

Country-of-Origin Premiums for Retailers in International Trades: Evidence from eBay's International Markets

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Abstract

Using real-world transaction prices in the Internet auction Web site eBay's U.S., U.K., and global markets, the authors study the price dispersion of homogeneous products related to the sellers' country-of-origin. For both tangible and intangible products and services, sellers from the United States enjoy a price premium. This premium appears to stem from country-of-origin equity instead of trading risk or product quality. The findings of this research suggest potential profitable opportunities in international trade by employing the retailer's country-of-origin as an arbitrage tool. © 2010 New York University. Published by Elsevier Inc. All rights reserved.

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Modern globalization has made it almost impossible for a regular American consumer to imagine a day without calling a customer service representative located in the South Asian sub-continent, watching Discovery programs shot by Australians, or working out wearing sneakers made in Southeast Asia. Because of the perceived disparities in culture, technology, labor, management, corporate structure, and government regulations however, products or services sold by retailers from different countries, regardless of their homogeneity, may be evaluated differently by consumers. In other words, country¹ of origin (COO) matters. For products that are uniform and comparable, such disparity across countries might be caused by the generally higher risk associated with international trade than with domestic transactions. Risk rooted in the COO often appears as a price discount or premium. If such risk can be measured objectively, any price premium or discount due to COO should fully reflect the level of risk. The question is, does such price premium or discount persist even after controlling for the trading risk?

The goal of this research is not to study complicated international trading scenarios, such as toy imports, for which indirect economic liability is almost impossible to predict and quantify. Instead, we focus on product categories in which transaction risks can be measured objectively. The Internet auction company eBay makes it possible for sellers from different countries to sell through a common marketplace, which grants us a rare opportunity to study the real-world price dispersion of homogeneous products in international trade. Ultimately, we are interested in whether a COO-based effect exists for price discrepancies (which we call the country-of-origin premium phenomenon) in homogeneous products across sellers with different COOs. If such discrepancies exist, which country or countries benefit most from them in international trade?

By empirically analyzing transaction data related to Sony memory sticks, the iPod Nano, World of Warcraft (WoW) gold strategy, and phone unlocking service, we arrive at conclusions that have important implications for international trade. In a nutshell, we find that U.S. (and, with limited evidence, Canadian) sellers in eBay markets, both domestic and international, enjoy significant price premiums, even for homogeneous products or services. Studies of these four different product/service categories in two eBay markets offer consistent conclusions. The retailer COO premium we discover in eBay's global markets suggests inefficiency (and hence an arbitrage opportunity), likely caused by consumers' irrational perceptions of risk or risk aversion in the context of international trade. Similar to the

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¹ The word "country", as used in this research, has a broad meaning, reflecting an economically independent region instead of a political nation. For example, Hong Kong, a Special Administrative Region of China, is referred to as a "country" in an economic sense.

notion of equity premiums (Benartzi and Thaler 1995; Siegel and Thaler 1997) in the U.S. financial market, according to which riskier investment (equity) enjoys a higher premium than that demanded by its risk, compared with safer investments (government bonds), the existence of the COO premium makes it a profitable means for retailers to arbitrage.

This article contributes to marketing literature in three ways: First, it provides the first examination of a COO premium accruing to the *retailer* rather than to the manufacturer or brand, while controlling for product quality. Second, unlike previous research that uses listed price to examine the COO effect, we use actual transaction prices to assess price premiums. By reflecting real market outcomes, this study offers more interesting and managerially relevant results for global retailers. Third, by exploiting eBay's unique global presence, our research proposes a methodology that effectively teases out many alternative explanations for the observed price variations and quantifies the retailer's COO premium.

The remainder of this article is organized as follows: We first review the theoretical background provided by related research. We conduct three studies pertaining to the transaction prices of homogeneous physical products and intangible products/services in different eBay markets. Finally, we conclude with some of the implications of our findings.

Theoretical background

Extant research on the COO effect generally focuses on issues related to two major areas: the economic aspect and the behavioral aspect. We review this literature and identify its relevance to the pricing topic on which we focus. That is, we present various theories for the existence of price dispersions in international trade to control for any alternative explanations through market selection (i.e., eBay) and product categories in the empirical analysis.

The most important reason for price dispersion emerges from economic theories related to vertical product differentiation (Salop and Stiglitz 1977; Shapiro 1982). We exclude such effects by selecting four product/service categories for this research: Sony memory sticks on eBay's U.S. site, Apple's iPod Nanos on eBay's U.K. site, and WoW² gold strategies and mobile phone unlocking service from eBay's global Web sites. These products are fairly homogeneous, such that we can control for any differentiation that may exist. Specifically, all memory sticks carry the brand name "SONY" and vary only by capacity; all MP3 players are Apple iPod Nanos and differ only in generation and capacity; WoW gold strategies can be categorized as either gold or upgrade strategies; and mobile phone unlocking services vary little by phone brands.

Moreover, through our selection of the focal products/services, we can exclude several alternative explanations

proposed by economists regarding the existence of price dispersion across *homogeneous* goods. First, Kreinin (1961) shows that tariffs create price discrepancies across countries, but according to the Harmonized Tariff Schedule of the United States, solid-state, nonvolatile storage devices (i.e., Sony memory sticks) are free of duties. In addition, in the United Kingdom, Her Majesty's Revenue & Customs commands a 2 percent duty on MP3 player imported from outside the European Union, so we factor this additional duty into the price. Digitally downloadable products are not subject to such duties, nor are excise taxes enforced on any of the product categories we study. Second, we integrate shipping and distribution costs (Anderson and van Wincoop 2004), if they exist, into the total price of the products. Third, we find that no quotas (Anderson 1985) apply. Fourth, eBay's marketplace generally represents a shared platform for the competitive market, so no heterogeneity results from the market structure (Baldwin 1948). Fifth, in an Internet marketplace such as eBay, consumers likely incur minimal search costs (Bond 1984; Stigler 1961), because they can rely on the page map and search capacities. Sixth, intertemporal price fluctuations (Varian 1980) and currency exchange rate fluctuations (Isard 1977) can explain price changes only over time, whereas the scenario we study pertains to price dispersion across products at a single given point of time, which means the effects due to currency exchange fluctuations are inconsequential. If any price dispersion due to COO exists in our analysis, it therefore should be caused by reason(s) other than those indicated in these economic theories.

What else could lead to price dispersion in international trade? Behavioral and brand equity literature sheds some light on this question. From a consumer perspective, research in marketing mainly focuses on how COO influences evaluations of products and intentions to purchase. Thus, prior research identifies such COO effects as "stereotype effects" (e.g., Nagashima 1970), because they are "based on attributes that are inferred, are context dependent, and vary considerably across the members of category" (Maheswaran 1994, p. 354). Bilkey and Nes (1982) summarize research published over 20 years pertaining to the effect of COO on product evaluations. Generally speaking, COO affects beliefs but not attitudes (Erickson, Johansson, and Chao 1984) and influences consumers' purchase intentions. Maheswaran (1994) uses "stereotype" to describe this effect and finds that when evaluating products, novice consumers rely on COO more than do experts when the attribute information is ambiguous. When they use COO information, novices also interpret subsequent information regarding product attributes in that same light. In other words, COO as a cue for product evaluations does not reflect objective, tangible differences in the products themselves. If the COO effect can be justified with objective measurements such as quality signaling (e.g., Han 1989), we could attribute COO-related price premium effects to these measures. In contrast, if the COO premium is anchored to nothing other than the countries themselves, it represents COO-based equity, conceptually similar to the notion of brand equity in consumer products, which implies that positive brand equity tends to lower the price elasticity and lead to price premiums in branded products, with equal performance (e.g., Keller 1993). Recently,

² World of Warcraft, commonly known as WoW, is a massive, multiplayer, online, role-playing Internet computer game produced by Blizzard Entertainment, a division of Vivendi Games. "WoW gold" is a crucial resource in the game that enables players to obtain equipment and upgrades.

Table 1
Cross-country sales.

Product/service	Seller origin	Average price	SD of price	# of unique sellers	# of items sold
SONY memory stick (US dollar)	Canada	48.76	28.28	6	6
	China	32.32	6.25	22	141
	Hong Kong	46.55	20.56	18	233
	United Kingdom	37.93	0.48	1	21
	United States	41.29	20.74	58	207
iPod Nano (GB pound)	Canada	80.52	7.40	1	13
	Hong Kong	91.87	13.57	4	33
	Singapore	94.64	12.98	2	15
	United Kingdom	97.13	19.66	183	290
	United States	121.63	6.15	3	10
WoW gold strategy (US dollar)	Australia	7.02	1.20	3	7
	Canada	4.99	0.00	1	19
	United Kingdom	4.95	0.00	1	14
	United States	8.63	2.87	23	440
Phone unlocking (US dollar)	Australia	7.37	1.63	3	8
	Canada	17.09	1.72	4	22
	United Kingdom	5.06	7.11	4	35
	United States	11.60	5.85	12	54

Roggenveen, Bharadwaj, and Hoyer (2007) examined the effects of call center location on consumer expectations of service; the country in which the call center is located does not affect consumers' expectations when the firm is reputable. However, if the firm is less known, consumers expect to experience less satisfaction if the call center is located in countries dissimilar to the United States. Our study thus connects to extant COO literature in several ways: First, we attribute the price variation to a "stereotype" effect rather than an effect rooted in objective (tangible or intangible) attributes. Second, to test and measure the seller's COO premium, we use buyer product evaluations, measured as the *actual* prices paid in auctions and posted price transactions. Third, our findings enrich limited empirical evidence about COO effects across product categories.

The connection between behavioral studies pertaining to the underpinning of the mechanism of COO and its real-world influence on pricing, however, remains insufficiently researched empirically. Therefore, in this analysis, we attempt to tease out the potential reasons that might explain price dispersion within homogeneous products and identify whether an equity-based price premium due to the retailer's COO exists in international trades. Moreover, we use real-world data to examine a few interesting findings about the COO premium gathered through different data collection processes. Specifically, recent cultural research by Gürhan-Canli and Maheswaran (2000) indicates that Japanese and American respondents both prefer products from their home countries. Cordell (1991) suggests that developing countries may be less favored than developed countries when it comes to COO. Also, instead of studying production origins, such as "Made in ____" labels on a product (e.g., Ettenson, Wagner, and Gaeth 1988; Gaedeke 1973), we focus on the origins of the *retailer* (e.g., a U.S. retailer may sell a product with the same country of production as a Hong Kong-based retailer). Finally, instead of relying on controlled experimental environment, surveys, or printed list prices (e.g., Agrawal and Kamakura 1999), our analyses are based on real transaction data.

Empirical analysis and results

Data

We extract our study data in November 2007 from eBay's Web site, which includes publicly available transaction information, such as product price, shipping cost, auction bidding process, and so forth. The data employed herein comprise the price record of four products/services: Sony memory sticks ($N=608$), iPod Nanos ($N=360$), WoW gold strategies ($N=480$), and mobile phone unlocking services ($N=119$). In selecting these products, in addition to ensuring their homogeneity, we must confirm that each product category is sold by sellers from different origins. For the product categories, we observe extensive cross-country sales (Table 1), which makes them good product categories for our study. Specifically, Sony memory sticks on the eBay U.S. market are sold by sellers from Canada, China, Hong Kong, the United Kingdom, and the United States; iPod Nanos on the eBay U.K. market are sold by sellers from Canada, Hong Kong, Singapore, the United Kingdom, and the United States; WoW gold strategies are sold by sellers from Australia, Canada, the United Kingdom, and the United States; and the phone unlocking services are sold by sellers from Australia, Canada, the United Kingdom, and the United States.³ In contrast, many products on the U.S. eBay market, such as Sony's PlayStation Portables, are sold almost exclusively by American sellers, which makes them unsuitable for a seller COO study. For digitally delivered intangible products, such as WoW gold strategies or mobile phone unlocking services, eBay provides common product listings across all eBay market countries.

By comparing Sony memory sticks in the U.S. and iPod Nanos in the U.K. markets, we examine the consistency of our

³ We drop five transactions from a seller in India from the data set because of the small sample size.

Table 2
List of independent variables.

Variable name	Explanation
<i>AUC</i> ^a	Dummy variable for price format: auction (base level: direct purchase), =1 if the transaction has auction price format, 0 otherwise
<i>mBID</i>	Minimum bidding amount (only applies to <i>AUC</i>)
<i>nBIDS</i>	Total number of bids submitted (only applies to <i>AUC</i>)
<i>DURA</i>	Auction duration (only applies to <i>AUC</i>)
<i>SellerXX and BuyerXX</i>	Dummy variables for seller and buyer origins, respectively. =1 if the seller in the transaction has origin <i>XX</i> , 0 otherwise <i>XX</i> = AU for Australia <i>XX</i> = CA for Canada <i>XX</i> = CN for China <i>XX</i> = HK for Hong Kong <i>XX</i> = SG for Singapore <i>XX</i> = SP for Spain <i>XX</i> = UK for United Kingdom <i>XX</i> = US for United States The based level of <i>SellerXX</i> is the US; the base level of <i>BuyerXX</i> is “Other Countries”
<i>SellerFB</i>	Seller’s total feedback score; this variable measures the seller’s experience
<i>SellerPos</i>	Seller’s percent of positive ratings; this variable measures the level of risk in each transaction. That is, the perceived transaction risk should be seller specific, such that the higher percentage of positive feedbacks a seller receives, the lower the risk there is in the transaction
<i>BuyerFB</i>	Buyer’s total feedback score; this variable measures the buyer’s experience
<i>bsSame</i>	Dummy variable for whether the buyer and the seller have the same country-of-origin
<i>Gold</i>	Dummy variable for WoW gold strategy, =1 if the strategy is explicitly described as a “gold” strategy
<i>Gen1, Gen2, Gen3</i>	Dummy variable for the generation of iPod Nano: 1st or 2nd = 1 if the product is 1st or 2nd generation iPod Nano, 0 otherwise. (base: 3rd generation)
<i>GB1, GB2, GB4</i>	Dummy variable for SONY memory stick or iPod Nano capacity: 1, 2, 4 GB, = 1 if the capacity of the product is 1, 2, or 4 gigabytes, 0 otherwise (base level: 2 GB for SONY memory sticks, 8 GB for iPod Nano)

^a We drop the subscript *i* in this table to increase readability.

conclusions across different countries and with different monetary values. Products or services of a digital nature also enable us to confirm the robustness of our findings related to tangible products, such as the memory sticks or iPod Nanos. By analyzing their transaction prices, we can determine whether price dispersion persists without addressing physical shipping or delays in delivery due to the sellers’ COOs.

The prices vary significantly for sellers with different COOs (Table 1). For example, sellers of four-gigabyte Sony memory sticks from the United States sell for an average price (including product price and shipping cost) of \$42.51, higher than their counterparts from China (\$38.41) or Hong Kong (\$39.15). Canadian sellers’ average price for the same product (\$51.44), however, is higher. Therefore, the observed price dispersion is not fully consistent with the home-country effect (e.g., Canadians prefer products from Canada, while Americans prefer products from the United States) observed by Gürhan-Canli and Maheswaran (2000).

Empirical analysis

The existence of price dispersion for homogenous goods across countries leads us to consider whether such the seller COO effect on product prices persists after we account for factors that may vary across different transactions.

A major factor that we need to control for is trading risk. Buyers may take more risk by purchasing from a foreign retailer, but the level of risk can be controlled for by noting the eBay

seller’s feedback score. As a measure of reputation, we use the feedback score as a proxy that indicates the level of risk and the reliability or truthfulness of each retailer in each transaction (e.g., Melnik and Alm 2002; Park and Bradlow 2005). That is, we quantify the level of risk and control for it to tease out the pure price premium that results from the retailers’ COOs. As our reviews of economic and behavioral theories suggest, such premiums likely indicate a COO-based equity effect.

Following the tradition of price dispersion literature (e.g., Milyo and Waldfogel 1999; Sorensen 2000), we use transaction prices (including product price and shipping costs)⁴ as the dependent variable. The other available information, which serves as independent variables, can be categorized as product information (e.g., capacity for Sony memory sticks or iPod Nano), auction variables (e.g., price format,⁵ minimum bidding amount, number of bidders), seller information (e.g., seller countries, feedback ratings), and buyer information (e.g., buyer countries, feedback ratings). We provide a list of the variable definitions in Table 2.

⁴ We conduct the same analyses using product price alone (i.e., excluding shipping costs) as the dependent variable. The results do not change substantively.

⁵ eBay’s products usually sell through three price formats: pure auctions, buy-it-now auctions (i.e., allowing the bidder to end an auction prematurely at a fixed price), and fixed price.

Table 3
Study results.

Variable	Estimate			
	SONY memory sticks (Study 1)	Apple iPod Nano (United Kingdom) (Study 2)	World of Warcraft gold strategy (Study 3)	Phone unlocking service (Study 3)
Intercept	-10.87 (6.61)	30.02 (8.68)**	-45.23** (2.06)	-1.19 (8.80)
AUC	-10.06 (0.94)**	-14.18 (3.11)**	-8.21 (1.07)**	-0.17 (3.00)
mBID	0.24 (0.03)**	0.12 (0.04)**	-#	-#
nBIDS	0.33 (0.07)**	0.83 (0.14)**	0.35 (0.52)	-#
DURA	0.76 (0.13)**	0.55 (0.25)**	0.10 (0.05)**	0.72 (0.26)**
SellerFB	-3.12E-06 (1.48E-05)	8.02E-5 (4.57E-4)	3.90E-4** (1.13E-4)	8.69E-4** (1.86E-4)
SellerPos	0.38 (0.07)**	-0.06 (0.39)	0.62 (0.02)**	0.04 (0.09)
Gen1	-	-5.21 (2.27)**	-	-
Gen2	-	-0.15 (1.98)	-	-
GB1	-	-66.52 (8.73)**	-	-
GB2	-	-28.60 (2.16)**	-	-
GB4	14.84 (0.61)**	-19.71 (1.88)**	-	-
GB8	58.38 (0.93)**	-	-	-
Gold	-	-	-8.81 (0.77)**	-
BuyerFB	1.87E-5 (5.28E-4)	4.34E-3** (1.87E-3)	-2.92E-4 (4.19E-4)	0.02 (0.01)
BuyerAU	5.33 (1.06)**	-	-	-
BuyerCA	3.41 (1.28)**	-	-	-
BuyerSP	5.08 (1.85)**	-	-	-
BuyerUK	-	2.16 (2.24)	-	-
BuyerUS	0.64 (0.79)	-	-	-
bsSame	-0.52 (1.09)	-	-	-
SellerAU	-	-	-1.62 (0.85)**	-5.71 (1.75)**
SellerCA	-0.13 (2.74)	-13.36 (3.01)**	-4.52 (0.50)**	3.04 (1.11)**
SellerCN	-5.02 (0.92)**	-	-	-
SellerHK	-3.27 (1.08)**	-7.28 (1.48)**	-	-
SellerSG	-	-7.81 (2.54)**	-	-
SellerUK	-9.10 (1.62)**	-9.74 (2.22)**	-3.72 (0.60)**	-5.84 (1.46)**
N	608	360	480	119
Pseudo-R ²	0.91	0.61	0.48	0.57

Notes: Dependent variable: transaction price Y (US dollars for Studies 1 and 3, Great Britain pounds for Study 2). Standard deviations are in parentheses.

** Significant at $p = .05$, indicating the interval between the 2.5 percent and 97.5 percent percentile of the posterior estimates does not cover 0.

Dropped from analysis because of singularity.

Study 1: Sony memory sticks

We propose a random-effects model and estimate it using a Bayesian method. This approach offers three advantages over a frequentist approach (e.g., ordinary least squares). First, it allows us to control for the remaining heterogeneity in retailers' COO due to unobserved factors. Second, the Bayesian method alleviates the missing data problem in estimation. For example, if the buyer's country and feedback information is missing, we can set prior distributions for the variables with missing values (*BuyerAU*, *BuyerCA*, *BuyerSP*, *BuyerUS*, and *bsSame*) in the Bayesian approach without losing observations. Third, the distribution form of the parameter estimates captures uncertainty, such as that due to small sample size.

In the Bayesian framework, the price of a transaction i , Y_i , follows a normal distribution with mean μ_i and common variance σ^2 :

$$Y_i \sim N(\mu_i, \sigma^2),$$

and the mean μ_i is a linear function of the independent variables:

$$\begin{aligned} \mu_i = & \beta_0 + \beta_1 AUC_i + \beta_2 mBID_i I_i(AUC) \\ & + \beta_3 nBIDS_i I_i(AUC) + \beta_4 DURA_i I_i(AUC) \\ & + \beta_5 SellerFB_i + \beta_6 SellerPos_i + \beta_7 GB2_i + \beta_8 GB4_i \\ & + \beta_9 BuyerFB_i + \beta_{10} BuyerAU_i + \beta_{11} BuyerCA_i \\ & + \beta_{12} BuyerSP_i + \beta_{13} BuyerUS_i + \beta_{14} bsSame_i \\ & + \alpha_{i1} SellerCA + \alpha_{i2} SellerCN_i + \alpha_{i3} SellerHK_i \\ & + \alpha_{i4} SellerUK_i \end{aligned} \quad (1)$$

where $I_i(AUC)$ ($=AUC_i$) is an indicator variable for transaction i with an auction price format (vs. fixed price). In addition, β_k ($k=0, 1, \dots, 14$) are uninformative Normal distribution priors $N(0, 0.01)$. Note that α_{ij} ($\forall i$, and $j=1, 2, 3, 4$) are transaction specific and allow for retailer country-specific unobserved heterogeneity. We specify a random effects model such that $\alpha_{ij} \sim N(\bar{\alpha}_j, \sigma_{\alpha_j}^2)$ and assign uninformative priors to $\bar{\alpha}_j$ and $\sigma_{\alpha_j}^2$, such that $\bar{\alpha}_j \sim N(0, 0.01)$, and $\sigma_{\alpha_j}^2 \sim \text{inv-gamma}(0.01, 0.01)$.

Of the 25,000 total draws we obtain from a Gibbs sampler, the first 20,000 serve as burn-ins, and the posterior estimates are based on the last 5,000 draws. We use the 95 percent posterior confidence interval to judge the statistical significance and deem a variable significant at $p = .05$ if the interval between the 2.5 percent and 97.5 percent percentile of the posterior estimates does not cover 0. We also report the pseudo- R^2 , which captures the percentage of variance captured by the nonrandom component of the model.

The posterior mean and standard deviations of the coefficients ($\beta_k, k = 0, 1, \dots, 14$ and $\bar{\alpha}_j, j = 1, 2, 3, 4$) appear in Table 3. The result demonstrates a very strong sellers' COO effect. Compared with sellers from the United States as the base level, the transaction prices for sellers from China (mean = -5.02 , $p < .05$), Hong Kong (mean = -3.27 , $p < .05$), and the United Kingdom (mean = -9.10 , $p < .05$) are significantly lower. The regression result also indicates that such price dispersion is not caused by a home-country effect, because the parameter for *bsSame* is statistically insignificant. All else being equal, sellers from China or Hong Kong on average earn roughly \$5 and \$3 less than U.S. sellers, respectively, or an almost 10 percent price discount. The unobserved heterogeneity measure in the seller's COO differs across countries. The random variance for *SellerCA*, *SellerCN*, *SellerHK*, and *SellerUK* are 11.46, 0.17, 0.81, and 0.74, respectively. These estimates reflect the additional COO-specific variances that are not captured by the model (including the overall variance σ^2). The result therefore suggests high unobserved heterogeneity in pricing among the sellers from Canada. Variations in unobserved heterogeneity occur in the other product categories as well.

With regard to the control variables, we find an interesting result, in that U.S. buyers ($N = 302$) tend to be able to buy products at lower prices than do buyers from Canada, Spain, and Australia. However, the price paid does not statistically differ from the baseline price paid by "other countries" (i.e., 26 countries that collectively account for 210 of the 608 total samples). To draw conclusions about buyers' COO effects, we would need to measure the seller's willingness to sell to buyers from different countries. But in eBay's market structure, buyers choose sellers, not vice versa. In no scenario can a seller decide the price at which to sell to a buyer from a specific country. Therefore, the control variable results for the buyer prices merely reflect price variations among buyers.⁶

The sellers' percentage of positive ratings (*SellerPos*), which measures the transaction-level risk and reliability of the sellers, is significant (mean = 0.38 , $p < .05$); that is, better feedback leads to price premiums for the seller. Every 10 percent increase in positive ratings leads to an additional \$3.80 as a price premium. The other seller characteristic, seller's total feedback (*sellerFB*), does not have a significant effect on the final transaction price. On the buyer side, buyers from Australia, Canada, and Spain pay more than others, but buyer feedback ratings do not influence the purchase price significantly. In addition, the auction design variables, such as minimum bidding amount (*mBID*), number of

bids (*nBIDS*), and transaction duration (*DURA*), all have positive and significant influences on the ultimate transaction price, consistent with previous research on Internet auctions (e.g., Park and Bradlow 2005). Compared with direct purchases, an auction pricing format (*AUC*) leads to lower prices. Finally, we find that higher capacity (4 and 8 gigabytes) models attain significantly higher prices.

The cost structure of certain Asian countries or regions may differ from that of North America⁷; as a result, a retailer may set a lower asking price, which would lead to a lower transaction price. To explore this possibility, we use gross domestic product (GDP) as a general measure of the cost structure for the seller's COO. According to the Central Intelligence Agency's World Factbook (<http://www.cia.gov/>), in 2007, the GDP per capita (or purchasing power parity, PPP) of the seller countries are as follows: Canada \$38,400; China \$5,300; Hong Kong \$42,000; United Kingdom \$35,100; and United States \$45,800. The correlation between the GDP and our estimate of the COO effect is not statistically significant ($0.38, p = .53$).⁸ The same statistically insignificant relationship between PPP and the COO premium also applies to the other three product categories we study. Thus, a cost structure based on the PPP or GDP cannot explain the COO price premium. Therefore, we do not find statistically significant results for Cordell's (1991) conclusions that the COO premium favors developed countries.

Study 2: iPod Nano

In Study 2, we confirm the robustness of the COO premium results from Study 1 with a different product and different market (iPod Nano at eBay United Kingdom). Study 2 also serves to assess whether shipping delays from a foreign country could interfere with the COO effects. The empirical analysis is similar to Study 1, with slightly different control variables.

We find significant COO discounts for Canada (mean = -13.36), Hong Kong (mean = -7.28), Singapore (mean = -7.81), and the United Kingdom (-9.74). Because U.S. sellers command the highest prices for iPod Nanos on eBay U.K., neither home-country nor shipping delays can explain the COO premium effect in Study 2. On the flipside, as a U.S. brand, the product's home location may explain the price premium for iPod Nano among U.S. sellers, but it cannot account for the results related to Sony memory sticks in Study 1. Therefore, the results of Studies 1 and 2 combine to indicate a COO price premium for the United States and discounts for all other locations, which cannot be explained by the home-country effect or shipping delays.

Among the control variables, the seller characteristics (*AUC*, *mBID*, *nBIDS*, and *DURA*) yield very similar results to those we

⁷ To determine if sellers have a different willingness to accept (WTA) because of different cost structures, we perform an ANOVA test of the mean of WTA (measured by minimum bid plus shipping cost specified by the seller) across countries. The test fails to reject the null hypotheses that the WTA is the same across countries. We thank an anonymous reviewer for this suggestion.

⁸ We cannot include GDP variables in our model because of collinearity with the seller country dummy variables.

⁶ We thank an anonymous reviewer for pointing out this issue.

find in Study 1. Because buyers on the eBay UK site are predominantly domestic (95 percent), we include only one dummy variable (*BuyerUK*) to control for buyer location, which turns out to be insignificant. An additional interesting finding shows that when we control for product capacity, the second and third generations of iPod Nanos sell for very similar prices ($Gen2 = -0.15$, not significant), which suggests that consumers are not willing to pay much more for an update of the iPod Nano between these generations.

Study 3: World of Warcraft gold strategy and phone unlocking service

To investigate the COO price premium we have identified, we conduct similar analyses of digital products/services sold on eBay's international marketplaces. Because such products or services can be delivered or fulfilled over the Internet, we can remove the potential confounding factors in COO price premiums due to different shipping times or delays in delivery. The analysis remains the same as that presented in Study 1, with slightly different product control variables. We drop the minimum bidding amount (*mBID*) and the number of bids (*nBIDS*) variables from the analysis, because their high correlation with auction pricing (*AUC*) could lead to singular independent variable matrices.

Consistent with Studies 1 and 2, we find significantly lower prices when the seller origins are not the United States (except Canada). For WoW gold strategies, sellers from Australia (mean = -1.62 , $p < .05$), Canada (mean = -4.52 , $p < .05$), and the United Kingdom (mean = -3.72 , $p < .05$) all experience significantly lower transaction prices. For phone unlocking services, the prices of sellers from Canada (mean = 3.04 , $p < .05$) are higher than those from the United States; however, sellers from Australia (mean = -5.71 , $p < .05$) and the United Kingdom (mean = -5.84 , $p < .05$) both have significantly lower prices.

Overall, the evidence from four product categories in different eBay markets strongly suggests a price premium for sellers of United States. A small variation in the relative COO premium rankings across product categories remains, consistent with previous literature (e.g., Nagashima 1970; Okechuku 1994; Roth and Romeo 1992) that indicates COO effects are product specific and vary across countries. Agarwal and Sikri (1996) also show that the transference of COO effects across product categories depends on the similarity between the products.

Conclusion

As a result of globalization during recent years, outsourcing of both tangible products and intangible services has made geographically separate countries more economically connected than ever before. It is not simply an option to embrace globalization and expand to a free international market these days; it is the option. From a government's or regulator's point of view, the position of causing a "COO discount" is problematic. Everything else being equal, these exporting countries are punished by their low COO equity.

However, the inefficiency caused by COO bias also poses an arbitrage opportunity for potential retailers in countries (or markets) that command a COO premium. Retailers in places with COO discounts should establish intermediaries that can provide the COO premium. With an intermediary incurring a cost below the price premium, the gain would result in profitable arbitraging. Furthermore, because the United States (and, to some extent, Canada) is the only country that enjoys a seller COO premium, it makes sense for vendors to use U.S. registered companies or retailers to sell products. For the iPod Nano study, selling as a U.S.-registered seller would increase the transaction price by an average of between 7.28 and 13.36 pounds (GBP), all else being equal. This significant increase in profit margin demands very little cost, at least in the market scenario provided by eBay.

We do not find strong evidence of a negative spillover effect from large-scale product recalls (Munoz 2007; Spencer and Casey 2007), which occurred not long before the data collection. In the eBay U.S. market, the transaction prices for Sony memory sticks for sellers from Hong Kong or China are not significantly lower than those from the United Kingdom, and in the eBay U.K. market, Asian sellers' prices are not lower than those of local sellers.

Similar to the notion of equity premiums in financial markets (Benartzi and Thaler 1995; Siegel and Thaler 1997), the retailer COO premium suggests bounded rationality in global trade. Overly risk-averse buyers hurt the company's bottom line. In many product categories, unlike toys or food, the intangible risk is very limited. Therefore, buyers must be discriminating about the actual kind and level of risk incurred, instead of allowing COO bias to influence their purchasing decisions or willingness to pay.

In this study, we examine only a limited number of product categories and countries. A more generalized methodology to assess the retailer COO premiums for less homogenous product categories (e.g., collectibles) would provide more insights into how global consumers perceive retailers from various countries. Additional studies that focus on cross-category retailer COO premium also could draw a more comprehensive map of such effects in international trade. Finally, it would be interesting to quantify the vendor COO effect empirically in organizational buying, because it may differ from the consumer buying scenario we investigate herein (Wagner, Ettenson, and Parrish 1989).

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