

Mixed Methods: OLS + Experiment as an approach to endogeneity

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Endogeneity in Categories Research

- Is the same thing that creates the category boundaries the same thing that drives your outcome?
- Are categories (and placement into them) random or non-random?
- Does the arrow go both ways—your outcome impacts the category, which leads to your outcome?

My Example (Simplified)

- One reason categories matter is because they set expectations for how categorized objects will behave.
 - Research suggests that objects that fit into multiple categories tend to have lower market value, and attribute this to audiences discounting them for not fitting their expectations
 - Assumption: anything that belongs to multiple categories violates expectations, anything that is a full category member doesn't violate expectations
 - But, nobody studies the actual expectations!
- Make a case for studying expectations explicitly by:
 - Show that full category member can still violate expectations
 - Show that violation of expectations has different impact on market value depending on which measure you use

“Category expectations, category boundaries and market outcomes”



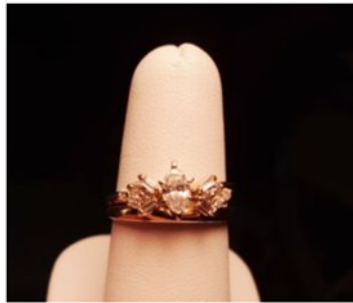
Rings from failed relationships sell for lower prices than those that aren't.

1st Approach: Archival Data

- All eBay data between January 1, 2011 and February 15, 2012 in category 152899, diamond solitaire rings (including item description)
 - Removed buy-it-nows, fake diamonds, unusual outliers
 - 1,560,998 listings and 14,710 sales
 - 3870 have reference to failed relationship
 - Matched sample with replacement (Elfenbein & McManus 2007)



Add to Watch list



Enlarge



Sell one like this

Size 7 Diamond Engagement Ring and Wrap .59 CT 14K Yellow Gold

Item condition: **Pre-owned**
 Time left: 6d 10h (Nov 30, 2011 21:12:22 EST)
 Bid history: 0 bids

Starting bid: **US \$1,000.00**
 Approximately C \$1,046.80

Your max bid: **Place bid**
(Enter US \$1,000.00 or more)

Price: **US \$1,200.00**
 Approximately C \$1,256.16 **Buy It Now**

Seller info
 mah0731 (3)
 100% Positive feedback

[Ask a question](#)
[Save this seller](#)
[See other items](#)

Other item info

Item number: 320800594595
 Item location: Two Rivers, WI, United States

Ships to: Worldwide
 Payments: **PayPal**
[See payment information](#)

Shipping: **US \$150.00** (approx. C \$157.02) UPS Worldwide Express | [See all details](#)
 International items may be subject to customs processing and additional charges.

Delivery: Varies for items shipped from an international location
 Seller ships within 3 days after receiving cleared payment.

Returns: No Returns Accepted

Coverage: Pay with **PayPal** and your full purchase price is covered | [See terms](#)

Print | Report item

Description Shipping and payments

Share

Seller assumes all responsibility for this listing.

Item specifics			
Condition:	Pre-owned: An item that has been used or worn previously. See the seller's listing for full details and ... Read more	Main Stone Shape:	Marquise
Exact Carat Total Weight:	.59 per Professional Appraisal 10/28/11	Carat Total Weight:	0.46 - 0.69
Ring Size:	7		

14K Yellow Gold Diamond Solitaire ring: .33 Carat Marquise Cut Diamond. Graded VS2 Clarity. H in color. Appraised at \$1,350.00 on 10/28/11 by Certified Gemologist.

14K Yellow Gold Diamond Wrap: .26 total Carat Diamonds. Two 1.3mm Round Diamonds, Six 1.7mm Round Diamonds, & Four 2.5mm x 1.25mm Baguettes. Graded VS2 - S11 Clarity. G-H in Color. Appraised at \$900.00 on 10/28/11 by Certified Gemologist.



This was my wedding set and it is pretty much all "he who shall not be mentioned" allowed me to take when we divorced. Just appraised for a total of \$2,250.00.

My loss is your gain!

Shipping will include insurance.

Variables

- Failed relationships: 1 or 0 from item description for words indicating a divorce or other failure, such as a failed engagement.
 - “divorce” and its roots, “marriage ended,” “ex- husband/wife,” “not/no longer married, ex-fiancé(e), right ring wrong guy, my loss is your gain” etc.
- Ring characteristics: cut, color, clarity, carats, metal type, certified, starting price, jeweler’s name
- Auction characteristics: extra pictures, auction duration, reserve price, # of listings
- Seller characteristics: # of prior items sold, engagement ring specialist, # of categories sold, success ratio, # of words in listing, seller feedback
- Buyer characteristics: # of engagement rings purchased in the last year

Method

- 2 stage model predicting likelihood of sale in first stage, use inverse Mills ratio in second stage predicting sales price
- DV of interest: $\text{Log}(\text{sales price})$

Results (abbreviated)

	Model 1 (Likelihood of sale)	Model 2 (Purchase price)
Color	0.0261 (0.0228)	-0.0267 (0.0268)
Clarity	0.0190 (0.0223)	0.0623 (0.0267)**
Carats	0.7098 (0.1316)***	1.5661 (0.1988)***
Carats squared	-0.1283 (0.0289)***	-0.2561 (0.0394)***
Metal (gold)	-0.1709 (0.1506)	0.0041 (0.1480)
Metal (platinum)	-0.0504 (0.1895)	0.4726 (0.2204)**
Seller feedback (Ln)		-0.0190 (0.0293)
Number of prior ring purchases		0.0070 (0.0029)**
Number of bids		0.0583 (0.0065)***
Failed Relationship (1=yes)	-0.1900 (0.1016)*	-0.3389 (0.1274)***
Constant	0.5416 (0.9301)	0.9082 (1.0957)
<i>N</i>	14,532	291
<i>R</i> ²		0.67

Problem: self-selection

- Divorce/failed relationship is not a random event
- Could divorce/failure variable be capturing something about the individual that is leading to the low price, rather than the failure of the relationship?

Evidence from the listings

- Mean number of words:
 - All rings:
 - 2026.72 (failed rings)
 - 1194.82 (non-failed rings)
 - Sold rings
 - 455.21 (failed rings)
 - 616.65 (non-failed rings)
- Casual reading suggests content of the listings does seem to differ:
 - non-failed relationship listings tending to include far more information about selling practices, such as very detailed information about shipping methods and returns,
 - while failed relationships tend to discuss more about the rings themselves

More evidence....

“My fiance cheated on me recently and decided to leave me and our daughter high and dry for another man,Also leaving me with 20,000.00 in credit card debt.So she took her ring off to shower and forgot it as she ran off with another man.So i am selling it to pay down some bills.I bought the ring 3 years ago for 2500.00,i am not aware of the grade or color but it is beautiful and sparkles like crazy,no noticable imperfections to the neaked eye.She got compliments on it all the time,it truely sparkles.It is on 14 carat white gold band.and it weighs around .85 carat.I cant wait till she finds out she forgot it,she deserves it for leaving our 4 year old daughter and myself with this debt.Oh well pay backs a bit. Free priority shipping in united states. [...]”

What to do?

- Add more variables?
 - Reputation {only available for the second stage, may not capture full issue with listing}
 - Capture personal narrative {count of “I” or “we” not revealing}
- Change design/get additional data?
 - Not clear what other design using eBay data is possible
 - Non-auction setting makes it difficult to know consideration set (also hard to get)
- Complementary setting?
 - Distracts from theoretical goal

My answer: Use an experiment

- Mimic eBay data exactly {was this wise?
 - Why not field experiment on eBay (as in Jin and Kato 2006)
- Allows seller characteristics and listing to be identical across advertisements
- Deals with issue of buyer experience, perception etc. via random assignment
- Can measure issues of authenticity, desperation, engagement “norms”



Welcome! Sign in or register.

- CATEGORIES
- ELECTRONICS
- FASHION
- MOTORS
- TICKETS
- DEALS
- CLASSIFIEDS

eBay Buyer Protection Learn more

Back to search results | Jewelry & Watches > Engagement & Wedding > Engagement Rings > Diamond > Diamond Solitaire



1kt DIAMOND RING 18kt White Gold- GIA Certified--Color: I--Clarity: VS2 Engagement Ring

Item condition: **Pre-owned**
Time left: 3d 07h (Jun 18, 2012 17:33:23 PDT)

Starting bid: **US \$599.00** [0 bids]

Place bid

Enter US \$599.00 or more

Add to Watch list

Share: | [Add to Watch list](#)

Top-rated seller

pamela_el (4893 ★)

100% Positive feedback

- Consistently receives highest buyers' ratings
- Ships items quickly
- Has earned a track record of excellent service

[Save this seller](#)
[See other items](#)



Bill Me Later: \$5 back on first Bill Me Later purchase
Subject to credit approval. [See terms](#)

Shipping: **FREE** - Standard Shipping | [See all details](#)
Item location: **LAKEWOOD, NJ, United States**
Ships to: **United States, Europe, Canada, Australia**

Delivery: Estimated between **Thu. Jun. 21 and Mon. Jun. 25** ?

Payments: **PayPal**, Bill Me Later | [See details](#)

Returns: 14 days money back, buyer pays return shipping | [Read details](#)



eBay Buyer Protection

Covers your purchase price plus original shipping.
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3 conditions

Buy with confidence! I accept returns and have 100% positive feedback! I am auctioning this gorgeous .70 carat diamond ring. It is a round brilliant cut and set in 18k white gold. The clarity is SI1 (the level of most quality diamonds) and the color is D (very rare and the highest color level you can get), and the cut is very good. It is certified by the GIA, and I will send you the certificate with the ring.

This ring is absolutely beautiful and I always got many compliments whenever I wore it. It cost \$3500. But you can have it for much less than that! Bidding starts at only \$300.

Divorce condition:

Due to a divorce, I am auctioning this gorgeous .70 carat diamond ring..... Since my ex and I split up I don't wear it anymore, but someone else should!

Happy marriage condition:

I am still happily married—I prefer to wear only my wedding band because I work with my hands.

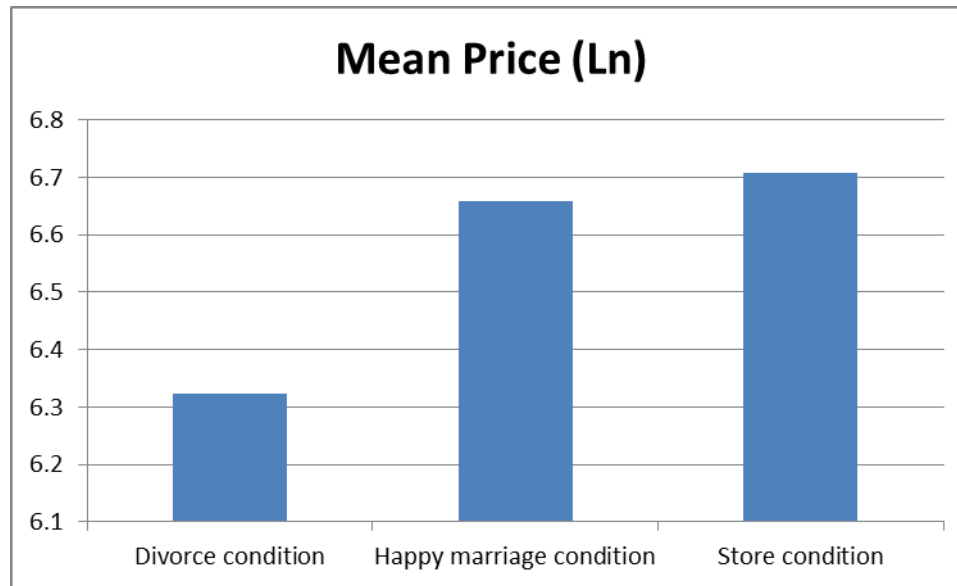
Store condition:

This ring originally cost \$3500. Due to excess inventory, Ring Depot is selling it for much less than that! Bidding starts at only \$300.

Study Information

- 300 subjects from Amazon's Mechanical Turk (20 unusable). Randomly shown one of the 3 conditions and then asked
- “If you were planning to buy an engagement ring on eBay, how much money would you pay for this ring?”
 - They were able to choose a value on a sliding scale from \$0 to \$4,000.
- Also asked (after pricing the ring)
 - How authentic they thought the ring was as above (after they chose a value)
 - “How desperate do you think the seller is to sell this ring? (That is, how important is it for the seller to receive cash quickly?)”
 - Then asked series of questions designed to capture their beliefs about engagement rings, purchasing behavior, and provided demographic information.

Results



Results

	Price (Ln)
Authenticity	0.1764 (0.0535)**
Desperation	-0.1077 (0.0431)*
Female (1=yes)	-0.0380 (0.1545)
Age	-0.0035 (0.0387)
Income	0.0964 (0.0976)
Uncertainty (Ln)	0.1271 (0.1067)
Married (1=yes)	-0.1259 (0.1767)
Divorce condition	-0.3667 (0.1824)*
Happy marriage condition	-0.1226 (0.1809)
Constant	5.5457 (0.6171)**
R^2	0.09
N	280

What I learned....

- Best time to deal with endogeneity concerns is before you have run any regressions. Choose mixed methods up front....
 - Think carefully about what research design concern each is solving and how it should solve them. You get one chance with field & lab experiments!
- Fix the problems with your individual methods that you can fix
- Assume you will get a reviewer (sometimes editor) who has strong competence in one area, and has heard of the other
- Need to be explicit about why these choices and how they solve specific problems in your research
 - “The experiment addresses the issue of unobserved heterogeneity in buyer preferences through random assignment.”
 - Obvious to experiment expert. Possibly not obvious to the regression expert.

Some examples in org research

- Fernandez-Mateo, I. 2007. “Who pays the price of brokerage? Transferring constraint through price setting in the staffing sector.” *American Sociological Review*
- Doering, L. 2014. “Rethinking escalation of commitment: Relational lending in microfinance.”
- Battilana, Pache, Sengul & Model. 2013. “Keeping a foot in both camps: understanding the drivers of performance in hybrid organizations.”

Taking a mixed methods approach

- Small, M. 2011. “How to conduct a mixed methods study: Recent trends in a rapidly growing literature.” *Annual Review of Sociology* 37: 57-86.
- Small, M. 2013. “Causal thinking and ethnographic research.” *American Journal of Sociology* 119: 597-601 (whole issue is about causal research)
- Brewer, J. and Hunter, A. 1989. *Multimethod research: A synthesis of styles*. Thousand Oaks, CA: Sage Publications, Inc.
- Harding, D. and Seefeldt, K. 2013. “Mixed Methods and Causal Analysis.” *Handbook of Causal Analysis for Social Research* ed. S. L. Morgan. New York: Springer.
 - Also forthcoming issue on mixed methods in *Organizational Research Methods*

Thanks!