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# **The Role of Trust and Risk Aversion in Farmers' Used Machinery Transactions**

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# The Role of Trust and Risk Aversion in Farmers’ Used Machinery Transactions



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### Abstract

Results of a nationally representative survey of US farmers link previously validated survey measures of risk aversion and interpersonal trust to farmers’ intended use of online venues for transacting used equipment. Other factors affecting online purchase propensity includes the quality of farmers’ relationships with local equipment dealerships. Understanding the factors that impact farmers’ use of internet market venues is crucial as rural internet penetration deepens, farm equipment needs grow more specialized and local offline markets thin. These results may also help explain past observations of severe discounting of used farm equipment sold in online venues.

### Motivation and Problem Statement

- Internet auction and sales platforms are changing the nature of markets for farm machinery and equipment (FME) by
  - broadening the pool of potential sellers and buyers and
  - reducing search and sales costs.
- FME represent U.S. farms’ most valuable physical assets after land and buildings.
- Used FME provide a rich source of data for understanding the impact of the internet on the structure and function of markets for quality-differentiated items.
- As online FME sales proliferate, questions arise about the nature of price determination in online versus traditional markets.
  - Extant research reveals a stark discount for used tractors sold on eBay versus in-person auctions (Diekmann, Roe and Batte 2008).
  - For Midwestern states DRB find the mean (median) used tractor in their data set would sell for 55% (30%) less on eBay than at an in-person auction.
- Several differences across eBay and in-person auctions may contribute to the eBay discount observed in DRB, including
  - (a) differences in the risk attitudes of buyers bidding at the two venues (Klemperer 1999),
  - (b) differences in the perceived quality of goods offered for sale,
  - (c) differences in a seller’s cost of transacting a sale and
  - (d) differences in the auction mechanisms used across venues.
- However, virtually no information exists to document or calibrate issues (a) – (c).

### Research Questions

For US farmers, to what extent: (a) Do risk and trust attitudes differ by venue of exchange?  
(b) Do the perceived quality of goods differ by venue of exchange?  
(c) Do the perceived costs of selling FME differ by venue?

### Data and Methods

- Mail survey (4 contacts) of 6000 US farmers in winter 2010:
  - 2 versions (buying focused and selling focused) with many overlapping questions.
  - 671 undeliverables + 2585 responses → 48.5% response rate.
  - Sample is balanced by region, clustered at the zip-code level, oversamples larger farmers.
  - All analysis
    - Weights by region and farm size.
    - Calculates standard errors clustered on zip code.
- Farmers are asked:
  - About their most recent used farm machinery buying or selling experience
    - Venue, perceived value received, perceived quality cost of selling.
  - Intention to use various online and offline sales venues for next transaction.
  - Perceptions of item quality and value across 5 different online and offline venues.
  - Extent and quality of their relationships with local machinery dealerships.
  - Demographics and personal characteristics.
  - Measures for risk aversion (Dohmen et al.) and interpersonal trust (Naef and Schupp 2009).

### Results

#### Risk & Trust Measures

- Respondents asked the following risk tolerance question that Dohmen et al. show correlates with experimental economic risk aversion results.
  - “How do you see yourself? Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?”
    - 1 = Don’t like to take risks, 11 = Fully prepared to take risks
    - Mean = 5.6, Std. Dev. = 2.7
- Respondents asked to rate 4 statements (1 = strongly disagree to 4 = strongly agree):
  - Trust 1: “In general, you can trust people” Mean = 3.0
  - Trust 2: “Nowadays, you can’t rely upon people” Mean = 2.2
  - Trust 3: “When dealing with strangers, it’s best to be cautious..” Mean = 3.4
  - Trust 4: “I trust strangers I meet for the first time” Mean = 1.9
  - Naef and Schupp correlate responses to results from paying trust experiments.

#### Risk & Trust by Last Venue Used during Last FME Transaction

	Buyers		Sellers	
	<u>Internet</u>	<u>Other</u>	<u>Internet</u>	<u>Other</u>
Risk Tolerance	7.1***	5.8***	6.8	6.1
Trust 1	3.0	3.1	3.1	3.0
Trust 2	2.4	2.2	2.1	2.1
Trust 3	3.1***	3.4***	3.3	3.5
Trust 4	1.9	1.9	2.2	2.0

\*\*\* denotes difference at the 1% level

- Internet buyers more risk tolerant and feel less cautious with strangers.
- No differences for sellers by venue.

#### Perceived Quality of Goods by Venue

- For each possible sale venue, respondents told to assume they were buying a used tractor in the next month and asked to rate the following statement:
  - “I would feel confident the equipment’s quality and condition would be ‘as advertised’.”
  - 1 = strongly disagree and 5 = strongly agree

	Average: Internet Auction & Internet Ads	Average: Regular Auction & Ads
Perceived Quality Rating	2.76***	3.14***

\*\*\* denotes difference at the 1% level

- Buyers perceive lower quality to be available on Internet venues.

#### Perceived Costs of Selling by Venue

- For each possible sale venue, respondents told to assume they were selling a used tractor in the next month and asked to rate the following statement.
  - “I would spend little on commissions and other sale related expenses.”

	Average: Internet Auction & Internet Ads	Average: Regular Auction & Ads
Perceived Quality Rating	3.07	3.11

- No difference in perceived costs between internet and regular version of venues.

### Conclusions

- More risk-averse and less trusting buyers were more likely to use non-internet sales venues than internet sales venues during most recent used FME purchase.
- Sellers tended not sort by risk aversion or trust by the venue of their last sale of used FME.
- Farmers perceive quality of FME sold in internet venues to be inferior to that offered in non-internet venues.
- The perceived costs of selling used FME through an internet venue are no different than the perceived costs of selling through non-internet venues.
- Risk aversion among buyers attending standard auctions and perceived quality differences between used FME items offered on internet and non-internet auctions can help explain differences in prices for used tractors that Diekmann, Roe and Batte observed between eBay and in-person auctions.

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