

**Cultural Effects on Price Format Choices: Evidence from  
eBay's International Marketplace**

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**2007-004**

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First Draft: January 7, 2007

This Version: January 7, 2007

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### **Abstract**

Price format choices (auction, buy-it-now and fixed price) at international marketplaces are influenced by the cultural and economic factors of the market countries, as well as those of the sellers.

**Keywords:** Cultural effects, Auctions, Price Format

JEL classification: F14, D40

## 1 Introduction

Online auction has attracted much interest of practitioners and researchers. As a popular price exploration mechanism, it is considered one of the most viable business models on the Internet. Economists have studied this online pricing mechanism extensively; for example, linking auction outcomes to seller's reputation, auction design considerations, and bidding behavior, empirically or experimentally (see Bajari and Hortacısu, 2004 for a survey of recent research). However, literature is silent about seller's price format choices (pure auction, buy-it-now auction<sup>1</sup>, and fixed price<sup>2</sup>), and the cross-listing behavior is largely ignored. In this paper we address this research question by empirically studying the effect of the cultural and economic factors on the price format choices.

## 2 Data and Model

Listing data of Sony's 2GB memory sticks were randomly collected from eBay's eight international websites (hereafter markets): Canada, France, Germany, Hong Kong, Italy, Netherlands, Taiwan, and United States, in May 2006. We chose this product for it is relatively homogeneous and widely available worldwide, thus eliminated other possible sources that may influence pricing decisions, such as product physical attributes and availability. In total, we obtained 120 listings from each market, of which 954 were useable after cleaning. An interesting observation on this unique cross-country dataset is that sellers often listed their product outside their own countries (Table 1). For example, in the US market, only 20% listings were from US eBay sellers, the remainders were from Hong Kong (34%), U.K. (25%), China (14%), Singapore (4%), and Canada (3%). The cross-listing behavior varies substantially across markets, however. For instance, 76% of the listings on Germany's site were from domestic sellers.

[INSERT TABLE 1 HERE]

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<sup>1</sup> <http://pages.ebay.com/help/sell/bin.html>

<sup>2</sup> <http://pages.ebay.com/help/sell/price.html>

Of all the listings, 61% used pure auction, 16% used buy-it-now auctions, and 23% used fixed price. It is worth noting that the adoption rate of these three price formats varies greatly across markets. Pure auction is a popular choice in Germany (76%), Netherlands (72%) and Canada (70%); whereas fixed price dominates in Italy (63%). Detailed break-downs of price format choice by market are presented in Table 2A. The cross-tabulated price format by seller country (Table 2B) suggests that there is discernable preference differentiation across countries.

[INSERT TABLE 2 HERE]

To explain the variations on price format choices, especially considering the cross-listing behavior, we hypothesize that the sellers' own cultural background and, if they are capable of taking into consideration, the market characteristics, will both affect their price format decisions. Formally, we specify the attractiveness of price format  $k$  ( $k = 1, 2, 3$  for auction, buy-it-now and fixed price respectively) for listing observation  $i$  as:

$$\eta_{ik} = b_k + \alpha_k GNP_{s[i]} + \beta_k GNP_{m[i]} + \gamma_k Z_{s[i]} + \lambda_k Z_{m[i]}, \quad k=2, 3, \quad (1)$$

where the pure auction format ( $k=1$ ) is used as the baseline. We adopt the five cultural dimensions originally developed by Hofstede (2001) to understand the basic value differences across countries as our cultural variables for the sellers ( $Z_{s[i]}$ ) and the market countries ( $Z_{m[i]}$ ). These five dimensions include: Power Distance, Individualism, Long Term Orientation, Masculinity, and Uncertainty Avoidance. Below we briefly explain the definition of each of them.

*Power Distance* measures the extent to which a society's level of inequality is accepted by the followers as much as by the leaders. *Individualism* (vs. collectivism) determines how much individuals are integrated into groups. Values associated with *Long Term Orientation* (vs. Short Term Orientation) are respecting for tradition, fulfilling social obligations, and protecting one's "face". *Masculinity* (vs. Femininity) indicates the gender roles in a society. According to Hofstede (2001), "Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender,

and concerned with the quality of life." *Uncertainty Avoidance* measures a society's tolerance for uncertainty and ambiguity.

Our preliminary data analysis shows that among the countries in our dataset, some of the cultural variables are highly correlated (e.g., Power Distance and Individualism of seller countries have a correlation of -0.98), which, if not dealt with, would lead to severe multi-collinearity problem and unreliable estimation results. Hence, we first run a factor analysis to identify the cultural factors that sufficiently describe the countries, and then include only those as the independent variables in Equation (1). The result shows that *three* factors (Table 3) explain 91.2% of the variance of the five cultural dimensions, and their communalities are all above 0.8. From the rotated pattern of the factors, it is clear that Femininity and Uncertainty Avoidance should be included in the analysis as two separate cultural factors. The third factor which we call "Eastern Culture", represents Power Distance, Collectivism and Long Term Orientation, with China, Taiwan, and Hong Kong on the high end of the scale, while U.K., U.S., and Canada on the low end.

[INSERT TABLE 3 HERE]

Cultural variables are very stable and capable of explaining the behavioral and socio-economic differences across countries (Hofstede 2001). Furthermore, Mooij (2004) argues that cultural values become manifest with increased wealth. In cross-country studies, gross national product (GNP) per capita is typically used as a measure for national wealth. Since our dataset contains both developing and developed countries, we include this variable as control for the income effect for the seller countries ( $GNP_{s[i]}$ ) and the market countries ( $GNP_{m[i]}$ ).

In Table 4 we list the hypothesized relationship between the variables in the model and the price format choice:

[INSERT TABLE 4 HERE]

Based on (1), the probability of a price format being adopted is formulated as a pure multinomial logit model. Due to the sparse and unbalanced nature in our cross listing data (see Table 1), we estimated the model using a Bayesian method, which not only makes estimation possible for small samples, but also reflects the uncertainty in the parameter estimation as a result of that.

### 3 Results

The results are reported in Table 5. We mainly focus on the two groups of cultural factors: those of the seller countries and those of the markets. Whereas the former explains the choice as a result of the sellers' cultural characteristics, the latter reflects how they price in anticipation or reaction to the markets where they sell.

[INSERT TABLE 5 HERE]

#### *Culture of Seller Countries*

We find supportive evidence that Eastern Culture, which tends to be more collective and rule-following, leads to more buy-it-now over pure auctions. However, the estimate of Eastern Culture's influence on fixed price (negative) is opposite to our expectation. We speculate this may be related to the social norm that price haggle in regular stores is common in eastern countries like China, but not in western countries such as the United States. The estimate of Femininity (negative on fixed price) suggests that fairness may be playing a bigger role given the seller's Femininity background. Uncertainty Avoidance decreases the probability of buy-it-now, as we have expected.

#### *Culture of Markets*

The influence of Eastern Culture is similar to the case of seller countries. For Femininity, interestingly, we observe supportive evidence opposite to that of seller countries: male aggressiveness seems to be more dominant in deciding that auction makes more sense with low Femininity. Comparing the cases of Femininity of seller countries and markets, it suggests that the fairness mindset of seller's cultural background (high Femininity) leads to less fixed price; while the aggressiveness of part of the population

(males) in the market (i.e., low Femininity) makes auction a more attractive price option. Uncertainty Avoidance increases the probability of buy-it-now and fixed price, as we have expected.

#### **4 Conclusion**

In this research, we employ data from eBay's international markets to study the influence of culture on price format choice. We find that cultural and income considerations of the sellers as well as the markets play an important role when making price format choices.

We mainly focus on cultural and income variables. Further studies on this topic could potentially include other social economic variables such as age distribution. What's more, in addition to seller's price format decision, the variation on transaction price from pure auction, buy-it-now, and fixed price formats is also an interesting subject that deserves more research.

## References

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Table 1: Seller Countries and Markets

Seller Countries (below)	Markets							
	Canada	France	Germany	Hong Kong	Italy	Netherlands	Taiwan	US
Canada	1%	-	1%	3%	23%	-	2%	3%
China	10%	23%	16%	20%	-	20%	11%	14%
France	-	13%	-	-	-	-	-	-
Germany	-	-	76%	-	1%	-	-	-
Hong Kong	47%	16%	7%	63%	17%	-	45%	34%
Italy	-	-	-	-	60%	-	3%	-
Netherlands	-	-	-	-	-	5%	-	-
Singapore	3%	44%	-	-	-	75%	8%	4%
Taiwan	-	-	-	-	-	-	-	-
U.K.	23%	-	-	9%	-	-	28%	25%
U.S.	17%	5%	1%	5%	-	-	4%	20%

Table 2A: Price Format Choice by Market.

<b>Markets</b>	<b>Auction</b>	<b>Buy-it-Now</b>	<b>Fixed Price</b>
Canada	70%	17%	13%
France	61%	18%	22%
Germany	76%	-	24%
Hong Kong	53%	33%	14%
Italy	24%	13%	63%
Netherlands	72%	-	28%
Taiwan	68%	29%	3%
U.S.	65%	20%	14%

Table 2B: Price Format Choice by Seller Country.

<b>Seller Countries</b>	<b>Auction</b>	<b>Buy-it-Now</b>	<b>Fixed Price</b>
Canada	24%	-	76%
China	46%	20%	35%
France	40%	47%	13%
Germany	81%	-	19%
Hong Kong	54%	38%	7%
Italy	37%	-	63%
Netherlands	50%	-	50%
Singapore	90%	-	10%
U.K.	75%	15%	10%
U.S.	55%	2%	44%

Table 3: Factor Analysis of Cultural Variables

<b>Rotated Factor Pattern</b>	<b>Factors</b>		
	<b>Eastern Culture</b>	<b>Femininity</b>	<b>Uncertainty Avoidance</b>
Power Distance	0.885	-0.037	-0.132
Individualism	-0.923	-0.022	0.226
Long Term Orientation	0.921	-0.009	-0.091
Uncertainty Avoidance	-0.204	0.054	0.977
Masculinity	0.009	-0.999	-0.049

Table 4: The Influence Cultural Factors on Price Format

Variables		Expected Influence		Explanation
		Buy-it-Now	Fixed Price	
Seller Country	Eastern Culture	+ (supported)	+ (not supported)	Eastern culture tends to be societies more collective, more "rule" based, so that it's more likely that buy-it-now or fixed price is chosen over auction.
	Femininity*	+/-	+/- - (supported)	(+) In a culture with high Femininity, males are more modest, less aggressive, so auctions may become less attractive. (-) In a culture with high Femininity, males and females tend to have similar roles in the society. So higher fairness is preferred, and auctions are more of a fair pricing mechanism comparing to buy-it-now or fixed price
	Uncertainty Avoidance	- (supported)	-	Fixed price leads to riskier alternatives for sellers (yes/no only, and "no" means no transaction at all if priced inappropriately). Auctions are indeed less risky for sellers since as far as the highest bid reaches the reserve price, a transaction is achieved.
	GNP per Capita	- (marginally supported)	- (supported)	Sellers from countries with higher GNP per capita tend to be more mature e-commerce sellers. Properly executed auctions tend to lead to higher seller surplus.
Market Country	Eastern Culture	+ (marginally supported)	+	Same as "Seller Culture"
	Femininity *	+/- + (supported)	+/- + (supported)	Same as "Seller Culture"
	Uncertainty Avoidance	+ (supported)	+ (supported)	Buy-it-now or fixed price has less uncertainty for buyers.
	GNP per Capita	+	+ (marginally supported)	Buyers in richer countries have higher purchasing power and opportunity cost. Hence they are more likely to exercise the buy-it-now option or use fixed price format.

\* Femininity is hypothesized to have alternative possible influences on price format.

Table 5: Pure Multinomial Logit Regression Result

Variables		Parameter Estimates (standard deviation)		Estimated Confidence Interval [2.50%, 97.50%]
Seller Country	Eastern Culture_bin	0.766 (0.222)	**	[0.373, 1.211]
	Eastern Culture_fp	-0.574 (0.124)	**	[-0.833, -0.339]
	Femininity_bin	-0.146 (0.233)		[-0.597, 0.323]
	Femininity_fp	-0.466 (0.135)	**	[-0.736, -0.200]
	Uncertainty Avoidance_bin	-1.357 (0.157)	**	[-1.665, -1.060]
	Uncertainty Avoidance_fp	-0.095 (0.130)		[-0.357, 0.150]
	GNP_bin	-0.020 (0.012)	*	[-0.043, 0.003]
	GNP_fp	-0.061 (0.010)	**	[-0.082, -0.041]
Market Country	Eastern Culture_bin	0.329 (0.181)	*	[-0.017, 0.694]
	Eastern Culture_fp	-0.216 (0.181)		[-0.560, 0.143]
	Femininity_bin	0.469 (0.139)	**	[0.186, 0.728]
	Femininity_fp	0.841 (0.121)	**	[0.590, 1.082]
	Uncertainty Avoidance_bin	0.273 (0.116)	**	[0.038, 0.510]
	Uncertainty Avoidance_fp	0.319 (0.119)	**	[0.088, 0.563]
	GNP_bin	0.015 (0.021)		[-0.027, 0.056]
	GNP_fp	0.040 (0.023)	*	[-0.006, 0.085]
Intercept_bin		-2.814 (0.291)	**	[-3.415, -2.271]
Intercept_fp		-1.107 (0.161)	**	[-1.424, -0.796]
Seller's experience_bin		-0.018 (0.059)		[-0.130, 0.101]
Seller's experience_fp		0.013 (0.055)		[-0.097, 0.121]

Note:

\_bin: Buy-it-Now, \_fp: Fixed Price

\*\* and \* denote 0 is not included in 90% and 95% confidence interval, respectively.