



## **Price Inefficiencies in Domain Name Markets: An Empirical Investigation**

**Alex Tajirian**

January 6, 2006

### **Abstract**

I first outline a statistical test for the existence of price differences for comparable domain names among the marketplaces. The test results suggest the existence of price inefficiencies across exchanges. The existence of price inefficiency suggests that, on average, one side of a transaction is at a disadvantage. Moreover, price inefficiency significantly dampens a market's transaction volume and liquidity. In conclusion, I outline some efficiency remedies for domain name markets.

### **Introduction**

A necessary condition for a market to be price efficient is the prevalence of the “law of one price,” i.e., the same asset should command the same price across exchanges.<sup>1</sup> In well functioning markets, differences in prices (net of transaction costs) of comparable assets across exchanges are arbitrated away almost instantaneously.<sup>2</sup>

Thus, if domain name markets are price efficient, comparable (with similar value-driving characteristics) domain names should command the same value irrespective of the exchange they are being sold on.<sup>3</sup>

---

<sup>1</sup> For other studies of online price discrepancies, see Alex Tajirian (2005), “[Multiple Viable Domain Name Marketplaces Can Co-exist](#),” DomainMart, pp.3-4.

<sup>2</sup> A riskless arbitrage is a process whereby a market participant simultaneously buys the asset on the cheap exchange and sells (short) the identical asset on the dear exchange. The process nets the participant the price difference and narrows down the dispersion.

<sup>3</sup> Another class of inefficiency occurs when there is divergence between an asset's market price and its fundamentals. For a summary of causes and implications of this class, see Alex Tajirian (2006), “[Market Price and Value Can Diverge](#),” DomainMart.

Price inefficiency is important not only in terms of the magnitude of current price dispersions, but, more importantly, the dampening effect it has on the size and liquidity of the market.<sup>4</sup> With an increase in price efficiency, the domain name market can expand exponentially.

### Test Description

Comparing the means and medians of domain name sale prices across exchanges is like comparing apples and oranges. To unify the measurement unit, the researcher needs to use a statistical test that can measure price differences, while holding constant other factors that impact value.

To test for the existence of price differences across domain name marketplaces, I use a tree-regression model of the form

$$\text{Price} = f(X_1, X_2, \dots, X_N, X_M) + e$$

where Price is the market value of a domain name,  $f(\cdot)$  is a nonlinear function that also allows interaction between the descriptors,  $X_i$  is the  $i^{\text{th}}$  descriptor of Price,  $X_M$  is a factor that represents the various domain name marketplaces/exchanges, and  $e$  is a random error term.

Thus, if the “law of one price” holds in domain name markets,  $X_M$  should not be significant, i.e.,  $X_M$  should not appear in the estimated tree.

An alternative statistical test would be to estimate a linear regression on the predictors with dummy variables for each of the exchanges. One can then test the statistical significance of the coefficients on the dummy variables. However, a tree regression has a number of advantages, as it allows for non-linearity and interaction between the descriptors without having to specify the exact functional form of the regression, and is more robust to the presence of outliers in the data.

### Data

Market price data is obtained from the following publicly available sources:

- a. Sales of .net, .org, .biz, .info, and .us at a price of at least \$1,000 during January 2004 and October 2005. The data is available at DNJournal.com.
- b. Sales of .com domain names at a price of at least \$10,000 during January 2004-October 2005. The data is available at DNJournal.com

---

<sup>4</sup> Based on publicly available sales numbers, we estimate the market size in 2004 for gTLDs, including .us, to be in excess of \$35 million.

- c. All AfterNIC sales of over \$1,000 between January 2004 and November 2005.

Data on the descriptors is compiled by first splitting each domain name into keywords. For each keyword, the following descriptors are used: the number of search results on Google; the average cost-per-click (CPC) and the volume of daily clicks from Google’s AdWords; and the search volume, the number of bids, the highest bid, and the number of bids from Yahoo’s Overture.com.<sup>5</sup> Thus, for each of the domain names, data was collected for all the descriptors.

In addition to the above keyword-based descriptors, we use the top-level domain extension. The exchange grouping factor,  $X_M$ , associates each domain name sold to one of the following exchanges: AfterNIC, eBay, eNOM, GreatDomains, Moniker, pool, Private Sale, Sedo, SnapNames, and Other.<sup>6</sup>

The domain names not included in the study are: hyphenated and non-ASCII domain names; domain names that correspond to keywords that Google’s AdWords does not allow public access, such as certain keywords related to medical and pharmaceutical terms; and domain names with seasonal demand keywords, such as Christmas and Halloween.

The resulting database has 1,079 sales records with the following summary information:

<b>Summary Statistics</b>	
Total Sample Market Value	\$28,694,000
Maximum	\$2,750,000
Average	\$26,593
Median	\$10,500
Minimum	\$1,000

<b>Extension</b>	<b>Number of Domain Names</b>
biz	79
com	582
info	229
net	98
org	41
us	50
<b>Total</b>	<b>1,079</b>

<sup>5</sup> In our appraisal model, we find that the number of links-in, the registration of a domain name under one of the gTLDs, and one of the ccTLDs add predictive power to the model.

<sup>6</sup> For an outline of the economics of multiple markets in the presence of network externalities, see Alex Tajirian (2005), “[Multiple Viable Domain Name Marketplaces Can Co-exist](#),” DomainMart.

<b>Exchange</b>	<b>Number of Domain Names</b>
AfterNIC	186
eBay	12
eNOM	23
Great Domains	42
Moniker	42
Pool	66
Private Sale	137
Sedo	383
SnapNames	123
Other	65

## 2. Results

The estimated tree resulted in 8 clusters<sup>7</sup> of comparable domain names. The exchange factor  $X_M$  was significant only in four of the clusters. The test was unable to find significant price differences across the exchanges in the low-price cluster (with an average market price of \$4,941) or with the highest cluster (with an average price of \$693,800). For the middle price range, the estimated tree divided the exchange factor into two groups: (1) AfterNIC, eNOM, GreatDomains, other, pool, Sedo, and SnapNames (with an average group price of \$26,560) and (2) eBay, Moniker, and Private Sale (with an average price of \$70,040), i.e., an average premium of 264 percent.

The magnitude of the difference between the two exchange clusters suggests that transaction costs alone cannot explain the difference.

The results, however, do not indicate whether any of these markets is under- or overpricing the domain names. Nevertheless, there is evidence that some domain names were recently sold at a discount.<sup>8</sup>

### Remedies

The results suggest that the industry needs to work on making the market more price efficient and, in general, more informationally efficient. Increasing market efficiency is a win-win strategy. Buyers and sellers feel more comfortable that their transactions are being carried out in a fair market. Thus, buyers are more willing to acquire domain names, for their various value-adding roles, and sellers more likely to offer their domain

<sup>7</sup> The clusters can be subdivided into smaller groups. However, increasing the number of clusters should have no effect on the results.

<sup>8</sup> There is some evidence of under-valuation in the sale of large portfolios of domain names. See Alex Tajirian (2005), "[Domain Names Are Cheap!](#)," DomainMart.

names for sale. An increase in the volume of exchange, in turn, increases the profits of the exchanges.

Measures to make domain name markets more efficient include:

- More transparency in sales information:
  - Make data publicly available without “window dressing.” [AfterNIC.com](#) is the only marketplace that has been providing data for all their sales. Moreover, DNJournal.com continues to provide valuable price information. There is no good reason for the other exchanges not to make more data publicly available, as they need not reveal the domain name for clients who wish to keep the exchange private. Instead, a domain name can be represented in terms of its factor characteristics.
  - In addition to providing sales data, marketplaces should make public a range of appraised values for their exchange listed domain names, at least for those above a certain price level. This will reduce for sale listings that are not serious<sup>9</sup> and increase user confidence in the value of appraisals. The appraised values provide an uninformed buyer an approximate market value for the domain names they desire.
- Educate buyers and sellers about:
  - Value creating roles of domain names.<sup>10</sup>
  - The value to buyers and sellers of obtaining appraisals and whether the appraisal is based on liquidation value, market value of comparables, or market value based on fundamentals. Even naïve appraisals are useful.<sup>11</sup>

Domain name forums and discussion websites provide a tremendous force in the direction of market efficiency. Moreover, the two major conferences ([Domain Roundtable](#) and [TRAFFIC](#)) continue to provide valuable information to industry insiders and users of various domain name services.

---

<sup>9</sup> Another option to reduce non-serious listings is to charge a listing fee. The fee option, adopted only by AfterNIC, has not seemed to have much impact on listings at other exchanges. Ellison et al. speculate that a major reason that Amazon and Yahoo! auction sites struggled is that they tried to compete by not charging listing fees. Their pricing structure encouraged listing of products by nonserious sellers with high reserve prices. On the other hand, buyers prefer to visit sites with reputable sellers, high quality goods, and reasonable prices. Thus, markets with the wrong menu of prices are unable to create a critical mass and may survive only with their existing captive audience, if any. See Ellison Glenn, Drew Fudenberg, and Markus Mobius, “Competing Auctions,” *Journal of European Economic Association*, 2, 1, 30-66. However, Cariglist.com is a successful free (save job postings) classified service. Thus, the listing fee seems to be a necessary, but not a sufficient success requirement.

<sup>10</sup> See Alex Tajirian (2005), “[Roles of Corporate Domain Names](#),” DomainMart.

<sup>11</sup> Naïve from the perspective of the requester and not necessarily a reflection of the appraisers skills. See Alex Tajirian (2005), “[Value in Naïve Appraisal Advice](#),” DomainMart.