SHIPPING COST, SPOT RATE AND EBAY AUCTIONS: A STRUCTURED EQUATION MODELING APPROACH

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Abstract

In this paper, the author used a Structured Equation Modeling approach to capture the factors affecting selling prices of gold on eBay. The research showed that almost 99% of the variation in the auction's selling price can be explained by the item's calculated price (using the Gold daily spot rate). Auction prices of scrap Gold (per gram) was also found to be higher than that of useable gold. Though, unlike previous researches, shipping cost was not found to have any noticeable effect on the final auction price.

Keywords: E-Bay, Electronic Commerce, SEM, Structure Equation Modelling, e-commerce

Introduction

Highfill & O'Brien [2007] studied bidding and prices for online art auctions and concluded that a number of variables have significantly affected the number of bids. These variables includes: a higher minimum bid which decreased the number of bids, but the effect was small; availability of the buy-it-now option decreased the number of bids; a longer auction length increased bids; and an increased shipping and handling fees decreased bids by adding to the overall cost of an item, though the effect was small. They also concluded that an increase in the number of bids significantly increased the final sales price.

Song and Baker [2007] conducted a field study to elucidate critical factors that determine sellers' net revenue in Internet auctions using two datasets of Internet auctions. One dataset was for the auction of a DVD, while the other was for the auction of an MP3 player. They concluded that the buy-it-now option, number of payment options, number of pictures, and number of delivery methods were found to be significant predictors for the outcome of the MP3 player auction, but not for the DVD auction. Conversely, auction duration and feedback ratings were found to be significant in DVD auctions, but not in MP3 player auctions. They also identified the potential role of the product type in Internet auction research and concluded that "it is conceivable that consumer electronics, collectibles, and commodity-like items—to name only a few types—may have specific sets of variables that influence the final price they bring and the net revenue they are able to generate when auctioned".

Dimoka, Hong, and Pavlou [2012] reported that auctions that receive price premiums are those that last longer (Melnik and Alm 2005), end on weekends [Kauffman and Wood 2006] and during business hours [McDonald and Slawson 2002], and that are prominently displayed [Pavlou and Dimoka 2006]. The number of auction bids was also linked to the price premiums [Ba and Pavlou 2002].

Ye et al. [2013] explained that as a signal of quality, reputation can reduce consumers' concern about risk, enhance the trust between buyers and sellers [Ba and Pavlou 2002; Utz et al. 2009], and thus contribute to better sales performance and higher sales prices or sales volumes [Melnik and Alm 2002]. Therefore, this explains why the seller's positive feedback was found in the literature to affect the selling price [Brint 2003, Gilkeson, and Reynolds 2003; McDonald and Slawson 2002; Standifird 2001; Standifird et al. 2004].

Bland et al. [2007] believed that a lower starting price should make potential consumers more willing to bid because of the perception of less financial risk. Also, it increases the likelihood of a transaction occurring. Swinyard and Smith [2003] reported that online consumers are sensitive to high shipping costs. Bland et al. (2007) also indicated that a lower shipping price associated with an eBay auction will result in both a higher value of the final bid and a higher likelihood of a transaction actually occurring.

Houser and Wooders [2006], McDonald and Slawson [2002], and Dewan and Hsu [2004] were unable to establish any relationship between the length of an auction and the final price. In contrast, Lucking-Reiley et al. [2000] found that the length of an auction was positively related to price.

In addition to the above, a number of factors have been repeatedly shown in the literature to affect the final selling price in an eBay auction. However, the initial bid value was shown to have a negative effect on the final price [Ba and Pavlou 2002; Brint 2003; Gilkeson and Reynolds 2003; McDonald and Slawson 2002; Standifird 2001; Standifird et al. 2004]. The number of bids in an action was also found to affect the final price [Gilkeson and Reynolds 2003; McDonald and Slawson 2002; Standifird 2001; Dholakia, 2005]. In addition, shipping cost was also found to influence the final price [Gilkeson and Reynolds 2003; McDonald and Slawson 2002; Bruce 2004].

Structure Equation Modeling

Structure Equation Modeling (SEM) technique is a second-generation multivariate technique that combines aspects of both multiple regression and factor analysis to estimate a series of interrelated dependence relationships in a simultaneous manner [Hair et al. 1995]. This technique is very flexible because it can deal with a number of regression equations simultaneously. Thus, the same variable may represent a dependent variable in one equation and an independent variable in another equation.

Date and Model Variables

In this research, the author collected data from completed auctions of gold items on eBay between January 2012 and June 2013. The author also searched for past eBay auctions where the selected auctions were bid randomly as long as the total weight of gold in the auction was specifically indicated. This is clearly important in order to be able to calculate the value of Gold using the spot rate. The sample consisted of 109 completed sets of variables (except for the auction duration, which only had 105 values). However in this research, four endogenous variables were used:

- Selling Price
- Total Price=Selling Price + Shipping Cost
- Number of bids (bids)
- Number of bidders (bidders)

And the following exogenous variables were used:

- Calculated price=weight X Spot price of Gold
- Period: auction duration (3, 7, or 10 days)
- Seller positive feedback
- Seller feedback score
- Shipping cost
- Relative Start (rel_start)=starting bid/selling price
- Relative Shipping (rel_shipping)=shipping cost/selling price
- Scrap: Damaged items that could not be used immediately were designated as “scrap” and were given the value of “1”. Items that can be immediately used are given “0”. The author subjectively evaluated auction items and assigned values between 0 and 1 (in increments of .25) to describe the state of the auctioned item.

The Research Models

In this research, four models were presented. In the first model (Model 1), the covariances between the residuals of the three endogenous variables are restricted to zero. In the second model (Model 2), we loosen this restriction, and allowed the covariances to exist between the residuals of the three endogenous variables. In the third model (Model 3), we allowed covariances to exist between the residuals of the Bids and the Selling Price, as well as between the residuals of Bidders and the Selling Price. In addition, we restricted the covariance between the residuals of the Bids and the Bidders to zero. In the fourth model (Model 4), we allowed covariances between the residuals of Bids and Bidders and restrict covariances between the residuals of Selling Price and both Bids and Bidders to zero.

Data Analysis

Model 1

By using STATA's built-in Generalized SEM functionality, the author tested Model 1 (Figure 1.). The results are shown in Table 1. It is clear from the results that the following variables have a positive effect on selling price: 1) scrap, 2) seller positive percentage, 3) calculated price, and 4) number of bidders. However, the number of bids on the other hand had a negative effect on price.

The results also showed that the number of bids, auction duration and the relative start price have a positive effect on the number of bidders in an auction, while the auction duration and the relative start price have a positive effect on the number of bids.

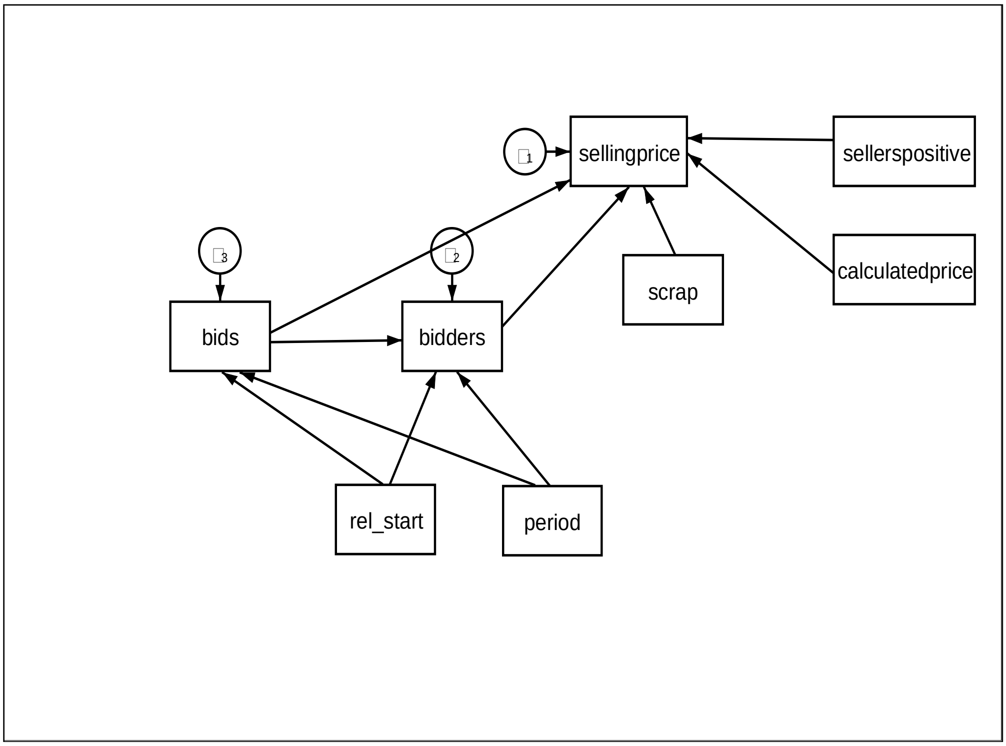

Figure 1: Model 1

Table 1: GSEM Results for Model 1

	Coef.	Std. Err.	Z	P>z	95% Conf. Interval	
sellingprice						
bidders	13.04086	5.660486	2.3	0.021	1.94651	24.13521
bids	-5.175908	2.256439	-2.29	0.022	-9.598446	-0.7533688
sellerspositive	4.842017	1.022836	4.73	0	2.837295	6.846739
calculatedprice	0.9872934	0.0067244	146.82	0	0.9741137	1.000473
scrap	116.3081	35.02449	3.32	0.001	47.66132	184.9548
_cons	-588.1938	106.5567	-5.52	0	-797.0411	-379.3466
bidders						
bids	0.2487593	0.0254163	9.79	0	0.1989443	0.2985744
period	0.3196314	0.0792817	4.03	0	0.1642422	0.4750206
rel_start	-3.203303	0.776989	-4.12	0	-4.726174	-1.680433
_cons	4.251041	0.6193855	6.86	0	3.037068	5.465014
bids						
period	0.6678514	0.2996085	2.23	0.026	0.0806294	1.255073
rel_start	-20.00911	2.272643	-8.8	0	-24.46341	-15.55481
_cons	18.15829	1.59813	11.36	0	15.02601	21.29057
var(e.sellingprice)	20154.28	2816.072			15326.13	26503.43
var(e.bidders)	4.869019	0.6719886			3.715049	6.381437
var(e.bids)	72.87571	10.06728			55.5898	95.53675

It is worthy to note here that the above results can almost be exactly replicated by replacing the selling price variable with the total price variable (Table 2.). The only difference between the two variables is that while the latter includes the item's shipping cost, the former does not.

Table 2: GSEM Results for Model 1 With Total Price as Endogenous Variable

	Coef.	Std. Err.	z	P>z	95% Conf. Interval	
totalprice						
bidders	14.29952	5.736827	2.49	0.013	3.055549	25.5435
Bids	-5.515597	2.286968	-2.41	0.016	-9.997972	-1.033222
sellerspositive	4.847471	1.036732	4.68	0	2.815514	6.879428
calculatedprice	0.9885051	0.0068158	145.03	0	0.9751465	1.001864
scrap	114.8629	35.50033	3.24	0.001	45.28353	184.4423
_cons	-589.2201	108.0043	-5.46	0	-800.9046	-377.5355
bidders						
bids	0.2487593	0.0266645	9.33	0	0.1964979	0.3010208
period	0.3196314	0.0794643	4.02	0	0.1638842	0.4753786
rel_start	-3.203303	0.7935604	-4.04	0	-4.758653	-1.647953
_cons	4.251041	0.636453	6.68	0	3.003616	5.498466
bids <-						
period	0.6678514	0.2996085	2.23	0.026	0.0806294	1.255073
rel_start	-20.00911	2.272643	-8.8	0	-24.46341	-15.55481
_cons	18.15829	1.59813	11.36	0	15.02601	21.29057
var(e.totalprice)	20705.65	3035.148			15535.13	27597.05
var(e.bidders)	4.869019	0.6719888			3.715048	6.381438
var(e.bids)	72.87571	10.06611			55.59155	95.53375

Model 2

In this model, we do not restrict any of the covariances between the residuals of the three endogenous variables. After 2302 iterations, STATA returned the following results (Table 3).

Table 3: GSEM Results for Model 2

	Coef.	Std. Err.	z	P>z	95% Conf. Interval	
Sellingprice						
Bidders	44.61616	37.21156	1.2	0.231	-28.31715	117.5495
Bids	-19.62662	16.2546	-1.21	0.227	-51.48504	12.23181
Sellerspositive	4.887518	1.020894	4.79	0	2.886603	6.888433
Calculatedprice	0.9884571	0.0068116	145.11	0	0.9751066	1.001808
Scrap	99.42179	37.73393	2.63	0.008	25.46466	173.3789
_cons	-631.1355	132.2805	-4.77	0	-890.4005	-371.8706
Bidders						
Bids	0.246912	5.983382	0.04	0.967	-11.4803	11.97412
Period	0.3208725	4.013816	0.08	0.936	-7.546063	8.187808
rel_start	-3.24025	119.6885	-0.03	0.978	-237.8253	231.3448
_cons	4.28455	108.5697	0.04	0.969	-208.5081	217.0772
Bids						
Period	0.6678259	0.307371	2.17	0.03	0.0653898	1.270262
rel_start	-20.00917	2.27812	-8.78	0	-24.4742	-15.54414
_cons	18.15841	1.630386	11.14	0	14.96291	21.35391
var(e.sellingprice)	28401.59	19105.96	7598.595	106157.9		
var(e.bidders)	4.869267	1.744815	2.412408	9.828256		
var(e.bids)	72.8757	10.05803	55.60362	95.51299		
cov(e.bidders,e.sellingprice)	-151.7838	3238.62	-0.05	0.963	-6499.363	6195.795
cov(e.bids,e.sellingprice)	525.8275	547.5674	0.96	0.337	-547.3849	1599.04
cov(e.bids,e.bidders)	0.1346315	436.0466	0	1	-854.501	854.7702

This model can be rejected because the coefficients of the covariance terms as well as the coefficients of some of the other variables are insignificant. It is interesting to note that in spite of this, we still see that the Seller's Positive Feedback Percentage, the Calculated Price, and the fact that the item is Scrap or not are still positively affecting the Selling Price.

Model 3

In this model (see Figure 2), we restricted the covariance between the residuals of Bids and Bidders to zero, and allowed the covariance between the residuals of Selling Price and Bids. Also, we restricted the covariance between the residuals of Selling Price and Bidders to take any value.

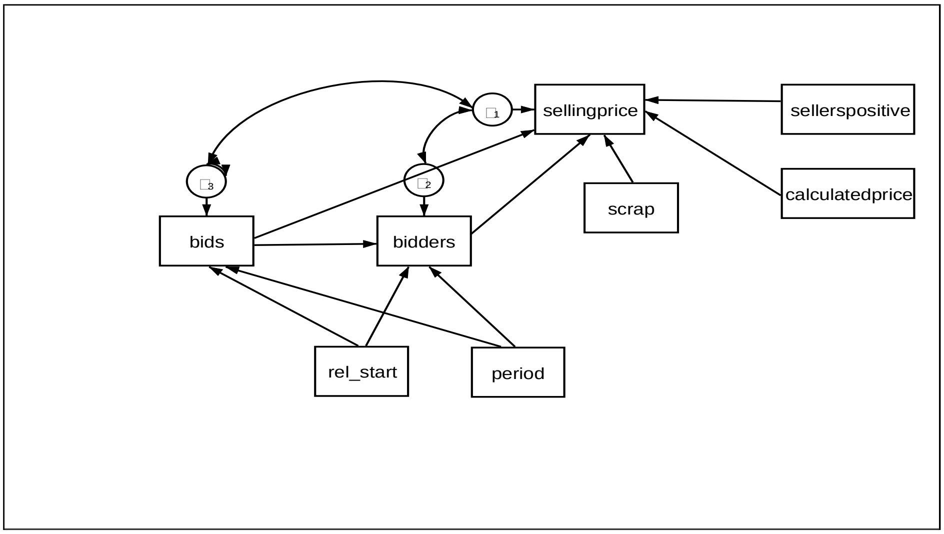

Figure 2: Model 3

We can see from the results (Table 4.) that all the coefficients of the model are significant and that the covariance between the residuals of Bids and Selling Price, as well as the covariance between the residuals of Bidders and Selling Price are also significant. This model accordingly confirms again that the number of Bidders, Seller Positive Percentage, as well as Scrap all have a positive effect on the Selling Price, while the number of Bids negatively affects the Selling Price. The model also confirms that the Auction Duration as well as the Relative Start Price has both a positive effect on both the number of Bids as well as the number of Bidders. In addition, the number of bids also has a positive effect on the number of Bidders which creates another channel through which the number of bids affects the Selling Price.

Table 4: GSEM Results for Model 3

	Coef.	**Std. Err.**	**z**	**P>z**	**95% Conf. Interval**	
Sellingprice						
Bidders	44.70998	9.079025	4.92	0	26.91542	62.50454
Bids	-19.66667	4.261289	-4.62	0	-28.01864	-11.3147
Sellerspositive	4.887634	1.020412	4.79	0	2.887664	6.887605
Calculatedprice	0.9884602	0.006706	147.4	0	0.9753167	1.001604
Scrap	99.39716	36.18062	2.75	0.006	28.48444	170.3099
_cons	-631.3172	113.8286	-5.55	0	-854.4172	-408.2172
Bidders						
Bids	0.248761	0.025259	9.85	0	0.1992543	0.2982678
Period	0.3195486	0.0744306	4.29	0	0.1736673	0.4654299
rel_start	-3.20338	0.7730088	-4.14	0	-4.71845	-1.688311
_cons	4.251388	0.6026324	7.05	0	3.070251	5.432526
Bids						
Period	0.6681341	0.2843151	2.35	0.019	0.1108867	1.225382
rel_start	-20.00875	2.263745	-8.84	0	-24.4456	-15.57189

_cons	18.157	1.535358	11.83	0	15.14776	21.16625
var(e.sellingprice)	28449.73	5191.598			19895.2	40682.55
var(e.bidders)	4.869219	0.6817477			3.700677	6.406746
var(e.bids)	72.87458	10.0575			55.60333	95.51055
cov(e.bidders,e.sellingprice)	-153.2326	47.81898	-3.2	0.001	-246.9561	-59.50916
cov(e.bids,e.sellingprice)	527.0323	238.1057	2.21	0.027	60.35368	993.711

Model 4

In this model, we allowed covariances between the residuals of Bids and Bidders, and restricted covariances between the residuals of Selling Price and both Bids and Bidders to zero. After 16000 iterations (the default maximum number of iterations), STATA was not able to achieve convergence. Therefore, by increasing the number of iterations to 25000 and rerunning the model, the results were still the same.

The Effect of Shipping Cost

There has been contradicting evidence from the literature with regards to the effect of Shipping Cost on Selling Price. By adding the shipping cost to model 1, it becomes apparent (Table 5.) that the coefficient associated with it is not significant. To confirm the result, the author added Shipping Cost to model 3 (allowing for covariance between the Selling Price residuals and the residuals of Bids and Bidders). However, not only was the resulting coefficient of the Shipping Cost variable insignificant, but also, the coefficients of the covariance terms were insignificant. Accordingly, we can not prove in this paper that shipping cost affects the selling price.

Table 5: GSEM Results for Model 1 after Adding Shipping Cost

	Coef.	**Std. Err.**	**Z**	**P>z**	**95% Conf. Interval**	
sellingprice						
bidders	11.22437	5.807205	1.93	0.053	-0.1575443	22.60628
bids	-4.685671	2.274687	-2.06	0.039	-9.143977	-0.2273659
sellerspositive	4.834146	1.015332	4.76	0	2.844132	6.824159
calculatedprice	0.9855446	0.0068215	144.48	0	0.9721746	0.9989145
scrap	118.3937	34.80729	3.4	0.001	50.17266	186.6147
shipingcost	1.443189	1.16023	1.24	0.214	-0.830819	3.717197
_cons	-586.7128	105.7795	-5.55	0	-794.0368	-379.3887
bidders						
bids	0.2487593	0.0255508	9.74	0	0.1986807	0.298838
period	0.3196314	0.079301	4.03	0	0.1642044	0.4750584
rel_start	-3.203303	0.7787534	-4.11	0	-4.729632	-1.676974
_cons	4.251041	0.6212076	6.84	0	3.033496	5.468585
bids						
period	0.6678514	0.2996085	2.23	0.026	0.0806294	1.255073
rel_start	-20.00911	2.272643	-8.8	0	-24.46341	-15.55481
_cons	18.15829	1.59813	11.36	0	15.02601	21.29057
var(e.sellingprice)	19858.79	2789.427			15079.62	26152.62
var(e.bidders)	4.869019	0.6719886			3.715049	6.381437
var(e.bids)	72.87571	10.06965			55.58627	95.54283

It might be argued though that what really affects selling price is not the shipping cost but the relative shipping cost (Shipping Cost divided by the Selling Price). The logic behind this is that a potential buyer will view a $10 shipping cost differently when the item is worth $50 versus when it is worth $1000. To accommodate for this, the author introduced the Relative Shipping variable (shipping cost/selling price) and then tested the model again using STATA. It is clear from Table 6 that the coefficient associated with this variable is also not significant. Again, we added the Relative Shipping variable to model 3, and the results again showed that the coefficient associated with this variable was insignificant. Consequently, the coefficients of the covariance terms were significant, and so the model was not rejected. Both findings have though led us to conclude that both the Shipping Cost as well as the Relative Shipping Cost does not affect the selling price.

Table 6: GSEM Results for Model 1 after Adding Relative Shipping Cost

	Coef.	Std. Err.	Z	P>z	95% Conf. Interval	
sellingprice						
bidders	12.86504	5.650861	2.28	0.023	1.789554	23.94052
bids	-5.237603	2.252318	-2.33	0.02	-9.652064	-0.8231414
sellerspositive	4.883826	1.022041	4.78	0	2.880663	6.886989
calculatedprice	0.9858428	0.0070108	140.62	0	0.9721018	0.9995838
scrap	121.8906	35.80892	3.4	0.001	51.70642	192.0748
rel_shipping	-496.4541	697.4688	-0.71	0.477	-1863.468	870.5597
_cons	-583.4011	106.511	-5.48	0	-792.1588	-374.6434
bidders						
bids	0.2487593	0.0277575	8.96	0	0.1943556	0.3031631
period	0.3196314	0.0796311	4.01	0	0.1635573	0.4757054
rel_start	-3.203303	0.808427	-3.96	0	-4.787791	-1.618815
_cons	4.251041	0.6516796	6.52	0	2.973772	5.528309
bids						
period	0.6678514	0.2996085	2.23	0.026	0.0806294	1.255073
rel_start	-20.00911	2.272643	-8.8	0	-24.46341	-15.55481
_cons	18.15829	1.59813	11.36	0	15.02601	21.29057
var(e.sellingprice)	20056.57	3060.487			14872	27048.54
var(e.bidders)	4.869019	0.6719889			3.715048	6.381438
var(e.bids)	72.87571	10.06465			55.59374	95.52998

Relationship between Auction Selling Price and the Calculated Price Using the Gold Spot Rate

It is clear from the above tables that the coefficient of the Calculated Price variable is around .99. This implies that a 1 unit increase in the calculated price will result to a .99 units increase in the Selling Price. In order to understand how variations in the Calculated Price explain variations in the Selling Price, we ran a regression of the selling price on the calculated price (see Table 7.). Thus, the R2 value was .9939 which implies a very close fit.

Table 7: Regression Results between Selling Price and Calculated Value

Source	SS	df	MS
Model	494003358	1	494003358
Residual	3029210.85	107	28310.3818
Total	497032569	108	4602153.42

Number of obs	= 109
F(1, 107)	=17449.55
Prob > F	= 0.0000
R-squared	= 0.9939
Adj R-squared	= 0.9938
Root MSE	= 168.26

sellingprice	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
calculatedprice	.9769056	.0073954	132.10	0.000	.9622451	.9915661
_cons	2.035259	20.60029	0.10	0.921	-38.80242	42.87294

To visualize this relationship, the author plotted a diagram of the 2 variables as shown in figure 3. All the points seem to lie on the 45 degree line together with the very high value of R2, which indicates that the final price is highly affected by the calculated price of gold content. Any variation in the final selling price not attributed to the calculated price is accordingly very small.

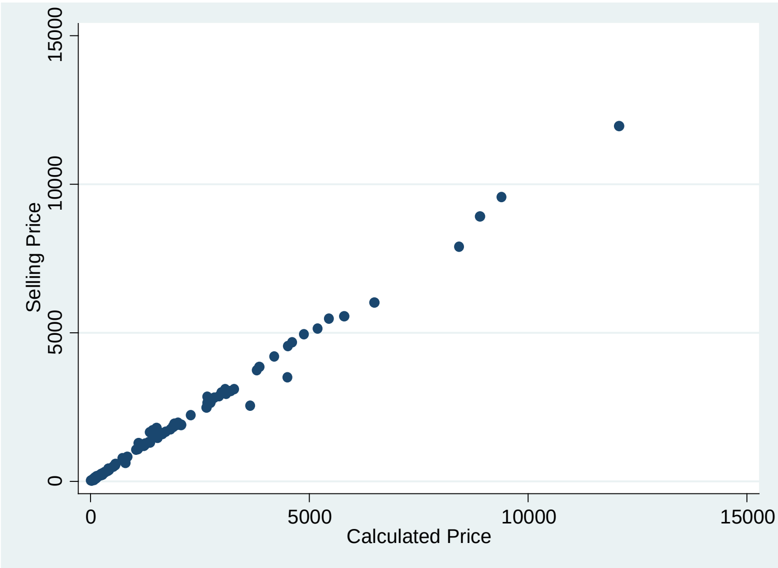

Figure 3: Plot of Selling Price Against Calculated Price

The Effect of Auction Duration and Relative Start Price on Final Selling Price

Both models 1 and 3 show that Auction Duration has a positive effect on both the number of Bids and the number of Bidders, and at the same time, the Relative Start Price has a negative effect on both the number of Bids and the number of Bidders. But since the number of bids has a negative effect on the Selling Price and the number of Bidders has a positive effect on Selling Price, the cumulative effect of the Auction Duration and the Relative Start Price on the Final Selling Price cannot be clearly ascertained. Equations 1, 2, and 3 represent the relationships between the variables (see Table 4).

$$Selling\ Price = 44.71 * Bidders - 19.67 * Bids + \cdots \quad (1)$$

$$Bidders = .25 * Bids + .32 * Period - 3.2 * rel - start + \mathcal{E}_{Bidders} \quad (2)$$

$$Bids = .67 * Period - 20 * rel - start + \mathcal{E}_{Bidss} \quad (3)$$

Thus, a one unit increase in the Auction Duration (Period) will result in a .32 increase in the number of Bidders, and accordingly in a 14.3 units increase in Selling Price. The same increase in the Auction Duration though will result in .67 units increase in the number of bids and 13.18 units decrease in the Selling Price. The cumulative effect though is 1.12 increase in the Selling Price. This is reflected in the following equation (equation 4.).

$$\Delta\ Selling\ Price = 44.71 * .32 - 19.67 * .67 = 1.12 \quad (4)$$

Similarly, a one unit increase in the Relative Start Price (auction start price/Selling Price) will result in a 3.2 decrease in the number of Bidders, and accordingly to a 143.1 units decrease in the Selling Price. The same one unit increase in the Relative Start Price will decrease the number of Bids by 20 units, and accordingly increase the final Selling Price by 393.4 units. This is reflected in the following equation (equation 5.)

$$\Delta\ Selling\ Price = 44.71 * (-3.2) - 19.67 * (-20) = 250.33 \quad (5)$$

Conclusion and Discussion

By using Structured Equation Modeling, the author was able to capture the complexity of the model of the factors that affect selling prices of gold on eBay. In this research, three endogenous variables were used: number of Bidders, number of Bids, and the Selling Price. As in previous researches, the seller’s positive feedback percentage had a positive effect on the Selling Price. The item’s calculated value (using the daily spot rate of Gold) also had a positive effect on the Selling Price. The research showed that almost 99% of the variation in the auction’s selling price can be explained by this variable.

In this research, the author was able to show that shipping cost does not influence selling prices on eBay auctions. Presumably because most eBay sellers do not make profit from shipping, and shipping cost is not considerable compared to the final selling price.

As shown in previous sections, the longer the Auction Duration and the lower the Auction Start price, the higher the number of Bidders and the number of Bids in the auction. This does not necessarily mean a higher Selling Price though. This is due to the fact that both Auction Duration and Relative Start Price affect the number of Bids and number of Bidders simultaneously, but the latter factors affect the Selling Price in different ways. So, while the number of Bidders have a positive effect on the Selling Price, the number of Bids have a negative effect. By taking this into account and by calculating the cumulative effect, we showed that a longer Auction Duration and a higher Relative Start Price will both result in a higher Selling Price.

The fact that a higher Start Price has a positive impact on the final Selling Price primarily stems from the dampening effect this factor has on the number of Bids. Since buyers are able to calculate the exact value of the Gold item using the daily sport rate, they do not look favorably at a high number of bids because it signals a strong desire to purchase. Therefore, this might result in the Selling Price surpassing the Calculated Price.

Because buyers seem to be primarily buying Gold for investment and not for use, one can conclude that they view a higher number of Bidders as a signal of trust in the auction. However, this instills confidence and motivates them to bid (which explains the positive relationship between the number of Bidders and the Selling Price). On the other hand, the number of bids imply a strong desire to purchase which can demotivate buyers from engaging in the auction for fear that the Selling Price will be too high (which explains the negative relationship between the number of Bids and the Selling Price).

Of particular interest was the finding out that the auctions prices of scrap gold (per gram) are relatively higher than that of useable gold. This discrepancy might imply that there is stronger competition for scrap gold and/or willingness of buyers to bid a higher price for it. This seems to run against common sense, because while scrap gold can only be used for investment, useable Gold can be used both as an investment and as wearable jewelry. To explain this, it is important to note that testing the purity of gold can result in some damage to the item being tested. While clearly this is not an issue with scrap gold, it is an issue when trying to return a useable item to the seller after testing it because the item was not in the proper condition it was before it was tested.

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