

Information and price dispersion on net

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Abstract

Internet firms charge a wide range of prices for nearly homogeneous products and price dispersion vary significantly across markets. This study is an attempt to explain different levels of price dispersion across online product markets. We found price dispersion vary systematically with the number of firms offering the product and the markets at which consumers are more informed have smaller price dispersion. Moreover prices charged by individual retailers decline as the number of retailers selling the same product rise.

Keywords: Information, Online Markets, Price Dispersion, Search Costs

JEL codes: L11, L81, D83.

1. Introduction

In a world at which perfect information exists, prices will be driven to marginal cost and only one price will exist for homogeneous goods¹. As we all know, in real world information is imperfect, and often not cheap. However, increasingly interconnected world has dramatically lowered the marginal cost of acquiring information. Thus, many have suggested that internet, by reducing search costs, will move the world closer to the information ideal where rents are eliminated by increased competition and

¹ Other assumptions of perfect markets have to be satisfied too.

prices are forced to marginal cost. (Bakos, 1997; Morton et al., 2001). The Economist articulated this optimism as

'The explosive growth of the Internet promises a new age of perfectly competitive markets. With perfect information about prices and products at their fingertips, consumers can quickly and easily find the best deals. In this brave new world, retailers' profit margins will be competed away, as they are all forced to price at cost.' The Economist, November 20, 1999, p. 112.

This optimism was due to the prediction by the search theory; the more accurate information that consumers have concerning homogeneous goods, the lower the prices they will pay. Forty years ago as the founder of search theory, Stigler (1961) showed that optimizing consumer with imperfect information will search for additional price information and will move to the point where marginal search benefits equal marginal search costs. Since internet lowers search costs, optimizing individuals are expected to increase search effort and in a dynamic and competitive adjustment, the price dispersion is expected to go down at least at markets which internet plays a significant role.

Stigler's work has been extended by Salop and Stiglitz (1977) and many others. According to the most of these models extensive search reduces prices since it helps perfect the market by increasing consumer knowledge. Salop and Stiglitz (1977) used the externality to explain the effect of search on the overall price level of the market. All consumers pay a lower price for a good when a large proportion of consumers engage in search. The result is a market environment in which demand curve is more elastic, price to marginal cost margins diminish, seller rents are reduced, and consumer surplus is raised. In other words, because the online medium lowers search costs by making price information more available to buyers, prices on internet should be lower than the prices in conventional markets.²

However, numerous empirical studies have found conflicting accounts on both predictions of the search theory. One of the first studies of price comparison of internet markets with conventional markets was made by Lee. (1998) He found the internet prices are higher than conventional market prices. Similarly Bailey (1998) found the prices of homogenous products like books, and CDs to be higher on the internet. Immaturity of the internet was thought to be responsible for these perverse findings. However Lehman (2003) found the prices of travel packages to be higher on the internet using data from 2000-2001 season. By this time internet markets should have been matured. Many have suggested product branding, and price discrimination

² Not all search theory models have this conclusion.

based on data mining were responsible for the unexpected results³. Hanrahan (1999) reported that BizRate, a consumer tracking firm, found the level and quality of service on Net is more important than price for consumers who shop on internet. The implication is that internet consumers shop at online retailers because of its convenience, not for lower prices. On the other hand in similar studies Brynjolfsson and Smith (2000) and Harris and Abate (2000), unlike Lee (1998) and Bailey (1998), found that the net prices are lower than conventional outlets.

2. Price dispersion

Price dispersion refers to the distribution of prices of a product or service with the same characteristics across sellers. Stigler was the first one to suggest the price dispersion as a result of incomplete information. Salop and Stiglitz (1982) and Carlson and McAfee (1983) showed price dispersion is an equilibrium outcome when individuals have different search costs. However, if markets on internet are highly competitive, one might expect that price dispersion is at minimum level in these markets as buyers have relatively low search costs.

Many search theory models predict that as the number of stores offering the same product rises, price dispersion diminishes. At the limit with free entry, prices are driven to the full-information, competitive price under certain plausible assumptions. Increasing the number of stores causes a rise in the elasticity of demand each store faces. So the stores have incentive to lower their prices; as a result, spread in prices is likely to shrink. This prediction motivates us to make the following hypotheses:

H1: As the number of retailers selling the same product rises, the higher competition will cause prices to vary less.

H2: The number of the retailers which sell the product is expected to lower the overall price level on the market.

In order to understand this point, consider a utility maximizing consumer is trying to purchase a book. She is going to continue to look for cheaper price till the expected marginal benefit of search (in terms of lower price) equals to the expected marginal cost of search (in terms of time and effort). If the book which our consumer is planning to buy is sold by many retailers, the expected marginal benefit of search is higher. However if the book is sold at only few retailers, most probably the search will yield zero

³ There are many other studies which found significant price dispersion online including Clay et al. (2001), and Smith (2001), Clemons et al. (2002) Pan et al. (2001), Ancarani and Shankar (2004).

benefit and so the expected benefit of the search is lower. Thus our consumer is going to search less. On the contrary if more stores sell the product, expected search benefit is higher as a result consumers will have incentive to make more search which would reduce the price dispersion.

Baye, Morgan and Scholten (2004) found the level of price dispersion is greater when small numbers of firms list prices than when large numbers do. According to their data for products where only two firms list prices, the gap (a variable to measure price dispersion) between their prices averages 23 per cent. In contrast, for products where 17 firms list prices, the gap between the two lowest prices falls to about 3.5 per cent. In this study we are going to follow a similar methodology to analyze the effects of number of retailers offering the good on the level of price dispersion. However, unlike theirs the stores and products in our sample are fixed. This is going to allow us to control the market structure effects more efficiently. We are also going to analyze the effect of number of stores selling the good on the average price level using the same sample.

Moreover, heterogeneity of the search cost is also a significant issue for internet markets. Some consumers, especially consumers of technology items, are sophisticated users of the Internet, they know exactly which product they want and quickly and efficiently search for the lowest price. In contrast, many other customers don't know how to search for low price efficiently, and put a very high value on their time (the customers with high search costs). If enough consumers have high search costs, it pays for some firms to charge a relatively high price and sell to only their portion of uninformed customers who choose between retailers randomly. Other retailers charge a lower price and sell to both informed and uninformed consumers. At the markets which there are both informed and uninformed consumers, we expect price dispersion to be higher. The empirical account on this prediction is also mixed. Clay and et al (2001) found internet retailers do not have lower price dispersion than physical outlets for 107 books in their dataset. Lehmann (2003) found travel agencies using internet medium have higher price dispersion for low price travel packages and lower price dispersion for more expensive travel packages than traditional suppliers. We would like to test these predictions with our dataset. Thus our last hypothesis:

H3: Price dispersion of technology items is lower than the price dispersion of other product categories.

3. Data and methodology

In order to analyze the effects of the number of retailers selling the same item on the price dispersion level, during the week of May 1, 2006, we

collected the data on prices of 80 items on major online retailers in Turkey.⁴ The price information is collected for the items on 8 different categories; Bestseller books, books recommended by Ministry of National Education, bestseller music CD's, bestseller movie DVD's, laptop computers, digital cameras, mobile phones and computer memory modules. We collected the price information of 10 most popular goods in each category. For book, music and movie categories we choose best-seller products and for the others we tried to choose most popular products based on our own observations.

In selecting online retailers we used Google Turkey's shopping directory. The online retailers in the sample include both general stores which sell a variety of products and specialized stores which sell only a narrow set of items such as music retailers or technology stores⁵. For each category we choose a number of retailers⁶ and presumed these retailers represent the whole internet retail market in Turkey. So if only a few of these retailers sell a product, we take it as an indication of relatively small number of retailers selling in the whole market. For example, 20 retailers are chosen for the digital camera market. Each of 10 models of digital camera is looked for in these retailers. If a given model is sold by many of these retailers, it was taken as the availability of the product by many retailers. We repeated the same procedure for all 8 categories. The price information is collected manually. For each transaction we opened up an account to purchase the products. We have not actually purchased the goods, but continued on transaction until the last step which is the confirmation of the purchase. Alternatively we could have used web spiders. However, we have realized that many online stores do not reveal their "full prices". Some prices include taxes some do not, some include shipping and handling fees some do not, some include processing fees some do not. Since internet retailing is relatively new in Turkey, these non-standard practices seem to be more common than in other developed countries. So we choose to collect the pricing data manually. Not using web spiders allowed us also to keep the set

⁴ Internet penetration rate is relatively low in Turkey. According to a survey conducted by official government statistics institution in Turkey (DIE) 14% of the population accessed internet in the last three months. Internet commerce is not very widespread either. Only 6% of the internet users have used to make purchase goods or services from the internet retailers. Security concerns and preference of touching and seeing the actual products were the main reasons of low level of internet purchase.

⁵ None of retailers in our sample has brick and mortar type of stores.

⁶ We choose on mobile phone, laptop computer, computer memory, digital camera, bestseller books, recommended books, music CD, movie DVD markets 19,20,19,20,12,12,8,8 retailers; respectively. The retailers in our dataset are most probably relatively biggest online retailers since we choose the retailers ranking high on Google Turkey shopping directory. It is probable that non inclusion of smaller retailers may over or understate price dispersion variable. However our focus is not on the size of price dispersion but on influence of product availability of the same product at different retailers on price dispersion. Thus non inclusion of retailers should not bias our results.

of retailers fixed which avoids the potential problems due to changes in retailer characteristics. Most general stores are in the sample set of retailers in many categories. In other words, for most general stores the data is collected for all 80 items, but for many other general stores and almost all specialized stores the price information is collected only for one or two categories. However for the 10 items in the same category, the set of retailers are kept the same while for different categories the set naturally varies. Table 1 shows the number of retailers at which the price information is collected in each category.

Baye et al (2004) used somewhat different methodology. They used a paid shopping directory (shopper.com) to collect the price information for 8 months, thus their dataset is considerably bigger than ours. However in their dataset neither the products nor the retailers are fixed. So adjustments are required to compensate variations at the market structure with this time period. We believe by fixing the products and retailers we are going to be able analyze the effect of # of rival stores on the price dispersion and price levels at the expense of lower sample size. Moreover, their data almost exclusively include technology items, by including non-tech items like music CD's, and books, we had the opportunity to test the effect of presumably different consumer groups on price dispersion.

Table 1
Number of Retailers Included in the Dataset

Category	General Stores	Specialized Stores	Total
Mobile Phone	19	10	19
Laptop Computer	20	14	20
Computer Memory	19	15	19
Digital Camera	20	10	20
Bestseller Books	12	6	12
Recommended Books	12	6	12
Music CD	8	-	8
Movie DVD	8	-	8

4. Results and discussion

The prices in our sample range between 2.5 \$ to 3518 \$ with the average of 417 \$. The maximum coefficient of variation⁷ occurs on music CD category with 56% price variation. The minimum mean price dispersion is in mobile phone market at which prices vary only 2% on average. Whole sample has a 9.6 % price variation. Table 2 gives the details about the dataset.

⁷ The ratio of standard deviation of the prices of the same product sold at different retailers on mean price of the product..

Table 3 lists the summary statistics of the retailers. Most general stores had price information for more than 40 out of 80 items in our sample. The relative price is calculated by subtracting average price from the list price on the particular retailer and dividing by the mean price in the whole sample for this item. The unweighted average of the relative prices on all items is given on the second column. According to that, Kitapyurdu is the cheapest retailer which has on average 9% lower prices than market mean price and 9sekiz is the most expensive store with 24 % higher prices than market average. Other columns rank the stores in each category based on the relative prices.

4.1. Price Dispersion

We hypothesized, H1, as the number of retailers selling the same product rises, higher competition will cause prices to vary less. The estimation presented on Table 4 tests this hypothesis. The coefficient of variation⁸ is regressed on the ratio of retailers which sells the product and dummy variables for categories and a dummy variable for technology items⁹. As the models suggested; the higher the ratio of stores which sell the commodity, the lower the price dispersion. A 10% increase in the percentage of retailers selling the product reduces price dispersion by 22%.

The second prediction of the Salop and Stiglitz model is also confirmed. We hypothesized, H3, the consumers of the technology items are potentially more informed on use of internet thus have lower search costs. Moreover, more knowledgeable individuals might have better understanding of the credit card purchasing system on the net and smaller worries about giving the card information on the smaller retailers¹⁰. Both of these might cause the technology markets to become more competitive than non-tech markets such as books. A significant and negative coefficient for technology markets confirms this prediction. According to our results technology items 2.5% less price dispersion than non-technology category products. The category with the highest price dispersion is DVD movies category. The buyers of DVDs could be on average wealthier than buyers of other categories. Thus their time is more valuable and they might be searching less for lower prices. So some online retailers could be better off by selling DVDs at substantially higher prices than their competitors.

⁸ Unlike Baye *et al.* (2004) we used more traditional measure of price dispersion coefficient of variation rather than price gap. Sorensen (2000) and Carlson-Pescatrice (1980) used coefficient of variation.

⁹ Technology categories are laptop, mobile phone, digital camera and computer memory.

¹⁰ Many might argue just the opposite of that, more informed consumers are less willing to give credit card information online. However, informed consumers are also more knowledgeable on security measures taken and tools offered by financial institutions such as one-time use credit card numbers.

Table 4
Price Dispersion

Dependent variable: log of coefficient of variation		
	Coefficient	t-stat
Store ratio (# of retailers selling the item divided by # of retailers in the sample for given category)	-2.15***	-2.98
Technology	-0.05***	-3.64
Bestseller book	0.03**	2.46
Books recommended by MOE	0.11***	3.52
Movie DVD	0.16***	2.66
Constant	0.15***	3.29
Number of Obs:	80	
R ²	0.42	

** Significant at 5%

*** Significant at 1%

Reported t-statistics are estimated with OLS and corrected for heteroskedasticity.

Table 5
Prices

Dependent variable: log of price on each store		
	Coefficient	t-stat
Average price on rival stores	9 * e-4***	17.58
Store ratio (# of retailers selling the item divided by # of retailers in the sample for given category)	-1.87***	-8.89
# of items listed (Size of the retailer)	-0.01***	-6.46
TV commercials	0.65***	4.90
Free shipping	1.81***	18.04
Picture of the product	0.29**	2.10
Detailed information of the product	-0.49***	-2.55
Constant	5.28***	18.66
Number of Obs:	805	
R ²	0.79	

** Significant at 5%

*** Significant at 1%

Reported t-statistics are estimated with OLS and corrected for heteroskedasticity.

4.2. Price Level

The number of the retailers which sell the product is expected to lower the overall price level on the market.¹¹ The ability of retailers to charge premiums over the marginal cost declines when the same product is offered by high number of retailers. In order to test this hypothesis, H2, price charged by individual retailers is regressed on the average price on the rival stores¹², the ratio of stores at which this product is available, some proxy for the size of the retailer, the several dummies for store characteristics such as whether the store provides in-depth information and the picture of the product. However, there is a potential endogeneity problem between average price on rival stores and dependent variable, price on the specific retailer. Since each retailer determines their prices simultaneously, the interaction between dependent and independent variables works in both ways. The alternative would be to use manufacturers, suggested retail price as a proxy for marginal cost of product to the retailers. However we don't have this data. Considering these markets are relatively competitive and individual retailers don't have substantial market power, the simultaneity problem is probably small. Nevertheless this problem should be kept in mind when interpreting the results.¹³ Our estimations confirm this prediction, the data suggests when the item is sold on many retailers the price premium is lower for the suppliers. The effect is similar to the effect of number of substitutes on the demand estimations. The store ratio coefficient is negative and statistically significant. At the mean, rising store ratio from 70% to 80%, the individual store prices decline from 417 \$ to 381 \$.

The average price of the item on rival retailers has the expected positive and statistically significant coefficient. In fact 60 percent of the variation on price levels is explained by the average price level on the rival stores.

The proxy for the size of the retailer (size) is negative and statistically significant. The implication is that the bigger stores have lower prices. This might be due to the benefit of increasing returns to scale/scope. Although we

¹¹ Varian (1980) and Pereira (2004) show that under some conditions number of sellers actually raises the average price.

¹² Ideally we would use marginal cost of each product or manufacturers suggested retail price. However these are not available to us. We hypothesized rivals' price levels are good proxies for marginal cost of products. In any case we are interested in the effect of number of rival stores offering the product on the price level.

¹³ We also estimated the model without the average rival price independent variable as suggested by a referee. The results are very similar to the results presented here, relevant coefficients had the same signs and significance. However in this case since there is a wide variation between product prices (3518\$ max, 3\$min) the explaining power of the model is relatively small. Moreover omitted variable bias is probably a bigger problem in the model without average rival price variable.

presume increasing returns to scale/scope is more of an issue on traditional markets, we found that it is also significant on online retailers.

Another interesting result is the effect of offering free shipping. According to our estimation the retailers offering free shipping charge higher prices than their rivals¹⁴. It is presumed that stores offer high quality services are more inclined to offer free shipping than others. We might be measuring the service premium with this free shipping dummy. Two retailers in our sample use extensive TV commercials¹⁵. We wanted to see the effect of commercials on the price levels. IO literature suggests that the reputable suppliers will maintain a certain quality level on transactions and in return charge price premium. Running commercials is one of the main methods to assure customers brand name is important for the supplier. In other words, suppliers which spend significant advertisement investments are going to have more to lose in terms of brand name if they do not maintain the level of quality on relations with customers. The regression results have the similar interpretation. The retailers with TV commercials have higher prices than their rivals.

Lastly we wanted to see the effect of price dispersion on the average prices. On previous models we established as the ratio of retailers selling the product rises, the price dispersion goes down. In addition to that, as the ratio of retailers selling the product rises, the individual retailers' prices go down as well. Thus we expect a negative relationship between price dispersion measured by coefficient of variation and average price in the market. In order to test this proposition we created a variable called *product-price*. The average price of all products in a category is subtracted from the mean price of each product at the same category and divided by itself. Simple OLS regression of *product-price* on price dispersion measured by coefficient of variation concludes that there is positive relationship between average price level charged by the online retailers and price dispersion. Increasing price dispersion by 1% increases the average price level measured by the *product-price* variable by 2.5%.¹⁶

5. Conclusions

Our analysis indicates that the levels of price dispersion on online retailers operating in Turkey vary systematically with the number of firms offering the product. Price dispersion measured with coefficient of variation is higher for the products sold at relatively small number of stores. This conclusion is inline with the predictions of the search theory and previous empirical studies.

¹⁴ Our price data includes the shipping and other transaction costs, thus this result is not just shifting shipping costs on product prices.

¹⁵ Bidolu.com and estore.com.tr

¹⁶ Similar to previous model, this estimation is potentially susceptible to simultaneity problem.

In the markets at which consumers are more informed about the price distribution the price dispersion is expected to be lower. If we assume the technology market customers have lower search costs than other market customers, we should expect smaller variation in the prices of technology items. This proposal is confirmed by our estimations as well.

Following Salop and Stiglitz, extensive search by many customers should create positive externalities to the non-searching customers as lower overall price level. We found support for this proposal in this study. Prices at individual stores are lower when the number of rival stores selling the same product is higher.

Along with other studies, our analysis concludes that there is significant price dispersion at online stores. The law of one price does not hold. However, our data does not allow us to choose between service premium or tourists and natives models to explain the price dispersion. Moreover, since we do not know the actual sale numbers of stores, our analysis rely on the profit-maximizing suppliers assumption which might not have to hold if certain stores go out of business or the ones which post higher prices do not sell anything.

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Özet

Bilgi ve internet firmalarında fiyat dağılımı

İnternetteki alışveriş firmaları benzer veya aynı ürünler için birbirinden oldukça farklı fiyatlarda satış yapabilmektedir. Fiyat farklılıkları sektörlere göre önemli oranda farklılık göstermektedir. Bu çalışma sektörlere göre önemli ölçüde değişiklik gösteren fiyat farklılıklarını açıklamayı amaçlamaktadır. Çalışma sonunda fiyat farklılıklarının aynı ürünü satan firma sayısı azaldıkça arttığı ve tüketici bilinç ve bilgi seviyesi yükseldikçe azaldığı sonucuna ulaşıldı. Ayrıca aynı ürünü satan firma sayısı arttıkça ürünün ortalama fiyatının azaldığı bulundu.

Anahtar kelimeler: Bilgi, online alışveriş, fiyat dağılımı, arama maliyetleri.

JEL kodları: L11, L81, D83.

Table 2
Summary Statistics of Product Categories

	Mobile Phone	Laptop	Computer Memory	Digital Camera	Bestseller Book	Book	Movie	Music	Whole sample
Mean	441	1795	72	431	6	9	8	8	417
Median	375	1521	52	295	9	8	7	8	58
Min	141	878	26	181	3	5	4	6	3
Max	1199	3518	369	1219	17	19	19	12	3518
Mean coefficient of variation	1.9%	2.0%	9.4%	4.8%	9.7%	18.6%	7.0%	23.5%	9.6%
Min. coefficient of variation	0.5%	0.2%	0.6%	0.1%	6.3%	7.0%	3.6%	6.1%	0.1%
Max. coefficient of variation	7.1%	9.7%	24.6%	11.2%	12.2%	33.9%	9.6%	56.4%	56.4%

Price values are in \$.

Coefficient of valuation is the ratio of standard deviation to the average price of the item.

Table 3
Price Rankings of Retailers

Store	Number of items listed	Relative Price ^a	Price Rankings ^b								
			Whole Sample	Mobile Phone	Laptop	Comp. Memory	Digital Camera	Book	Best seller Book	Movie	Music
Weblebi	62	-0.2%	28	8	9	11	4	9	5	5	5
Hepsiburada	58	-4.1%	7	10	16	15	1	-	2	1	2
Ideefixe	49	-0.1%	30	6	-	-	-	3	9	6	7
Bidolu.com	44	-4.7%	5	5	17	3	11	-	-	3	-
Estore	43	-3.3%	14	9	7	4	10	-	-	2	3
Vesaire	36	-0.5%	26	-	-	-	-	5	6	4	6
DR	32	-3.4%	11	-	-	-	13	2	4	-	4
Kitapyurdu	20	-9.3%	1	-	-	-	-	1	3	-	-
Deppo	19	6.6%	43	7	19	16	16	-	-	7	-
MIR											
Webstore	19	-1.8%	19	-	15	7	-	-	-	-	-
Pandora	19	5.8%	41	-	-	-	-	8	10	-	-
Yenisayfa	19	0.7%	35	-	-	-	-	4	8	-	-
Btdepo	18	-4.4%	6	-	8	5	-	-	-	-	1
Kitapstore	18	-3.9%	9	-	-	-	-	7	1	-	-
Oemal	18	-7.4%	2	-	4	1	-	-	-	-	-
Netkitap	17	11.2%	47	-	-	-	-	11	11	-	-
Taksitlial	17	-1.6%	20	-	12	10	-	-	-	-	-

Tablo 3 (continued)

Store	Number of items listed	Relative Price ^a	Price Rankings ^b								
			Whole Sample	Mobile Phone	Laptop	Comp. Memory	Digital Camera	Book	Best seller Book	Movie	Music
Dijitalmarketim	16	-3.2%	15	-	5	8	-	-	-	-	-
Hipernex	16	-1.2%	22	3	-	-	9	-	-	-	-
Kitapalemi	16	0.8%	36	-	-	-	-	6	7	-	-
Pazaraktif	15	-1.5%	21	13	-	-	3	-	-	-	-
9sekiz	14	23.8%	50	-	-	-	-	-	-	8	8
Teknosa	14	0.1%	32	12	-	-	8	-	-	-	-
Pcdepo	13	22.8%	49	-	11	19	-	-	-	-	-
Sanalmagaza	13	5.5%	40	16	18	-	17	-	-	-	-
Garanti	12	4.7%	39	15	-	-	15	-	-	-	-
Aydınlr	10	-0.7%	25	-	-	-	7	-	-	-	-
Hepsikamera	10	-2.6%	17	-	-	-	5	-	-	-	-
Kangurum	10	-1.1%	24	1	-	-	14	-	-	-	-
Sibermarket	10	-0.2%	29	11	-	-	-	-	-	-	-
Beyazshop	9	19.0%	48	-	20	18	-	-	-	-	-
Minipazar	9	1.0%	37	-	14	-	-	-	-	-	-
Pcsatis	9	-5.1%	4	-	2	2	-	-	-	-	-
Telefoncum	9	-3.4%	13	2	-	-	-	-	-	-	-

Tablo 3 (continued)

Store	Number of items listed	Relative Price ^a	Price Rankings ^b								
			Whole Sample	Mobile Phone	Laptop	Comp. Memory	Digital Camera	Book	Best seller Book	Movie	Music
Cebindebil	8	7.3%	45	19	-	-	6	-	-	-	-
EFS iletişim	8	2.6%	38	14	-	-	-	-	-	-	-
Kitabus	8	8.2%	46	-	-	-	-	10	-	-	-
Netsiparis	8	-3.5%	10	-	1	-	-	-	-	-	-
Picom	8	-2.5%	18	4	-	-	-	-	-	-	-
Tuanabilg	8	0.1%	31	-	13	-	-	-	-	-	-
Turuncusepet	8	6.0%	42	18	-	-	12	-	-	-	-
Pccim	7	0.3%	33	-	10	17	-	-	-	-	-
Spotsatis	7	-5.4%	3	-	-	6	-	-	-	-	-
Tekpazar	7	-0.4%	27	-	-	13	-	-	-	-	-
Hızlı system	5	0.6%	34	-	-	14	-	-	-	-	-
Aktifshop	4	-1.1%	23	-	6	12	-	-	-	-	-
Dpazar	3	-2.9%	16	-	3	-	-	-	-	-	-
Domino	2	-3.4%	12	-	-	-	2	-	-	-	-
Escortland	2	-4.1%	8	-	-	9	-	-	-	-	-
Muzikaletleri	2	7.0%	44	17	-	-	-	-	-	-	-

^a Indicates the retailer's price compared to its competitors. Negative numbers imply the store is offering the same products on average cheaper than rival stores.

^b the smaller numbers indicate lower price levels for the given category

