)
- Empirically: are these results robust if we include other measurements (e.g., arbitrations, verifications, etc)
- Empirically: should we include that the bids from coders are dependent on the buyers?
- ...

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Including the fact that a bid is minimum

```

Conditional (fixed-effects) logistic regression   Number of obs   =   249860
                                                Wald chi2(11)   =   6764.26
                                                Prob > chi2     =   0.0000
Log pseudolikelihood = -37378.175              Pseudo R2       =   0.1282
  
```

(standard errors adjusted for clustering on buyerid)

choice	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
minbid	.3790379	.0248841	15.23	0.000	.330266	.4278098
amount	-.0021954	.0001719	-12.77	0.000	-.0025324	-.0018585
pastdum	1.748213	.0932087	18.76	0.000	1.565527	1.930898
past	.1445777	.0606189	2.39	0.017	.0257669	.2633886
c_has_repu	-3.030727	.2315075	-13.09	0.000	-3.484473	-2.57698
c_nvalid_r~g	.0096038	.0005017	19.14	0.000	.0086205	.0105871
c_avg_rating	.4220289	.0234176	18.02	0.000	.3761312	.4679265
c_range_ra~g	-.0055303	.0055833	-0.99	0.322	-.0164735	.0054129
samec	.4424066	.0237685	18.61	0.000	.3958212	.488992
c_biologth	7.89e-06	6.45e-06	1.22	0.221	-4.75e-06	.0000205
c_picture	.2025174	.0172297	11.75	0.000	.1687477	.236287

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Marginal effects

Marginal effects

y = Pr(choice|fixed effect is 0) (predict, pu0)
= .48416065

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
amount	-.0007169	.00005	-15.63	0.000	-.000807 - .000627	257.839
pastdum*	.3596519	.01354	26.57	0.000	.333123 .386181	.010254
past	.0365175	.01504	2.43	0.015	.007039 .065996	.013936
c_has~u*	-.6331974	.03438	-18.42	0.000	-.700582 -.565813	.480485
c_nval~g	.0023585	.00012	18.97	0.000	.002115 .002602	5.37236
c_avg~g	.1039146	.00583	17.82	0.000	.092486 .115343	4.5585
c_rang~g	-.0018015	.00139	-1.29	0.195	-.004528 .000925	.931918
samec*	.1099519	.00578	19.03	0.000	.098626 .121278	.159441
c_biol~h	1.23e-06	.00000	0.77	0.443	-1.9e-06 4.4e-06	1146.63
c_pict~e*	.0498735	.00429	11.63	0.000	.041469 .058278	.398971

(*) dy/dx is for discrete change of dummy variable from 0 to 1