THE IMPACT OF MODERN RETAILING ON THE PRICES OF FAST MOVING
CONSUMER GOODS: EVIDENCE FROM TURKEY

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ABTRACT

THE IMPACT OF MODERN RETAILING ON THE PRICES OF FAST MOVING
CONSUMER GOODS: EVIDENCE FROM TURKEY

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In Turkey, the retailing sector is in a modernization process with the increase in the
market share of supermarkets since 1990s. This process has important implications
on general economy with changing consumption characteristics. This thesis analyzes
the impact of increasing market share of supermarkets on the prices of fast moving
consumer goods in traditional retailers. By means of a household panel, a panel data
econometric approach is used for assessing the impacts of different supermarket
formats between 2002 and 2006 in 12 sectors. The results indicates that increasing
market share supermarkets decreases the price levels observed in traditional retailers
in some of the sectors and these impacts vary according to supermarket formats and
sectors.

Keywords: Retailing, Industrial Organization, Prices, Competition

ÖZ

MODERN PERAKENDECİLİĞİN HIZLI TÜKETİM MALLARI FİYATLARI ÜZERİNE ETKİLERİ: TÜRKİYE ÖRNEĞİ

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Türkiye'deki perakendecilik sektörü, süpermarketlerin pazar payının artması ile birlikte 1990'lardan bu yana önemli bir dönüşüm sürecinden geçmektedir. Değişen tüketim alışkanlıkları ile birlikte bu sürecin ekonomiye genel olarak önemli etkileri bulunmaktadır. Bu tezde süpermarketlerin artan pazar payının geleneksel perakendecilerdeki hızlı tüketim malları fiyatları üzerine olan etkisi incelenmektedir. Değişik süpermarket formatlarının 2002 ve 2006 yılları arasında, 12 sektördeki etkilerini incelemek için hane halkı tüketim paneli yardımı ile panel veri metodu kullanılmıştır. Sonuçlar, süpermarketlerin pazar payındaki artışın, geleneksel perakendecilerde gözlenen fiyatları bazı sektörlerde düşürdüğünü, bu etkinin süpermarket formatlarına ve sektörlere göre değiştiğinin göstermektedir.

Anahtar Kelimeler: Perakendecilik, Endüstriyel Organizasyon, Fiyatlar, Rekabet

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CHAPTER 1

INTRODUCTON

There is an important transformation in retailing around the world with the increase of chains and introduction of larger stores, hypermarkets especially. This process has important impacts on economic activities at macro and micro levels. In Turkey where such a process is also seen, traditional retailers leaving its place to organized retailers having varying structures, stores and formats including discounter, Non-chains, Local chains, National chains, one-city and multi-city supermarkets. Therefore, Turkey becomes an important laboratory to study impacts of this process. In this study, one of the most important effects of modern retailing on consumer welfare, the impact of this transformation on price levels, is investigated by looking at the evidence in Fast Moving Consumer Goods (FMCG) sector which consist of the products subject to daily consumption such as foods, beverages, cleaning products excluding dresses and white goods, etc. The results point out that increasing market shares of supermarkets have significant negative effects on the price levels in traditional retailers for specific sectors.

There is evidence in the literature about the impacts of different supermarket formats, chains and hypermarkets on different parts of the economy. But there are few empirical studies about their impacts on price levels. Previous studies investigating the impacts of organized retailers on the economy mainly focus on productivity changes, buyer power and competition policy issues. Studies about the impact of modern retailing on price levels focus on the impact of hypermarkets such as Wal-Mart but not other general supermarket types such as Discounters, Non-chains, Local chains etc. However, organized retailers operate under a wide variety of store types each should have different impacts on price levels. In addition, there is need to assess more deeply product choice for the analysis since supermarkets can reduce price levels by selling cheaper, low quality goods.

Ipsos-KMG Household Panel Data enable to analyze the prices of the goods at the brand level and across different supermarket types for Turkey. Dataset includes daily FMCG

consumption of households with detailed information for the purchase, items, households and stores. With some elimination and regrouping, database provides a unique opportunity to assess effects of organized retailers on price levels at brand level and across supermarket types.

According to this dataset it is evident that there is an important transformation in FMCG retailing in Turkey starting with 1990s. Supermarkets in Turkey replace Medium Market and Groceries and this trend can be observed for different regions and socioeconomic groups in Turkey. Nevertheless, the supermarket types that are subject to analysis have different market shares in different geographical regions and in the consumption bundles of different socioeconomic groups. Especially, the loyalty of upper socioeconomic groups in terms of specific supermarket types gives an idea about the service quality and other aspects of different formats directly related to their cost structure as well as the price level. On the other hand, there is important evidence that supermarkets charge lower prices relative to the traditional stores. Therefore, with increasing market share of supermarket formats - consisting Discounters, Local chains, Non-chain, National chains, one-city and multi-city supermarkets - a decrease in price levels should be expected. But this movement will be dependent on different cost structure of different formats

The impacts of increasing market share of supermarket formats on price levels of traditional retailers are studied in this study. To study these, first, the supermarket formats that will be used in the analyses is determined and also new supermarket definitions are created. In addition to that, the transformation in the retail market structure is analyzed with special emphasis on the changing role of supermarket and different supermarket formats as subgroups of it. Related with this issue, regional differentiation in market structures and effects of socioeconomic characteristic on store choice of households are also explored.

Finally, the impact of increasing market share of supermarkets on the price level of the products sold in traditional retailers is examined with a panel data econometric analysis. In this analysis, market share of each supermarket format is calculated by using the household consumption panel. The impact of the change in market share of supermarkets on the price level of the products in traditional stores is investigated for different sectors. A panel data econometric analysis is used for the estimations. The results showed that

supermarkets have a negative impact on the price levels in traditional stores but impact level varies according to different supermarket formats and sectors.

The study summarizing these results is organized as follows. In Chapter 2, there will be a brief overview of the literature on the impact of organized retailing to the economy. In Chapter 3, the characteristics of the dataset are described. In Chapter 4, the structure of the FMCG market and the role of retailers will be explained by using the dataset. Then the impact of supermarkets on price levels will be investigated in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

The transformation of retail sector and its impacts on the economy is relatively a new subject in microeconomics and industrial organization literature. These studies point out three characteristics of retail chains that are effective on the general economy. First, organized retailers bring competition to the market with their increasing market share. Second effect is the superior productivity level of the organized retail chains relative to the traditional stores. Last effect is the buyer power of larger chains leading to higher bargaining power against suppliers and decrease in cost levels.

Related with these impacts, recent studies explore the effects of the hypermarkets on the price levels and consumer welfare. To summarize the effects mentioned and their relationship with the change in price levels, this chapter will first focus on the literature discussing the relationship between competition and price levels and the role of retailers. Then the evidence on productivity and buyer power effects of the modern retailers will be summarized. Finally the planned contribution to the literature will be stated.

2.1 Competition and price levels

In the literature, the studies' focus about the relationship between competition and price levels are concentrated mainly on the evidence from general economy but there is few industry level studies as well. Previous studies found that the increased competition due to entrance of the new firms into the market reduces price levels. There are also cross country studies showing that differentiation in degree of competition level between countries becomes a determinant in inflation rate differential and price dispersion in the economies. Some empirical and theoretical studies also indicate the importance of change in competition level in the market at industry level including two recent studies by Basker (2005) and Lira et. al. (2005) about the effects of entrance of hypermarkets.

The causal link between the degree of competition in retail market and price levels at macro level has been investigated in different empirical studies. Armstrong and Vickers (1993) explored the effects of price discrimination practice of a dominant incumbent firm facing competition from more than one market. They find that the prices in the markets that incumbent firm competes in might fall with competition. Evidence about this particular relationship is also found in ECB (2001) whose focus was on the deregulation in network industries. This study indicates that deregulation bringing competition to the network industries decreases average telecommunication and electricity prices in Euro area. Another study about European economies also states that one of the reasons of the price dispersion in the European common market is the difference in the competition level in the economy (ECB, 2002).

Like the relationship between degree of competition in the economy and price levels, there is also evidence about the relationship between product market competition and inflation. Neiss (2001) tests the linkage between competition and inflation for twenty-four OECD countries with a cross county analysis and found that with the increase in product mark-up, inflation rate also increases. Cavelaars (2003) adds the role of product market institutions to the analysis of former study by using economic regulation indexes and more recent data. He finds that product market institutions also determine the competitive behavior of firms and lead to a decrease in inflation rates. He also gives special emphasis on the product market competition stating that it is a more important factor than any other factor in explaining the differences in inflation rates. On this particular emphasis, another study by Przybyla and Roma (2005) has been conducted. They investigate degree of competition by using mark-up levels and suggest that increase in the degree of competition in product markets leads to a decrease in the inflation rates in EU-15 countries.

At industry level, the negative effects of an increase in competition level on price levels have been also investigated in some empirical studies. Early studies by Marvel (1979) and Coterill (1986) show that with the increase in the market concentration – i.e. decrease in the competition level- the price level of the retailers also increases. A recent study by Golbsee and Syverson (2004) also shows that entry of new airlines into flight routes in the US reduced the price level of the incumbents vis-a vis the period before entry.

In the case of retailers, two recent studies shed light on the relationship between price levels and increasing competition by entrance of hypermarkets to the market. Basker (2005) investigates the impacts of Wal-Mart's entry to the retail sector in the U.S on the general price levels. Basker investigates these by combining two data sets: U.S average retail prices and opening dates of Wal-Mart stores. He finds that the prices for several goods are decreased with the Wal-Mart's entry to the market and this fall increased by 3-4 times in the long-run as long as Wal-Mart is active in the specific market.

The second study about the effects of entrance of hypermarkets on price levels is conducted for Chilean economy by Lira et al. (2005). They study the impacts of entry of hypermarkets on regional relative price levels by using the regional price indices supplied by national statistics institute and opening dates of supermarkets. The results show that the entry of a new hypermarket reduced the price levels by around ten percent.

2.2 Productivity and buyer power effects of organized retailers

It is expected and shown in empirical studies that high productivity level combined with buyer power of organized retailers enable them to charge lower prices. Organized chains have achieved high productivity growth with adaptation of technology. Putting together this productive organization structure with buying power, modern retailers can charge lower prices. Nevertheless, there is no directly related empirical study showing the effect of these developments on price levels.

The commerce and services sectors have important contribution to the productivity increases in the countries where studies showing the relationship between entry of hypermarkets and decrease in price levels. For Chilean economy it was also shown that the productivity growth in Chilean economy was driven largely by the commerce sector (Vergara and Rivero, 2005). In the U.S case, service sector is found to be the major driver of the productivity growth after mid 90s with high information technology usage (Bosworth et. al.). On average, U.S productivity has grown annually by 2.88 percent while this ratio increases to 5.33 and 5.37 percent in retail and wholesale sectors respectively (Fernald and Ramnath, 2004). According to Holmes (2001) the reason behind the high productivity growth in these sectors is the fact that retail sector made an

effectively uses of IT and this improves the logistic services and decreases the stock costs.

The retail chains increase the productivity level of not only retailers but also the suppliers of the retail chains. Dries, Reardon and Swinnen (2004), Swinnen et al. (2006), Reardon and Berdegue (2002) and Reardon et al. (2003), Minten et al. (2006), Mattoo and Payton (2007) explain the effects of entrance of foreign chains on the productivity growth in agriculture sector supplying food products to retail sector. Javorcik and Li (2008) reports that entry of global retail chains increases the productivity level of suppliers in the case of Romania. They suggest that the entry of global retail chains may transform retail sector and supplying industries. By triggering the modernization of supplying industries, retail chains create positive externalities and these suppliers can accommodate themselves with the distribution networks, IT usage and global sourcing of global chains. According to report of Mc-Kinsey (2003) for Turkey, the main performing difference between traditional retailers and organized chains is explained by their efficiency differential in operations as former does not have organized relations with the suppliers and have poor usage of logistics and IT services.

The literature points out that buyer power effect gives an important advantage to large retail chains for charging lower prices. Large retail chains have an important bargaining power over suppliers with their huge market shares and can obtain discounts on transactions (Dobson Consulting, 1999). Reardon and Hopkins (2006) summarize this change in the relations with suppliers with modernization of retailing as follows:

> 1. a shift from store-by-store procurement to centralised procurement via distribution centres; this tends to increase the geographical market-shed of procurement first to the country, then the region, then globally; the centralisation of procurement tends to reduce coordination costs and congestion diseconomies substantially, a gain that swamps increases in transport costs; this also allows purchase at mass scale, allowing stronger bargaining power with suppliers and reduction of per unit fixed costs of transaction; and

> 2. a shift from spot market procurement in traditional wholesale markets gradually toward procurement via specialized dedicated wholesalers and direct purchase

Related with these effects, the theoretical study of Dobson and Waterson (1997) suggests that increased retailer concentration reduces the price level of monopoly suppliers and only when retailers are very close substitutes, the decrease in the suppliers' prices are reflected to the consumer prices as a net decrease. About this issue, the case study of Dobson Consulting Report (1999) points out that the net effect of increase in buyer power will be positive for consumers because of decrease in prices unless there is no barrier in the entry of other retailers.

There is no empirical study directly enlightening the effect of buyer power and productivity increases on price levels. However Hausman and Leibtag (2005) find that the increase in the market share of Wal-Mart has negative impact on price levels by two channels one of which is the increase in competition but the other is the Wal-Mart's low cost structure enabling it to charge lower prices. They use AC Nielsen Household Panel data for U.S and investigated the effects with average price level of different product groups. The first channel for the downward pressure according to them is the increase in the competition in the market because of a new entrant. It is found that by increasing market share of Wal-Mart, the average price level of the same products sold in traditional stores is negatively affected. Second, Wal-Mart charges relatively lower prices leading to lower average price levels because of its high productivity level and buyer power leading lower costs. The combination of these effects leads to increase in consumer welfare according to their study and supporting the theory in the literature.

2.3   The contribution of the study

There is little empirical evidence in the literature about the impacts of modernization in retailing. This study aims to contribute to the existing literature focusing on Turkish retailing. In the previous studies summarized above, the effects of modernization in retailing on general economy are investigated heavily by empirical studies. However, the effect of this process on price levels got relatively small attention in the literature mostly because of the data scarcity. In previous studies, to overcome this problem, the consumer price index and information about the entrance of the specific hypermarket to the market data has been merged most of the time. Nevertheless, with this methodology, finding outcomes for overall effect of modernization in retailing is not easy. Hausman and Leibtag (2005) use household panel data to explore competition effect and other effects.

But in their study average price level of products in different brands is used which misses the fact that Wal-Mart and other retail stores can decrease the prices they charge by simply selling low quality goods or cheaper brands. Furthermore, in three previous studies on this issue by Lira et al. (2005), Basker (2006), and Hausman and Leibtag (2005), the impact of only hypermarkets (Wal-Mart is the only hypermarket for the two researches that is done for U.S), are considered but different retail formats might have different impacts on price levels because of the variation in their productivity level, buying power and competitive power.

To extend existing literature, in this study the impacts of different retail types on the price level of traditional retailers will be examined at brand level for different sectors. In order to explore the effects of different retail types, the existing and new definitions of organized retail types will be used in addition to an aggregate analysis. The effects of these retail types will be studied with products of FMCG sector having same brands in order to control for the product quality in entire Turkey.

CHAPTER 3

DATA DESCRIPTION

The dataset that will be used in the analyses is Ipsos-KMG Household Panel Data. This panel consists of the daily consumption of Fast Moving Consumer Goods (FMCG) of households between 2000 and mid 2006 in Turkey. To explain the properties of data set first the gathering methodology, time and geographical properties will be explained. Then, variables of the dataset will be summarized in a more detailed way.

3.1 General Characteristics

Data is collected by shopping reports filled by each household. Each household collects the bill of each shopping, a visit to a store, and fill the forms given by the company with the name, price and amount of the items that is purchased. Each week these forms and bills are collected by the company but data is announced monthly. The bills are used for checking the information about the items purchased is accurately filled in. Then database is formed by items specific to the family, household and store.

Data set covers time period between January 2000 and August 2006 and each household in the dataset represents a constant amount of households in Turkey having same characteristics. Until 2002 data was collected from the towns of 14 cities whose population is 25000 and above. Therefore dataset can only represent a smaller portion of Turkish population. 6.5 million households can be represented at most in 14 major cities. Starting with 2002, the number of cities where data is collected increased year by year in order to represent the entire Turkish population. With this modification, dataset represents entire population by covering 17 million households.

In descriptive statistics, regional classification will be used for geographic distinction. Data are in collected more than 20 cities. However, data from cities do not represent the consumption characteristics of each city except three most populated cities since household from these small cities are not sampled by taking household characteristics of

the cities that they live in. But these household are chosen in order to represent regional household characteristics where these households belong. Another important reason why cities are not used as unit of analyses is the fact that some cities are added to the data set after 4 or 5 years although by sampling methodology the region they belong to represented in the dataset starting with 2002. For this reason, a new regional variable named region code is created by using the regional classification in the dataset. In the classification, three largest cities of Turkey are separated from their original regions and 9 regions are created which are: Istanbul, Ankara, Izmir, Mediterranean, Marmara (excluding Istanbul), East and Southeast Anatolia, Central Anatolia (excluding Ankara), Black sea and Aegean region (excluding Izmir).

In the dataset, there are four different categories of variables: (1) Variables related with purchase, (2) variables related with the household that purchase the goods, (3) variables related with the items that are purchased and (4) the store where household purchase the goods. Those variable categories will be explained below.

3.2   Purchase

In the dataset, each item purchased have exact shopping characteristics. For each item purchased, the daily date of the purchase, price of items and the amount- number of item purchased[1] of transaction exists. By multiplying price level and transaction amount, the value of each purchase can be found[2].

3.3   Items

The dataset gives exact properties of the items that are purchased. There are 78777 items observed between 2000 and 2006 which are coded according to various properties. First, items are coded according to their major sector and sub sectors. Second, items are coded by using the information about its producer and the brand of the item. Although the exact name of the company, brand and item cannot be seen, they can be differentiated by the codes verified for each of these. A good having a specific brand for a specific sector can have multiple package types for different amounts of the same good. To differentiate the

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[1] If an item is sold in kilogram or grams, there will be gram value of the purchase which is explained in Chpater 3.3.

[2] Whole monetary values in dataset are in New Turkish Liras.

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goods which do not have same packages, for each item, the unit amount of each package and the number of packages for a specific item is given. With these properties, for instance, the purchase of Coke, whose brand name can be Coca Cola, in a can with a volume of 330 milliliter can have different item codes since a consumer can buy six of Coca Cola in cans with a six–pack package or one by one.

Item codes can easily differ in the dataset because of a small change in one of the characteristics above. This creates an important continuity problem in observations since each small number of items can be observed at each month. To overcome this continuity problem, other variables are derived by aggregating the items in a sensible way. First of these variables is derived by defining the products at brand level. By aggregating items at brand level, the package type of the items is not taken into consideration. This methodology enabled us to control for the product quality since it is assumed that quality of the item will not depend on the package item.

Items are classified under 12 sectors in the data set. These sectors are: Other products, meat products, food products, beverages, chocolates/candies/deserts, Dairy products, oil products, paper products, hair products, body products, detergents and other cleaning products. The products groups that are represented under these sectors are given in Table A.1.

3.4 Households

The variables related with the households who purchase items cover some basic characteristics about them. These characteristics include the size of household, the ages of household leader and its partner, the city and region they live in, their socioeconomic status they belong to. There are also monthly projection constants specific to each household showing the number of families living in Turkey, represented by the household in question.

Socioeconomic status of the household is determined according to some major determinants. First of all, the ownership point of each household which is a proxy for income level is determined. It is calculated by using the number and quality of the electronic and consumer durables in the house that the households live. For the education

and professional status points, the qualifications of the household member who is above 18 years old and has the highest level of education and professional status are used. By adding these points the socioeconomic status (SES) group of each family is determined. Then households are grouped according to the predetermined SES scales. For instance, a family has a point above 53 will be in group A, between 35 and 52 will be in group B. By aggregating A and B group families AB, D and E group families DE groups are formed. Finally four SES groups AB, C1, C2 and DE are represented in the dataset.

3.5 Store classification

Seven store classifications are used in the analysis. First of all, the analysis is being conducted for entire supermarkets. Then, the definitions of the data provider -Ibsos KMG- are used in order to observe characteristics of different formats. An additional classification having a dynamic classification varying in time is also derived in order to see the effects of increasing organizational capacity.

3.5.1 *Supermarkets and traditional stores*

In the study traditional and organized retailers will be examined by aggregating relevant retailer types. In dataset stores are classified as National chains, Local chains, Discounters, Non-chain Supermarkets, Medium Market and Groceries, Wholesalers, Kiosks, Open Bazaars and other stores. First of all National chains, Local chains and Discounters and Non-chain supermarkets are aggregated under the name of supermarkets which can also be called organized retailers. The traditional stores definition will be used for grouping rest of the retailers: Medium Market and Groceries including Bakkals, Wholesalers, Kiosks (Büfe in Turkish), Open Bazaars and other stores including specialties like Eczane (for cosmetics), Cleaning products sellers, butchers, şarkuteri etc.

3.5.2 *Supermarket formats*

Different supermarket formats are used in order to conduct a detailed analysis of the effects on different chains. Since each of the supermarket types defined in the dataset can have different service qualities and productivity levels, each can have different impacts on the analysis. Therefore, Discounters, Non-chain supermarkets, Local chains and National chains are used in the study as separate variables.

3.5.2.1 Discounters

Discounters are the supermarkets that target cheaper shopping. In general, their service quality is lower than other formats with longer queues and products in boxes. In Turkey, discounters have smaller stores dispersed around the city most of the time. In addition to that, they often sell cheaper brands as they target lower-income households.

3.5.2.2 Non-chains

Non-chains can be considered as the transition format from "Medium Market and Groceries" to supermarkets. They usually have one or two stores which are small. They do not have hyper or mega markets. The targeted consumers are especially households living near the stores. These supermarkets can also sell cheaper brands but their service quality is usually higher than the discounters. These supermarkets are operational around Turkey like National chains.

3.5.2.3 Local chains

Local chains are the supermarkets which are more organized than Non-chains. They can have several stores in a city and be operational in other cities belonging to the same region. It can be expected that their operational capacity is higher than the Non-chains with higher institutionalization and bargaining power with suppliers. It can be also expected that their service quality is better than Non-chains with more sophisticated personnel. Some of them also have bigger stores converging to hypermarkets.

3.5.2.4 National chains

These are the corporations dispersed around Turkey with different store sizes including hypermarkets. The corporations considered under this classification are the biggest players in FMCG retailing. They have different types of stores in different sizes operational in neighborhoods and as hypermarkets out of the city. Most of the time, their service quality is better than the other supermarket formats, Non-chains, Local chains,

Discounters. Having hypermarkets enable them to give place a wide range of products and brands on their shelves varying from cheaper brands to luxury products.

Different supermarket types should have different impacts on price levels. With the information given above, it is clear that the discounters can sell goods with lower service quality like longer queues by employing fewer cashiers so that they can decrease the prices of the same goods further. On the other hand, National chains can be more productive with more sophisticated logistics and exercise market power while gathering goods from suppliers at cheaper levels. However, their higher service quality can lead to higher price levels. On the other hand, local chains can offer prices lower than Non-chains with their higher organizational capacity. For these reasons, each supermarket type must be considered as different entities in order to measure their impacts.

3.5.3 *City-based supermarket types*

In addition to the classifications above, another variable set is also created to classify the chains for making the chain classification time varying. In the previous definitions, supermarket types are constant variables which do not change for different time periods. However, Turkey as an emerging market economy has a dynamic retailing market. This brings the fact that some chains can enlarge, local and regional chains can become National chains in another time. For this reason, the store classification methodology used by Jarmin et al. (2005) is used. In that methodology, a chain is assumed to be a **"one-city chain"** if retail chain is operational at one city and called **"multi-city chain"** if it operates at more than one city. With this methodology, Non-chains will be classified in one-city supermarket while Local chains and Discounters can be classified as both one-city and multi-city supermarket classifications. Certainly National chains are grouped under multi-city supermarkets.

Some elimination procedures are developed in order to classify supermarkets as one-city and multi-city. Since data are collected at household level and not at retail basis, a household can shop in another city. For instance, a household living in Izmir can travel to Istanbul and shop there. After he/she turns back to Izmir and fill the form, he will write the name of the supermarket that he has visited in Istanbul but does not exist in Izmir. However, dataset give the name of the city that household lives as the basic

geographical unit and the cities that different supermarket chains operate is not given. Therefore matching cities household lives in with the shop-names does not give true information about the cities that a supermarket chain operates. Therefore, the number of cities and regions where a retail chain is operational cannot be found by using the dataset directly. To overcome this problem, a retail chain is assumed to be existent in a city at the month in question if it is also observed in each of the 11 months after that observation. After determining the cities that each supermarket is observed by this methodology, the results are checked by evidence from other sources. Then, the number of cities and regions that a retail chain operational in are calculated and the type of chains are determined.

Table A.2 summarizes entire of these store classifications. First column gives the brand name of the supermarkets if it is stated (there can be also other stores that are not considered as brands) and general names of traditional retailers such as Bakkal, Orta Market, Ev (for the goods produced at home and sold to consumers), Bufe, Kuruyemisci. In the second column called specification1, the retailer category given to the specific shop-names by the company is shown. Specification 2 gives additional information for the supermarkets by showing the format of them as Discounters, Non-chains, Local chains and National chain. Specification 3 is the classification that point out that a supermarket operates at one or more than one city. Since this property changes in time the last month that a supermarket is observed as one-city supermarket or multi-city supermarket is shown in "End period" column.

In the study, the FMCG consumption data will be used in most of the analysis. For descriptive and econometric analysis, data described above will be used according to the classifications above. However, in case of any other data source usage it is indicated.

CHAPTER 4

MARKET OVERVIEW FOR FAST MOVING CONSUMER GOODS

The transformation process in the retail market has the capacity to decrease general price level in FMCG market. Turkish retailing sector transform itself to larger supermarket formats and gains economies of scale advantage. The transformation process of FMCG retailing is a reflection of this general process and shows the same properties. Especially in these larger markets the price levels of the same branded products are cheaper with some exceptions. In addition to the lower prices, the market power of supermarkets in the sector also increases in the whole country. Therefore, it might be expected that the combination of these two effects will have negative impact on general price levels of traditional retailers in average.

4.1   A general outlook to the transformation of retailing sector in Turkey

The transformation of retailing in Turkey has been going on since 1990s. The changes in consumer perceptions and the transition of Turkish economy to a more liberal economy have been important factors for the structural changes in the retailing sector. As a result of these, the number of larger retailers has increased substantially while smaller ones are trying to survive in the new economic environment.

There is an important increase in the number of modern retailers in Turkey since 90s. The number of supermarkets increased significantly while the number of hypermarkets reached 55 in eight years time until 1997. It shows that there is a significant transformation process undergoing where small retailers living their places to larger ones while all market formats are increasing their numbers (Table 4.1). However, the traditional stores (especially convenience stores and specialties) were still dominant players in the market (Tokatli and Boyaci, 1998).

Table 4. 1: Breakdown for number of markets according to size, 1990-1997

	Hypermarkets +2500 m²	Large supermarkets 1200-2500 m²	Small supermarkets 800-1200 m²	Large markets 400-800 m²	Small markets 100-400m²
1990	0	15	8	59	1095
1991	0	21	11	70	1195
1992	2	26	18	81	1291
1993	16	30	25	92	1407
1994	27	36	31	117	1630
1995	35	44	48	157	1903
1996	42	70	74	251	2244
1997	55	83	78	301	2678

Source: Tokatli and Boyaci (1998)

The liberalization process after mid 1980s and some internal dynamics are important factors for this transformation process in retailing. With liberalization process, Turkish economy has changed the trade regime and supported private sector development in a competitive economy. This process created a new domestic economic environment more open to international effects. With the entrance of the large corporations and foreign retailers to the open economy, the structure of the market has been altered. Tokatlı and Boyacı (1998) point out two reasons for the transformation in the market. First, the increase in urban population increases demand for products while in supply side there are improvements related to the increase in manufacturing and import liberalization policy. The second effect triggering domestic corporations for entering to the sector is the high cash flow from retailing in a high interest economy like Turkey and the value of real estate property of these retail stores.

The favorable domestic environment also had impacts on the transformation process. First, the consumer habits have changed with the introduction of mass media. Western consumer habits have become effective in large cities like Istanbul, Izmir and Ankara. However, the existence of traditional formats is still a fact in Turkey especially in rural areas. Especially high transportation costs and traditional consumptions habits can still be effective on the store choice of consumers by guiding consumers towards traditional retailers. In addition to the change in the demand conditions, the absence of a regulatory

framework as an entry barrier created a favorable environment for the market share of retailers (Çelen et al. 2005).

The numbers show that the trend starting in 1990s has continued after mid 1990s. Figure 4.1 shows the trends in the number of traditional and specialized retailer versus the organized retailer stores. The numbers of hypermarkets, chains and supermarkets have increased approximately 15 percent between 1998 and 2006 annually and that number reached 3 times of 1996. On the other hand, number of traditional and specialty[3] ones decreased 1 percent annually between 1998 and 2006. Sector specific information shows that although the number of organized retailers increased significantly, traditional retailers still survive in the market.
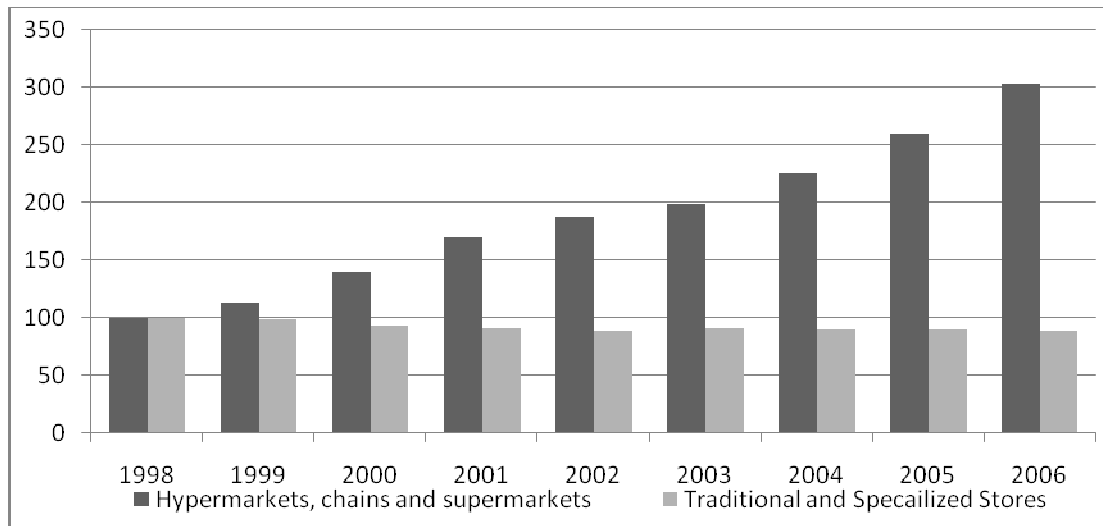
Figure 4. 1: Trends in the Number of Modern and Traditional Retailers (1998=100) *(Source: AC Nielsen)*

4.2   Developments in FMCG retailing

FMCG retailing, as a big subset of general retailing, has the same trends with the general one. Supermarkets, the organized retailers, have become the major player in the retail market in 2002-2006 with a continuous increase in their market shares. In this process,

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[3] Specialty stores are stores that sell only one or two Group of products having same sectors such as Kuruyemisci, Eczane (for cosmetics), Cleaning products sellers etc.

especially Non-chain supermarket is the dominant supermarket type that derived the transformation process in entire Turkey and other supermarket types could not improve their market share to significant levels like Non-chains. However, the importance of multi-city supermarket chains in the transformation shows that analysis is highly dependent on the definition of retailer types and any analysis that will be made should use different definitions to explain the impacts of the transformation. At regional level, there is a dynamic process in market shares that must be taken into account and although the trends are similar to the results for Turkey. Finally, the absolute numbers show that the transformation process does not change the leadership of Medium Market and Groceries, a traditional format, in most of the regions.

The results of the increase in the number of organized retailers are reflected in the market shares' trends. Supermarkets have become the major retailer type with approximately 40 percent market share after a permanent increase in the market share since 2002. In the same period traditional retailers, "Medium Market and Groceries", which includes Neighborhood stores (Bakkals), Bazaars and Wholesalers have lost their market share. Only the market share of "other stores", which includes especially the specialty stores such as Butchers, pharmaceuticals (for cosmetics sales) and stores for delicatessen named sarkuteri in Turkish, have not changed significantly although there are some slight fluctuations year to year. These dynamics in the FMCG market has changed the structure of the market. Therefore, learning about the types of supermarkets that leads to this transformation is also important in order to clarify the impact of this transformation (Figure 4.2).
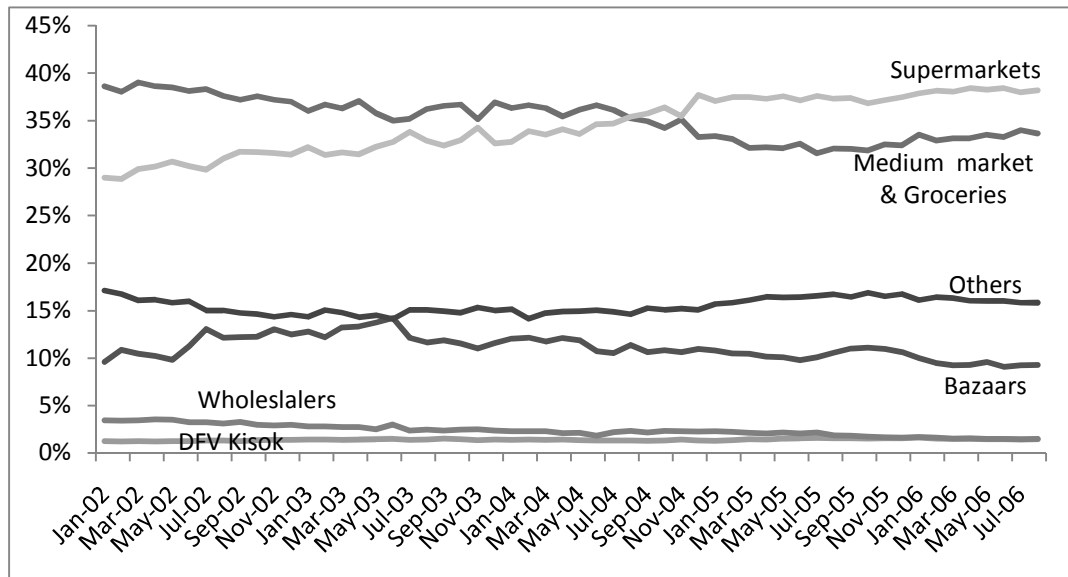
Figure 4. 2: The developments in market shares of retailers in the FMCG market, January 2002-August 2008, seasonally adjusted series.

The market share of supermarkets can be decomposed into different groups by using the definition existing in the dataset[4]. Non-chain supermarkets are the main drivers of the transformation in the retail markets. Non-chains increased their market share to 1.5 times when we come from the early 2002 to middle of 2006. Another increase in the market shares can be observed in the shares of Discounters although it cannot have a huge impact on the transformation process of the market since it has a very small share. On the other the hand, market share of other types of retail chains are stable with slight fluctuations. These developments point out the importance of Non-chain supermarkets and the reasons of the increase in the market share of this type (Figure 4.3).

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[4] See Chapter 2 for details of the classification.
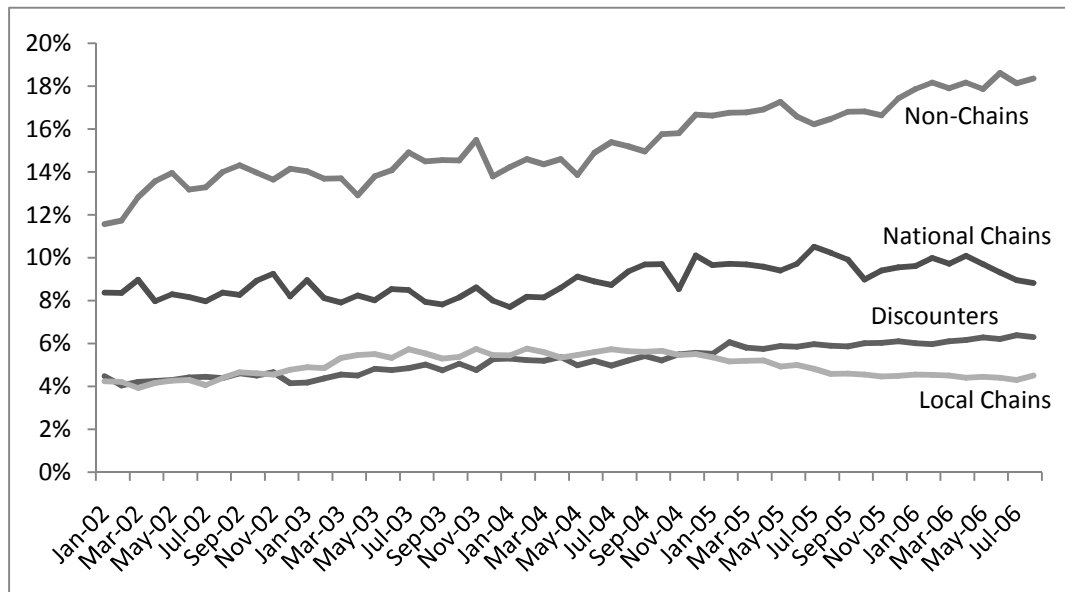
Figure 4. 3: The market shares of supermarket format in the FMCG market, January 2002-August 2008, seasonally adjusted series.

The leadership of Non-chains is an expected result for a retail market in transformation. First they are basically taking the place of Medium Market and Groceries by using locality advantages and can reach to consumers in their neighborhood with smaller stores. These supermarkets are the enterprises that are expected to be transforming themselves to larger retail chains in the long-term with the creative destruction in the market or become part of bigger chains with mergers and acquisitions. On the other hand, the number of Non-chain stores is expected to be higher and increasing in this period since there are a lot of brands classified under Non-chains which cannot be observed exactly in the dataset. So higher store number can definitely lead to higher sales and market shares. Nevertheless, the possibility that there might be some problems in the store definition of Non-chains must be also taken into account since it aggregates most of the stores under one heading and the other ones are decomposed into smaller groups.

City based store definition shows that, both of the types have similar contributions to the transformation process but during which they are more effective differentiate. The previous classifications used for market overview was not time-varying so that a retail chain cannot change its type. However, in a dynamic market like Turkey, the stores can improve its operations by modernizing themselves by owning other retailers, increasing

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the number of stores and opening new stores in other cities. The supermarket definition used for overcoming these problems classifies retailers by the number of cities that they are operating in and links their productivity with the geographical operational capacity of the retailer[5]. The developments in the market share of these types of supermarkets shows that until 2004, there was a gap between one city and multi city supermarkets. However this gap is closed and the market shares of these supermarkets have come close to each other. Therefore, it can be argued that between 2002 and 2004 multi-city supermarkets have triggered the increase in the market shares of supermarkets, but after 2004 these two groups have similar contributions to the transformation (Figure 4.4).
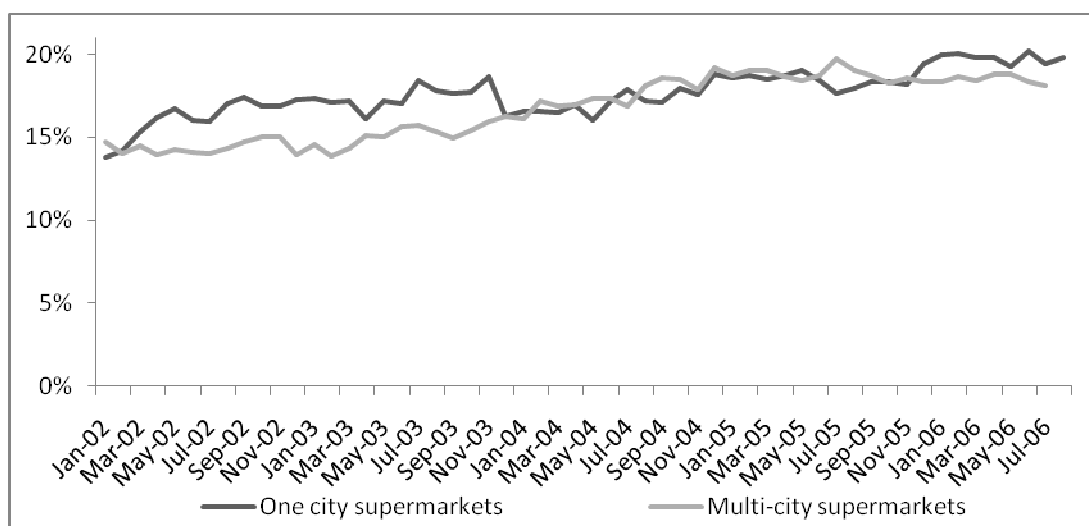
Figure 4. 4: The market shares of city-based supermarket formats in the FMCG market, January 2002-August 2008, seasonally adjusted series.

The results about market shares denote that they are sensitive to the store definition. Changes in the definition of supermarkets and retailers can affect the analysis. In the analyses, Non-chains which are classified under one city supermarkets can be seen as the only important drivers of the transformation process. However, some of the Discounters and Local chains which are one city supermarkets have turned into multi-city supermarkets and they also increased their market share in this process. Therefore, classifying them under the same classification for entire analysis will be questionable and should be controlled for robustness since these supermarkets turned into regional or

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[5] For details of the classification, see Chapter 3.

National chains in the process, and they become important players of the transformation process.

The transformation process in retail markets is also analyzed at regional basis by taking regional characteristic into consideration. Figure 4.5 and Figure 4.6 demonstrates the shares of regions in FMCG market. It is seen that Istanbul has the first and East and Southeast Anatolia has the second highest FMCG sales. Together their share approximates to 40 percent[6]. In addition to that, the market shares of the regions are not static, and the shares of some regions like Izmir and Black sea Region decrease whereas the ratios for Aegean region and Istanbul increase clearly. This fluctuating and active structure of the market highlights the fact that any analysis on regional basis should include the dynamics of the regions.
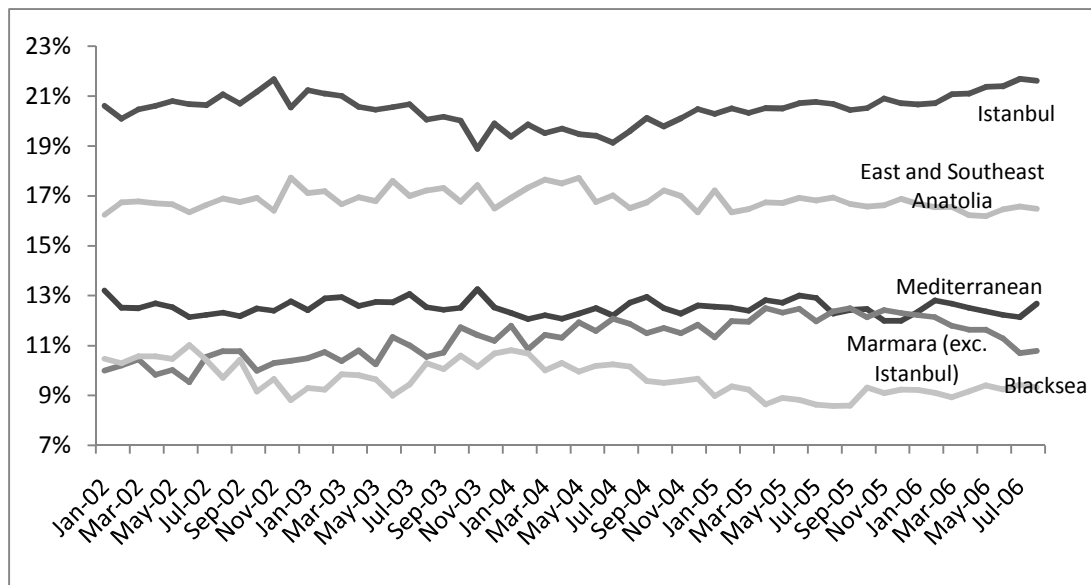
Figure 4. 5: The share of regions in total FMCG consumption for selected regions-1, January 2002-August 2006, seasonally adjusted series.

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[6] The result of Istanbul being the first place as a city was an expected result since approximately 15 million people are living in Istanbul and it is the centre for economic activity in Turkey. However, East and Southeast Anatolia is a less developed part and the result being second can be surprising. But elasticity of FMCG consumption to income level is less than many other goods so that the major driver of the total consumption can be the number of people living in the region. Especially, East and Southeast Anatolia region is larger than other regions subject to analysis. For this reason the population of the region is quite high.
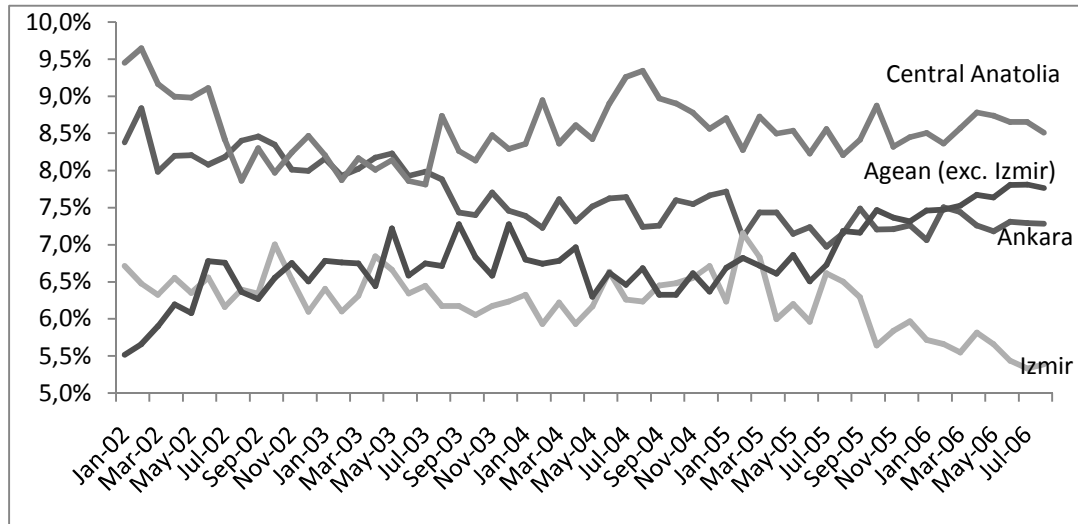
Figure 4. 6: The share of regions in total FMCG consumption for selected regions-2, January 2002-August 2006, seasonally adjusted series.

In some regions, the distribution of market share for different types of retailers is different from the picture of entire Turkey although the trends of these series are similar. According to Figure A1-A9, supermarkets are the leaders in the markets of three largest cities of Turkey: Istanbul, Ankara and Izmir since 2002. In other regions except East, Southeast and Central Anatolia, supermarkets have gained market power significantly, too. However, in these regions, Medium markets and groceries are still one of the leaders or dominant retail types. The shares of the rest of the retail types show similarities to general distribution in Turkey. Despite the similarity in the trends, the differences in market shares of different retail types between regions will most probably make each analysis at regional basis sensitive to the regional differences.

There is less regional differentiation in market shares of supermarket formats than the market shares of retail types (Figure A.10-A.18). Non-chains supermarkets are market leaders in most of the regions and their market power is improving in those regions. Izmir is the only exception where National chains are the dominant player, and there is a stable environment where market share indicators are not fluctuating year by year. This picture slightly changes when supermarkets are classified as one city supermarkets and multi-city supermarkets. In addition to Izmir, in Istanbul and Aegean region, multi-city supermarkets are the major formats. Moreover, the correlation between the market shares of one city and multi-city supermarkets in entire Turkey is not significant in regional

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analyses for most of the regions (Figure A.19-A.27). These results also point out that there are also some slight differences in the shares of different supermarkets for different regions.

4.3   Price levels in different supermarkets

Organized retailers have competitive prices in the same branded goods. The relative price levels observed in organized retailers are lower than the ones in traditional retailers on average. However, there is a variation both in the price levels of products in each supermarket and the average price level between supermarket types. It might be the result of changing characteristic of supermarket formats and its reflection to the unit cost level of these supermarkets. Especially, store choice characteristics of households from different socioeconomic groups prove that there is a differentiation between supermarket formats' service quality and surely the cost structure.

In order to calculate average price levels, common observations are found with a simple methodology. The goods having same brands are used for calculating the average price levels in different retailers. These products' average unit price levels sold in the organized retailers are compared with the price level of the same goods in traditional stores by considering the ones which can be observed at each month for each of the retailers and traditional stores. However, these products are not by each supermarket type at each month. For that reason, a second elimination procedure has been conducted in order to find the months common for branded goods in which price levels for each product and supermarket type exist. Finally, the average unit price levels have been calculated, and results are divided to the average unit price level of traditional retailers.

The results show that organized retailers have lower price levels with some exceptions. The relative price levels are quite close to each other. It is seen that, on average, the unit price level of products are lowest in Local chains. For discounters, the standard deviation is higher than the others showing that there exists both higher and lower priced brands which can also be examined in Table 4.2.

Table 4. 2: Average relative price level of organized retailers relative to traditional stores

	Supermarkets	Discounter	Local chain	Non-chains	National chains	One city Supermarket	Multi-city supermarket
Arithmetic Average	0.948	0.970	0.947	0.959	0.961	0.955	0.952
Standard deviation	0.046	0.152	0.052	0.039	0.088	0.039	0.079

4.4 Store choice of households according to socio-economic groups

The analysis shows that socioeconomic status is an important determinant of the retail store choice. For all socioeconomic groups the shares of supermarkets are increasing. However, the level of these shares varies according to the socioeconomic groups. The average share of supermarkets decreases while socioeconomic groups range from AB (upper socioeconomic group) to DE (lower socioeconomic group). The Bazaars and Medium Markets and Groceries take place of supermarkets for lower socioeconomic groups (Figure A.28-A31).

Non-chain supermarkets have high shares for all groups, and Discounters and Local chains have above ten percent market share for all groups and does not fluctuate from one year to another significantly. Furthermore, discounters increased their market share in the total amount of shopping for DE group which is also an expected result. On the other hand, National chains have the highest share in socioeconomic group AB and lowest in DE group (Figure A.32- Figure A.35). Considering that National chains' service quality is better than the other supermarket types and luxurious and expensive products can be found in these stores, it can be stated that the choice of AB group whose income level and education level are higher than the other socioeconomic groups is logical.

The pattern of choice according to socio-economic groups can be seen easily when the one city and multi-city supermarkets' shares according to socio-economic groups are analyzed. It is seen in Figure A.36-A.39 that the share of multi-city supermarkets is higher in the consumption bundles of group AB but it decreases when we go through C1,

C2, DE. This result is consistent with the fact that higher socio-economic groups will shop from the stores where they can find luxury goods and high service quality.

Three important points arises from the socioeconomic analyses. First, the supermarkets gain market share for all socioeconomic groups showing that the consumers groups have a common reason to shift from traditional stores supermarkets. Second, especially socioeconomic group AB, which most probably prefers luxury goods or higher service quality chooses National chains showing that this type of supermarkets offer the services higher socioeconomic groups prefer. Finally, with the decrease in the income level of households and education level, one-city supermarkets gain market power.

Finally, the transformation in retail market is significant, and it will certainly have impacts on the market. It is expected that the increasing market power of supermarkets must have increased the general productivity level in the market and have created important competitive pressure over traditional retailers. There is also evidence that organized retailers have lower price levels in average. These effects should cause a fall in the price levels of the FMCG market with a decrease in the price levels. However, larger supermarkets, especially National chains, multi-city supermarkets can be preferred because of their higher service and product quality. Therefore, their contribution to the fall in prices may be smaller.

CHAPTER 5

THE MODEL AND ESTIMATION RESULTS

In this section, an econometric analysis is performed by using Household Panel Data to estimate the effects of modern retailing on the price levels that consumers face in traditional retailers. It is expected that the increasing market share organized retailers will lead to a fall in the price levels of traditional retailers. The estimations are done for 12 sectors mentioned in Chapter 3.

5.1   Model

To estimate the effects, panel data analyses are used. The time horizon of the research is the period January 2002-August 2006 consisting of 56 months. The analyses are conducted for entire Turkey with brand level products for 12 sectors.

To test the hypothesis that increasing market shares of different types of supermarkets have a negative impact on price levels of the products sold in traditional stores, Hausman and Leibtag (2005) model utilized. Hausman and Leibtag (2005) used a model explaining average price level of each good by using market shares of Wal-Mart stores.

To estimate the aggregate effect of supermarkets the following models is used:

$$price\_index_{i,t}^{j} = \alpha^{j} + \delta_{t}^{j} + \theta_{i}^{j} + \beta_{j}share_{i,t}^{j} + \lambda_{j}(share_{i,t}^{j})^{2} + u_{i,t}^{j} \qquad (1)$$

where subscript i denotes the product t denotes the month and j denotes supermarket types explained in Chapter 3.

The dependent variable $price\_index_{i,t}$ is the index of price level in traditional stores for a specific good. The formula used for calculating it presented below:

$$price\_index_{i,t} = \frac{unitprice_{i,t}}{unitprice_{i,1}} \tag{2}$$

The index for a product at brand level is formed by dividing each monthly observation of the unit price of a product to the first observation.

$$unitprice_{i,t} = \frac{totalexpenditure\ (YTL)_{i,t}}{totalamount\ (gr,units)_{i,t}} \tag{3}$$

The unit price of each item used in the calculation of the price indexes is calculated by dividing total expenditure in nominal YTL to total transaction amount in grams or units. The estimations are also redone for the natural logarithm of price_index as ln(price_index) in order to see the percentage change in the price levels with one point change in market share.

$share_{i,t}^{j}$ is the market share of the supermarkets in the total sales of product i at time t for each type of supermarket. The market share of each supermarket type, Discounters, Local chains, Non-chains, National chains, one-city and multi-city supermarkets as well the aggregate share of supermarkets are calculated for each product.

It is expected that with the increase in the share of supermarket formats, β will take a negative value. The increase in market share of modern supermarkets will create competitive pressure against traditional retailers. In more competitive market, average profit level will also be lower. In addition to that, traditional retailers are forced to decrease their cost per sales by increasing their productivity levels.

$(share_{i,t}^{j})^{2}$ is added to the model in order to control for the non-linear relations between the market share of supermarkets and price levels observed in traditional stores. If β is lower (higher) than zero and λ is higher (lower) than zero it shows that market shares of retailers lead to a lower decrease (increase) in the price levels of traditional retailers at time t+1 than the decrease (increase) at time t. Although the increase in market share of retailers is expected to have negative impact on the price level of the goods in traditional stores, the rate of decrease per increase in market share can be lower in later months.

With the entrance and increase in the market share of the supermarkets, there must be an increase in the competition level in the market. As the competition level in the market changes, traditional retailers can sacrifice from their high level of profits in the market and will also try to decrease their cost levels. However, reductions in price levels might be lower in the future since the possibility of increasing productivity levels for decreasing per unit costs can be lower as time passes. Because there is a frontier for the service production of traditional retailers as these retailers can employ limited amount of personnel for a limited amount of store area by definition. Without increasing their store sizes their buyer power or productivity level can increase in limited terms. If they invest for enlarging their stores, it means that they transform themselves from traditional retailers to organized ones and cannot be named as traditional retailers in this study.

On the other hand, the competitive pressure that supermarkets create can be also lower as time goes on. The frontier relevant for traditional retailers is also valid for the organized retailers. The buyer power and productivity level of supermarkets might not increase in time at the same rate. Therefore, the relative price levels in organized supermarkets may decline with a decreasing rate converging to zero. That is why, increase in competitive pressure on traditional retailers might not increase by the same level with every per unit increase in market share of organized retailers. Therefore, the impact of one point increase in the market share of a competitive supermarket can decrease the price level for a specific good sold in traditional retailers at a lower rate.

There are also two control variables in the model inserted as dummy variables to control for the changes in general economic activities in Turkey and product level effects. Monthly effect variable, δ_t, is used in the model to control for the effects of some macroeconomic fluctuations, seasonality and changes in production costs in entire Turkey. Especially the dataset consists of many monthly effects like consumption booms in Ramadan[7]. Therefore, eliminating only seasonal effects is not satisfying and a dummy variable is needed for each month. θ_i is the control variable for the product specific effects since each price level specific for a good can be affected at varying levels by the changes in market shares.

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[7] Ramadan is the holy month where per capita consumption increases, and it has a direct impact on price levels. To learn about the impacts of Ramadan on inflation see Yucel (2007).

Relevant estimation methodology is used because of the presence of autocorrelation and heteroscedasticity in the estimations. Wooldridge (2002) and Baltagi-Li (1995) test for autocorrelation indicate that there is strong evidence of autocorrelation. In addition to that there is also evidence of heteroscedasticity according to the test analyses developed by Druker (2003)[8]. For these reasons, the significance of coefficients for entire models without correction is under considerations. Therefore, to increase the efficiency of estimation and eliminate autocorrelation and heteroscedasticity, panel level heteroscedasticity-corrected GLS estimation methodology using first-order autoregressive disturbances (AR1) is used in the estimations.

5.2   Estimation Results

Results of the estimations are consistent with the evidence in the literature for most of the sectors. Organized retailers have negative impact on the price level of selected fast moving consumer goods in eight of the sectors. However, in rest of the sectors increasing market share of supermarkets does not decrease the price level of traditional retailers. In addition, the impact of each supermarket format varies for each sector and there is no clear evidence that shows that one supermarket type has more impact on the price levels of traditional retailers.

Estimations are done for 12 sectors separately in order to see varying impacts in different sectors. The sectors mentioned in Chapter 3 might have different market structures. For example, some sectors in Turkey highly concentrated by 2 or 3 firms might have more oligopolistic market structure than the others. For this reason, the buyer power of supermarkets can be restricted in these sectors because of the bargaining power of suppliers. This fact surely limits the price reductions of supermarkets relative to the traditional stores for the products belonging to these sectors. To see these impacts estimations are done for each sector separately.

Analysis is conducted for 652 branded products for which price statistics can be derived for both traditional retailers and supermarkets in each month. Total number of observations reaches to 36,512 in dataset (Table 5.1). It is seen that for supermarket

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[8] In Druker (2003), heteroscedasticity consistent estimates and normal estimates from panel data GLS models are compared with LR test.

formats and city-based supermarket definitions the market share can take value of zero. These observations for supermarkets are not considered as missing observations and it is assumed that in these that brand product has not been sold at that specific month. This assumption is also consistent with another assumption that dataset represents the FMCG consumption characteristics of entire Turkey. For instance, if, for a biscuit of a specific brand, the market share of discounters, $share^{discounters}$, takes a value of "0" in the September of 2005, it must show that no household in Turkey buy that brand biscuit at that month from discounters. It can probably indicate either that biscuit brand does not exist on the shelves of discounters or consumers choosing to shop in discounters do not prefer that biscuit brand.

Table 5. 1: Descriptive statistics of the variables –entire dataset used in the analysis

Variable	Obs.	Mean	Std. Dev.	Min	Max
price_index	36512	1.345	0.485	0.083	6.123
ln(price_index)	36512	0.239	0.338	-2.483	1.812
$share^{supermarket}$	36512	0.514	0.222	0.004	0.998
$share^{discounters}$	36512	0.075	0.147	0.000	0.982
$share^{local\ chain}$	36512	0.079	0.086	0.000	0.919
$share^{non-chain}$	36512	0.222	0.143	0.000	0.985
$share^{national\ chain}$	36512	0.138	0.135	0.000	0.952
$share^{one\_city}$	36512	0.262	0.155	0.000	0.985
$share^{multi\_city}$	36512	0.206	0.193	0.000	0.987
$(share^{supermarket})^2$	36512	0.313	0.235	0.000	0.996
$(share^{discounters})^2$	36512	0.027	0.101	0.000	0.965
$(share^{local\ chains})^2$	36512	0.014	0.037	0.000	0.844
$(share^{non})^2$	36512	0.070	0.086	0.000	0.970
$(share^{national\ chain})^2$	36512	0.037	0.072	0.000	0.907
$(share^{one\_city})^2$	36512	0.093	0.103	0.000	0.970
$(share^{multi\_city})^2$	36512	0.079	0.147	0.000	0.975

The model is estimated for 12 sectors separately as indicated before. Therefore, descriptive statistics of each sector are also derived as shown in Table A.3-Table A.14. These tables point out that number of products as well as other statistics considered in each sector vary significantly. This factor also points out the importance of estimating the model for each sector.

The model is estimated for each supermarket definition separately with two specifications. In the former, only $share_{i,t}^{j}$ is used as explanatory variable whereas in the later $(share_{i,t}^{j})^{2}$ is added to the model. Estimation results of the model for each sector are given in Table A.15-Table A.38. All estimations give jointly significant results according to Wald Chi^{2} statistics. The results for time and product dummies are also jointly significant for all estimations[9].

The estimated coefficients of explanatory variables are given for 12 sectors by means of four tables. Table 5.2 and Table 5.3 gives the estimates of the coefficients for "Other products", "Meat products", "Food products", "Beverages", "Candies, Chocolates and Deserts" and Dairy products sectors. The results for rest of the sectors are indicated in Table 5.4 and Table 5.5. The estimates of the coefficients for $share_{i,t}^{j}$ and $(share_{i,t}^{j})^{2}$ are put into the tables if they are statistically significant at 10 percent significance level. If the coefficients of $share_{i,t}^{j}$ and $(share_{i,t}^{j})^{2}$ are jointly significant, the coefficients for this specification are given in the tables below. However, if the $share_{i,t}^{j}$ has a significant coefficient and $(share_{i,t}^{j})^{2}$ does not have, former specification where $share_{i,t}^{j}$ is the only dependent variable is checked. If its dependent variable has also significant coefficient, this one is stated in the tables.

Estimation results for the specifications where price_index and ln(price_index) are the dependent variables can differ. For instance, a coefficient can be statistically significant in a specification price_index is the dependent variable whereas it is not significant when ln(price_index) is the dependent variable. In order to use the robust results for explanations, the coefficients which are significant in both specifications are put into the tables. But, there are also "*" signs to show that there is a significant but not robust coefficients. These coefficients can be found in the Appendix.

Increasing market shares of supermarkets have negative effects on the price levels of traditional retailers on some sectors and the impacts of supermarket types also differ from each other. In eight of the sectors, increasing market share of modern retailers has

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[9] Since 55 monthly dummies are used for all the models and there are also product dummies for each sector, the dummies are not reported in the tables.

decreased the price levels in traditional retailers. Also, supermarket types have varying impacts in different sectors. The results of sector level analysis is as follows.

- In "other products" sector, one percentage point increase of the supermarkets market share decrease the price level by 0.12 percent in average[10]. In the decrease, Local and National chains and as a total multi-city chains are effective. Local chains reduce the prices most according to the test results.

- Meat products' prices in traditional stores do not negatively affected by the increasing aggregate market share of supermarkets. Only, one percentage point increase in the market share of Local chains decreases the prices by 0.05 percent.

- For food products, total effect of increasing market share supermarkets is an increase the price levels of traditional retailers. With an increase in the market share of supermarkets with one percentage point, the increase in price levels of traditional retailers will be 0.0671 or lower since the coefficient for $(share^{supermarket})^2$ is below zero and shows that the increase will be in a decreasing rate. However, national chains force traditional retailers to decrease the price levels by 0.0567 percent at most with a percentage point increase in market share and the rate of decrease declines with the increasing market share of national chains because of the positive coefficient of $(share^{national})^2$.

- In beverages sector, increasing market share of supermarkets cannot decrease the price levels in traditional retailers, showing that these retailers does not have enough room to decrease the price levels further.

- For chocolates, candies and deserts one percentage point increase in the market share of supermarkets decrease the price levels by 0.025 percent. The decrease in the prices mainly caused by the local chains and national chains. With one percentage point increase in the market share local chains and national, the price

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[10] In this statement and in the following comments about the increase in prices the Results of Table 5.3 and Table 5.5 are used. It is important to remember that the market shares of supermarkets are bounded between 0 and 1. In the comments, for instance, if the coefficient for share^{supermarket} 0.05 and market share at time t is 0.20, with a one percentage point increase in supermarket share, the market share will be increased from 0.20 to 0.21. Then, its impact on price level will be 0.05 percent. However, if market share is increased by one point (this is not possible in the case of market share as it is explained) from 0.20 to 1.21, the market share will be increased by 5 percent.

levels in traditional retailers will fall by 0.0478 and 0.0586 (with a decreasing rate for national chains) respectively.

- The price levels of dairy products in traditional stores are negatively affected by the increasing aggregate market share of supermarkets and Non-chain supermarkets. One percentage point increase in the market share of supermarkets decrease price levels of dairy products by 0.0287 percent while it is 0.0515 percent for Non-chain supermarkets

Table 5. 2: Summary results for the estimations-1 (price_index is the dependent variable)

Sector	Other products	Meat products	Food products	Beverages	Chocolates, candies and deserts	Dairy products
share^{supermarket}	-0.1706	*	0.0852	-	-0.0296	-0.0319
(share^{supermarket})^2	-	-	-0.0958	-	-	-
share^{discounters}	*	-	-	-	-	-
(share^{discounters})^2	-	-	-	-	-	-
share$^{local\ chain}$	-0.1952	-0.0717	-	-	-	-
(share$^{local\ chains}$)^2	-	-	-	-	-	-
share$^{non-chain}$	-	-	-	-	-0.0541	-0.0686
(share^{non})^2	-	-	-	-	-	
share$^{national\ chain}$	-0.153	-	-0.0677	-	-0.0836	-
(share$^{national\ chain}$)^2	-	-	0.1154	-	0.1891	-
share$^{one\_city}$	-	*	-	-	-	-
(share$^{one\_city}$)^2	-	-	-	-	-	-
share$^{multi\_city}$	-0.1453	-	-	-	-	-
(share$^{multi\_city}$)^2	-	-	-	-	-	-

Table 5. 3: Summary results of the estimation-1 (ln(price_index) is the dependent variable)

Variables	Other products	Meat products	Food products	Beverages	Chocolates, candies and deserts	Dairy products
share$^{\text{supermarket}}$	-0.1219	-	0.0671	-	-0.025	-0.0287
(share$^{\text{supermarket}}$)^2	-	-	-0.0784	-	-	-
share$^{\text{discounters}}$	-	*	-	-	-	-
(share$^{\text{discounters}}$)^2	-	*	-	-	-	-
share$^{\text{local chain}}$	-0.1823	-0.0501	-	-	-	-
(share$^{\text{local chains}}$)^2	-	-	-	-	-	-
share$^{\text{non-chain}}$	-	-	-	-	-0.0478	-0.0515
(share$^{\text{non}}$)^2	-	-	-	-	-	-
share$^{\text{national chain}}$	-0.1392	-	-0.0567	-	-0.0586	-
(share$^{\text{national chain}}$)^2	-	-	0.0877	-	0.1314	-
share$^{\text{one\_city}}$	*	-	-	-	-	-
(share$^{\text{one\_city}}$)^2	-	-	-	-	-	-
share$^{\text{multi\_city}}$	-0.1304	-	*	-	-	-
(share$^{\text{multi\_city}}$)^2	-	-	-	-	-	-

- The price level of oil products in traditional stores is affected by the aggregate market share of supermarkets only. With one percentage point increase in the market share of supermarkets, the prices fall by 0.1223 percent. However, this rate decreases with increasing market share of supermarkets by 0.1401 percent.

- In paper products sector, discounters and non-chain supermarkets are effective on the prices observed in traditional retailers. By the increase in market share of discounters with one percentage point, the price levels observed in traditional retailers fall by 0.15 at most. This rate is 0.0484 for non-chain supermarkets.

- Increasing market share of supermarkets one percentage point decreases the price level of hair products in sold in traditional retailers by 0.0606 percent while it is 0.068 percent for non-chain supermarkets.

- In body products, the effect of one percentage point increase in the market share of supermarkets on the price levels of traditional retailers reaches to 0.102 percent decreases. Local chains and Non-chain supermarkets have similar contributions to this fall with decreasing rates and discounters' average effect is

also close to them. If we look at city based supermarket definition, it can be seen that one-city supermarkets have greater effect than multi-city supermarkets.

- Detergents are the good whose traditional retailers' prices are mostly affected. The increasing market share of supermarkets by one percentage point decreases the price in traditional retailers by 0.2391 percent at most with a decreasing by the increases in market share. Especially Non-chains supermarkets are the subgroup that can affect the price levels by itself.

- The prices of the goods sold in traditional retailers belonging to other cleaning products sector is negatively affected by the presence of organized retailers. With one percentage point increase in the market share of supermarkets, the prices in traditional retailers fall by 0.1136 percent in average. The increasing market shares of multi-city chains are effective in the fall of these. Non-chains supermarkets are the most effective format in the fall of the prices of traditional formats. National chains and Local chains are also effective in the decreases.

Table 5. 4: Summary results for the estimations-2 (price_index is the dependent variable)

Variable	Oil products	Paper products	Hair products	Body products	Detergents	Other cleaning products
$\mathbf{share^{supermarket}}$	-0.1269	-	-0.069	-0.114	-0.2529	-0.133
$\mathbf{(share^{supermarket})^2}$	0.1401	-	-	-	0.281	-
$\mathbf{share^{discounters}}$	-	-0.195	-	-0.192	-	-
$\mathbf{(share^{discounters})^2}$	-	0.6462	-	-	-	-
$\mathbf{share^{local\ chain}}$	-	-	-	-0.196	-	-0.1507
$\mathbf{(share^{local\ chains})^2}$	-	-	-	0.4935	-	-
$\mathbf{share^{non-chain}}$	-	-0.0485	-0.0679	-0.222	-0.1475	-0.2902
$\mathbf{(share^{non})^2}$	-	-	-	0.2632	0.2728	0.3081
$\mathbf{share^{national\ chain}}$	-	-	-	-	-	-0.2323
$\mathbf{(share^{national\ chain})^2}$	-	-	-	-	-	0.4222
$\mathbf{share^{one\_city}}$	-	-	-	-0.1959	-	-
$\mathbf{(share^{one\_city})^2}$	-	-	-	-	-	-
$\mathbf{share^{multi\_city}}$	-	-	-	-0.076	-	-0.3539
$\mathbf{(share^{multi\_city})^2}$	-	-	-	-	-	0.5067

Table 5. 5: Summary results of the estimations-2 (ln(price_index) is the dependent variable)

Variable	Oil products	Paper products	Hair products	Body products	Detergents	Other cleaning products
share^{supermarket}	-0.1223	-	-0.0606	-0.102	-0.2391	-0.1136
(share^{supermarket})^2	0.1308	-	-		0.2646	-
share^{discounters}	-	-0.15	-	-0.158	-	*
(share^{discounters})^2	-	0.4067	-	-	-	-
share$^{local\ chain}$	-		-	-0.174	-	-0.1528
(share$^{local\ chains}$)^2	-		-	0.4414	-	-
share$^{non-chain}$	-	-0.0484	-0.068	-0.176	-0.1441	-0.2475
(share^{non})^2	-	-	-	0.2011	0.262	0.2575
share$^{national\ chain}$	-	-	-	-	-	-0.1929
(share$^{national\ chain}$)^2	-	-	-	-	-	0.3943
share$^{one\_city}$	-	-	-	-0.158	-	*
(share$^{one\_city}$)^2	-	-	-	-	-	-
share$^{multi\_city}$	-	-	-	-0.067	-	-0.3028
(share$^{multi\_city}$)^2	-	-	-	-	-	0.4403

The results show that for most of the sectors supermarkets have negative effect on the price levels of traditional retailers. Especially, market share of Non-chain supermarkets have negative effects on price levels within seven sectors. For beverages, increasing market share of supermarkets cannot decrease the price levels in traditional retailers. This fact brings questions about the product market structure of beverages because traditional retailers are not affected by changing market structure in this sector or they do not have enough room to decrease the price levels further. Moreover, in food products sector higher market share of supermarkets leads increases in prices although the rate of the increase decreases with increasing market share of organized retailers. Also there is no evidence proving that any supermarket type contributes to the decreases in price levels more than the others. The effects of different formats vary for each sector.

CHAPTER 6

CONCLUSION

Turkish retailing sector has been in a transformation process since 1990s. In this process, modern organized retailers are gaining market power while the traditional ones have been trying to survive in the market. The increase in the market share of non-chain supermarkets is the major driving force behind this process, and this is more prominent in the developed regions and cities. On the other hand, there is evidence about the fact that supermarket formats charge lower prices relative to the traditional formats for most of the products. That is why consumer can shop with the increasing market share of modern retailers.

Previous works on this issue are mainly concentrated on the channels that can lead to a decrease in the price level of households' consumption bundles or only the effects of hypermarkets on price levels. In this study a broader and more detailed definition for supermarkets is used in order to investigate the different impacts of these formats on price levels for different sectors. An extensive household panel data for FMCG consumption is used for the study. By means of this data, product quality problem was also eliminated with the use of brand level product definition.

The main result of the study is that increasing market share of supermarkets has a negative impact on price levels of traditional retailers in most of the sectors but this impact differs across each format for each sector. The estimates reveal that an increase in the market share of supermarkets have a negative impact on the price level in traditional retailers for 8 of the 12 sector examined in the study. Especially prices for food and beverages are not negatively affected by the increasing market share supermarkets and only some formats have negative impact on price levels of meat products. The impact of organized retailers on the traditional retailers' prices depends heavily on the sector characteristics. Therefore, the impact of each format differs for each sector. But, different characteristics supermarket formats create different impacts on the price levels observed in traditional retailers.

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There is also important space for future work in this area. First of all, the effective channels that enable supermarkets to charge lower prices can be investigated separately by using productivity and buyer power measures. Merging household panel and retailer based data can enable to see the impacts of different channels on prices. Retailer based data collected from retailer itself can make easier to monitor the changing structure and productivity level of retailers subject to analysis and give more clear results for the effects of these on price levels.

To conclude, the study found significant negative impact of increasing market share of modern retailers on average price levels of traditional retailers in some sectors of FMCG. The results point out that the presence and increasing market share of organized supermarkets is important for consumer welfare. Results show that one of the reasons that decrease the price levels that consumer face in traditional retailers is the existence of organized retailers and increasing competition in the market. Previous literature shows that inexistence of entry barriers to the markets has been one of the important factors that enabled the entrance of these supermarkets. For this reason, it is important to protect this competitive environment in order to maximize the welfare of the consumers as regulations causing a decrease in the market share of supermarkets will cause increases in price levels according to the results of the study.

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APPENDICES

APPENDIX A: TABLES

Table A. 1: Sector names and corresponding product groups for FMCG

Sector name	Product groups	Sector name	Product groups
Other products	Band-aids	Dairy products	Cheese
Other products	Batteries	Dairy products	Milks
Other products	Garbage bags	Dairy products	Yogurts
Other products	Light bulb	Oil products	Butters
Meat products	Processed meats	Oil products	Liquid oils
Meat products	White meats	Oil products	Margarine
Food products	Baby food	Paper products	Baby diapers
Food products	Bakliyat	Paper products	Baby wipes
Food products	Bouillon	Paper products	Hygienic pads
Food products	Corn flakes	Paper products	Paper products
Food products	Flours	Hair products	Hair conditioners
Food products	Frozen dinners	Hair products	Hair dyes
Food products	Frozen food	Hair products	Hair gels
Food products	Halvahs	Hair products	Shampoos
Food products	Jams	Body products	Cologne
Food products	Ketchup	Body products	Deodorants
Food products	Mayonnaise	Body products	Ear cleaner stack
Food products	Pasta	Body products	Personal wash
Food products	Puddings	Body products	Shaving blades
Food products	Rice flours	Body products	Shaving creams and gels
Food products	Soups	Body products	Skin care products
Food products	Spices	Body products	Toothbrushes
Food products	Tomato pastes	Body products	Toothpaste
Food products	Yeast	Body products	Wax & depilatory creams
Beverages	Alcoholic beverages	Detergents	Dishwashing detergents
Beverages	Beers	Detergents	Fabric conditioners
Beverages	Bottled waters	Detergents	Fabric detergents
Beverages	Buttermilk	Detergents	Granular soaps
Beverages	Fruit juices	Other cleaning products	Furniture care
Beverages	Granulated drinks	Other cleaning products	Household cleaners
Beverages	Instant cocoa drinks	Other cleaning products	Non-chemical household cleaners
Beverages	Instant coffees and creams		
Beverages	Mineral water		
Beverages	Soft drinks		
Beverages	Teas		
Beverages	Turkish coffees		
Chocolates, candies and deserts	Biscuits		
Chocolates, candies and deserts	Candies		
Chocolates, candies and deserts	Chocolate covered products		
Chocolates, candies and deserts	Chocolate spreads		
Chocolates, candies and deserts	Chocolates		
Chocolates, candies and deserts	Deluxe chocolates		
Chocolates, candies and deserts	Ice-creams		
Chocolates, candies and deserts	Snacks		

Table A. 2: Store Classification by Names and Period (End Period shows the last month that the store is in Specification_3 classification)

shop name	Specification_1	Specification_2	Specification_3	End period
Acik Pazar	Bazaar	Bazaar	Bazaar	200608
Adese	Supermarket	Local chains	One-city	200109
Adese	Supermarket	Local chains	Multi-city	200209
Adese	Supermarket	Local chains	Multi-city	200608
Afra	Supermarket	Local chains	One-city	200005
Afra	Supermarket	Local chains	Multi-city	200608
Akmopas	Supermarket	Non-chain	One-city	200607
Akyurt	Supermarket	Non-chain	One-city	200608
Altunbilekler	Supermarket	Non-chain	One-city	200608
Ankara Pazari	Supermarket	Local chains	Multi-city	200309
Ankara Pazari	Supermarket	Local chains	One-city	200608
Antalya Makro	Supermarket	Local chains	Multi-city	200009
Antalya Makro	Supermarket	Local chains	One-city	200608
Ardas	Supermarket	Non-chain	One-city	200608
Arican	Supermarket	Non-chain	One-city	200608
Bakkal	Medium Market & Grocery	Medium market & grocery	Medium Market & Grocery	200608
Bakkalim	Medium Market & Grocery	Medium market & grocery	Medium Market & Grocery	200608
Baris Gross	Supermarket	Non-chain	One-city	200608
Basgimpa	Supermarket	Non-chain	One-city	200608
Baymar	Supermarket	Local chains	One-city	200308
Baymar	Supermarket	Local chains	Multi-city	200606
Begendik	Supermarket	Local chains	Multi-city	200106
Begendik	supermarket	Local chains	Multi-city	200608
Belcar	supermarket	Non-chain	One-city	200210
Beltas/Dengemek	supermarket	Local chains	Multi-city	200210
Bim	supermarket	Discounter	Multi-city	200608
Binbir	supermarket	Local chains	Multi-city	200112
Bir Milyon Magazasi	Other	Other	Other	200608
Birmas	supermarket	Non-chain	One-city	200211
Büfe	Dfv-Kiosk	Dfv-kiosk	Dfv-Kiosk	200608
Bildirici	supermarket	Non-chain	One-city	200608
Birmar	supermarket	Non-chain	One-city	200608
Cagdas	supermarket	Non-chain	One-city	200608
Cagri	supermarket	Non-chain	One-city	200608

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Table A. 1(continued): Store Classification by Names and Period (End Period shows the last month that the store is in Specification_3 classification)

shop name	Specification_1	Specification_2	Specification_3	End period
Canerler	supermarket	National chains	One-city	200410
Canerler	supermarket	National chains	Multi-city	200509
Cankaya Market	supermarket	Local chains	One-city	200308
Cankaya Market	supermarket	Local chains	Multi-city	200604
Carrefour-SA	supermarket	National chains	Multi-city	200608
Cetinkaya	supermarket	Local chains	One-city	200109
Cetinkaya	supermarket	Local chains	Multi-city	200608
Ceylan	supermarket	Non-chain	One-city	200602
Champion-SA	supermarket	Local chains	One-city	200608
Continent	supermarket	Local chains	Multi-city	200010
Continent	supermarket	Local chains	Multi-city	200211
Contour	supermarket	Local chains	One-city	200108
Contour	supermarket	Local chains	Multi-city	200208
Dia	supermarket	Discounter	One-city	200110
Dia	supermarket	Discounter	Multi-city	200608
Diger	Other	Other	Other	200403
Diger	supermarket	Non-chain	One-city	200608
Dogmar	supermarket	Non-chain	One-city	200608
Dogu	supermarket	Non-chain	One-city	200204
Eczane	Other	Other	Other	200608
Ege Sok	supermarket	Non-chain	One-city	200608
Ekomar	supermarket	Non-chain	One-city	200608
Ender	supermarket	Non-chain	One-city	200602
Endi	supermarket	Discounter	Multi-city	200608
Erikciler	supermarket	Non-chain	One-city	200608
Esenlik	supermarket	Non-chain	One-city	200608
Esmar	supermarket	Non-chain	One-city	200608
Etmar	supermarket	Non-chain	One-city	200608
Ev	Other	Other	Other	200608
Fidanlar	supermarket	Non-chain	One-city	200608
For You	Other	Other	Other	200608
Fikret Karadag	supermarket	Non-chain	One-city	200608
Fiskomar A.S.	supermarket	Non-chain	One-city	200608
Genpa	supermarket	Local chains	Multi-city	200002
Genpa	supermarket	Local chains	One-city	200608
Gima	supermarket	National chains	Multi-city	200608
Gimsa	supermarket	Local chains	One-city	200608
Gokkusagi	supermarket	Non-chain	One-city	200608
Greens	supermarket	Non-chain	One-city	200608
Groseri	supermarket	Local chains	Multi-city	200503
Groseri	supermarket	Local chains	One-city	200608

Table A. 1(continued): Store Classification by Names and Period (End Period shows the last month that the store is in Specification_3 classification)

shop name	Specification_1	Specification_2	Specification_3	End period
Gross	supermarket	Local chains	One-city	200209
Gross	supermarket	Local chains	Multi-city	200608
Grup Hatipoglu	supermarket	Non-chain	One-city	200608
Guler	supermarket	Non-chain	One-city	200608
Gulgen	supermarket	Non-chain	One-city	200608
Gurmar	supermarket	Non-chain	One-city	200608
Gimpa	supermarket	Non-chain	One-city	200608
Hadim Gida	supermarket	Non-chain	One-city	200602
Hakmar	supermarket	Non-chain	One-city	200608
Happy Center(Rammar)	supermarket	Non-chain	One-city	200608
Has Begendik	supermarket	Local chains	Multi-city	200207
Hatmar	supermarket	Non-chain	One-city	200608
Ismar	supermarket	Local chains	One-city	200309
Ismar	supermarket	Local chains	Multi-city	200608
Kapidan Alim	Bazaar	Bazaar	Bazaar	200608
Kasap	Other	Other	Other	200608
Keybi	supermarket	Non-chain	One-city	200601
Kiler	supermarket	National chains	One-city	200011
Kiler	supermarket	National chains	Multi-city	200608
Kilerim	supermarket	Local chains	One-city	200608
Kiler-Kayseri	supermarket	Non-chain	One-city	200608
Kiler-Trabzon	supermarket	Non-chain	One-city	200608
Kipa	supermarket	National chains	One-city	200311
Kipa	supermarket	National chains	Multi-city	200608
Kipa Ekspress	supermarket	National chains	Multi-city	200606
Kooperatif	Other	Other	Other	200608
Kopuzlar	supermarket	Non-chain	One-city	200608
Koylu Kardesler	supermarket	Non-chain	One-city	200602
Kuruyemisçi	Dfv-Kiosk	Dfv-kiosk	Dfv-Kiosk	200608
Macro Center	supermarket	Local chains	One-city	200407
Macro Center	supermarket	Local chains	Multi-city	200608
Macit	supermarket	Non-chain	One-city	200608
Makmar	supermarket	Non-chain	One-city	200608
Makro Market-Ankara	supermarket	Non-chain	One-city	200608
Makro Serefler	supermarket	Local chains	Multi-city	200207
Marketim	supermarket	Local chains	Multi-city	200202
Marketim	supermarket	Local chains	Multi-city	200407
Marketim	supermarket	Local chains	One-city	200608
Mavi	supermarket	Non-chain	One-city	200605

Table A. 1(continued): Store Classification by Names and Period (End Period shows the last month that the store is in Specification_3 classification)

shop name	Specification_1	Specification_2	Specification_3	End period
Maxi	supermarket	Local chains	One-city	200112
Maxi	supermarket	Local chains	Multi-city	200608
Mepas	supermarket	Non-chain	One-city	200608
Mercek (Konya)	supermarket	Discounter	One-city	200608
Merhamet	supermarket	Non-chain	One-city	200608
Metro	supermarket	Local chains	Multi-city	200608
Migros	supermarket	National chains	Multi-city	200608
Mopas	supermarket	Local chains	One-city	200202
Mopas	supermarket	Local chains	Multi-city	200608
Muggy	supermarket	Non-chain	One-city	200608
Nazar	supermarket	Local chains	One-city	200608
Nokta	supermarket	Local chains	Multi-city	200207
Ofis	supermarket	Non-chain	One-city	200608
Ofis Market-Malatya	supermarket	Non-chain	One-city	200608
Ogutler	supermarket	Non-chain	One-city	200608
Oli Market	supermarket	Non-chain	One-city	200608
Onur	supermarket	Non-chain	One-city	200608
Opet	supermarket	Non-chain	One-city	200608
Ordu Pazari-Oypa	supermarket	Local chains	Multi-city	200112
Ordu Pazari-Oypa	supermarket	Local chains	One-city	200608
Orko	supermarket	Non-chain	One-city	200210
Orta Market	Medium Market & Grocery	Medium market & grocery	Medium Market & Grocery	200608
Osmanli Gida	supermarket	Local chains	One-city	200101
Osmanli Gida	supermarket	Local chains	Multi-city	200209
Ozdilek	supermarket	Non-chain	One-city	200608
Ozhan	supermarket	Non-chain	One-city	200608
Ozkuruslar	supermarket	Non-chain	One-city	200608
Ozmar – Erzurum	supermarket	Non-chain	One-city	200608
Ozmar - Zonguldak	supermarket	Non-chain	One-city	200608
Parfümeri	Other	Other	Other	200608
Pastane	Other	Other	Other	200608
Pehlivanoglu	supermarket	Local chains	One-city	200112
Pehlivanoglu	supermarket	Local chains	Multi-city	200309
Pehlivanoglu	supermarket	Local chains	Multi-city	200608
Pekdemir	supermarket	Non-chain	One-city	200608

Table A. 1(continued): Store Classification by Names and Period (End Period shows the last month that the store is in Specification_3 classification)

shop name	Specification_1	Specification_2	Specification_3	End period
PM	supermarket	Local chains	One-city	200308
PM	supermarket	Local chains	Multi-city	200608
Prestige	supermarket	Non-chain	One-city	200608
Real	supermarket	National chains	Multi-city	200608
Renk Gida	supermarket	Non-chain	One-city	200606
Sabit pazar	Bazaar	Bazaar	Bazaar	200608
Sarküteri	Other	Other	Other	200608
Savak	supermarket	Non-chain	One-city	200608
Saypa1	supermarket	Local chains	One-city	200608
Sekerciler	supermarket	Non-chain	One-city	200608
Seyhanlar	supermarket	Non-chain	One-city	200608
Sok	supermarket	Discounter	Multi-city	200608
Soykan	supermarket	Non-chain	One-city	200608
Tansa	supermarket	Non-chain	One-city	200608
Tansas	supermarket	National chains	Multi-city	200608
Tekpa	supermarket	Non-chain	One-city	200608
Tem	supermarket	Non-chain	One-city	200211
Tema	supermarket	Non-chain	One-city	200608
Tempo	supermarket	Non-chain	One-city	200608
Tespo	supermarket	Non-chain	One-city	200607
Toptanci Magaza	Wholesalers	Wholesalers	Wholesalers	200608
Toros	supermarket	Non-chain	One-city	200608
Ucarlar	supermarket	Non-chain	One-city	200208
Ucler	supermarket	Non-chain	One-city	200608
Ugur	supermarket	Non-chain	One-city	200608
Umi	supermarket	Discounter	One-city	200608
Umpas	supermarket	Non-chain	One-city	200608
Upa	supermarket	Non-chain	One-city	200608
Uyum	supermarket	Local chains	One-city	200608
Uzman Magaza	Other	Other	Other	200608
Vipa	supermarket	Non-chain	One-city	200608
Yalcinkaya	supermarket	Local chains	One-city	200608
Yimpas	supermarket	Local chains	Multi-city	200608
Yonca Gida	supermarket	Local chains	One-city	200404
Yonca Gida	supermarket	Local chains	Multi-city	200608

Table A. 3: Sector level descriptive statistics - other products

Variable	Obs[11]	Mean	Std. Dev.	Min	Max
price_index	448	1.29	0.58	0.08	3.84
ln(price_index)	448	0.13	0.55	-2.48	1.34
share^{supermarket}	448	0.44	0.27	0.01	0.98
share^{discounters}	448	0.06	0.09	0.00	0.45
share$^{local\ chain}$	448	0.06	0.10	0.00	0.76
share$^{non-chain}$	448	0.16	0.13	0.00	0.81
share$^{national\ chain}$	448	0.15	0.19	0.00	0.94
share$^{one\_city}$	448	0.19	0.15	0.00	0.93
share$^{multi\_city}$	448	0.20	0.20	0.00	0.93
(share^{supermarket})^2	448	0.26	0.27	0.00	0.96
(share^{discounters})^2	448	0.01	0.03	0.00	0.20
(share$^{local\ chains}$)^2	448	0.01	0.05	0.00	0.58
(share^{non})^2	448	0.04	0.07	0.00	0.65
(share$^{national\ chain}$)^2	448	0.06	0.12	0.00	0.89
(share$^{one\_city}$)^2	448	0.06	0.09	0.00	0.87
(share$^{multi\_city}$)^2	448	0.08	0.13	0.00	0.87

Table A. 4: Sector level descriptive statistics - meat products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	2632	1.46	0.42	0.45	3.71
ln(price_index)	2632	0.34	0.29	-0.80	1.31
share^{supermarket}	2632	0.54	0.25	0.02	0.99
share^{discounters}	2632	0.07	0.13	0.00	0.88
share$^{local\ chain}$	2632	0.09	0.10	0.00	0.79
share$^{non-chain}$	2632	0.22	0.14	0.00	0.89
share$^{national\ chain}$	2632	0.16	0.17	0.00	0.90
share$^{one\_city}$	2632	0.27	0.15	0.00	0.94
share$^{multi\_city}$	2632	0.22	0.19	0.00	0.90
(share^{supermarket})^2	2632	0.35	0.27	0.00	0.99
(share^{discounters})^2	2632	0.02	0.07	0.00	0.78
(share$^{local\ chains}$)^2	2632	0.02	0.04	0.00	0.62
(share^{non})^2	2632	0.07	0.09	0.00	0.80
(share$^{national\ chain}$)^2	2632	0.05	0.10	0.00	0.81
(share$^{one\_city}$)^2	2632	0.10	0.11	0.00	0.88
(share$^{multi\_city}$)^2	2632	0.08	0.13	0.00	0.81

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[11] Obs. refers to number of observations.

Table A. 5: Sector level descriptive statistics - food products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	8456	1.42	0.50	0.10	6.12
ln(price_index)	8456	0.29	0.34	-2.30	1.81
$share^{supermarket}$	8456	0.51	0.23	0.01	1.00
$share^{discounters}$	8456	0.07	0.15	0.00	0.98
$share^{local\ chain}$	8456	0.08	0.10	0.00	0.92
$share^{non-chain}$	8456	0.24	0.15	0.00	0.89
$share^{national\ chain}$	8456	0.12	0.13	0.00	0.94
$share^{one\_city}$	8456	0.28	0.16	0.00	0.96
$share^{multi\_city}$	8456	0.19	0.19	0.00	0.98
$(share^{supermarket})^2$	8456	0.31	0.23	0.00	1.00
$(share^{discounters})^2$	8456	0.03	0.11	0.00	0.97
$(share^{local\ chains})^2$	8456	0.02	0.05	0.00	0.84
$(share^{non})^2$	8456	0.08	0.09	0.00	0.80
$(share^{national\ chain})^2$	8456	0.03	0.07	0.00	0.89
$(share^{one\_city})^2$	8456	0.10	0.11	0.00	0.91
$(share^{multi\_city})^2$	8456	0.07	0.14	0.00	0.97

Table A. 6: Sector level descriptive statistics – beverages

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	4424	1.43	0.61	0.27	5.67
ln(price_index)	4424	0.29	0.36	-1.31	1.73
$share^{supermarket}$	4424	0.47	0.23	0.01	0.99
$share^{discounters}$	4424	0.09	0.17	0.00	0.93
$share^{local\ chain}$	4424	0.07	0.07	0.00	0.78
$share^{non-chain}$	4424	0.17	0.13	0.00	0.85
$share^{national\ chain}$	4424	0.14	0.12	0.00	0.83
$share^{one\_city}$	4424	0.20	0.14	0.00	0.95
$share^{multi\_city}$	4424	0.22	0.21	0.00	0.95
$(share^{supermarket})^2$	4424	0.27	0.24	0.00	0.98
$(share^{discounters})^2$	4424	0.04	0.13	0.00	0.86
$(share^{local\ chains})^2$	4424	0.01	0.03	0.00	0.61
$(share^{non})^2$	4424	0.05	0.07	0.00	0.73
$(share^{national\ chain})^2$	4424	0.03	0.06	0.00	0.69
$(share^{one\_city})^2$	4424	0.06	0.08	0.00	0.90
$(share^{multi\_city})^2$	4424	0.09	0.16	0.00	0.91

Table A. 7: Sector level descriptive statistics – chocolates, candies and deserts

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	5040	1.49	0.48	0.54	5.27
ln(price_index)	5040	0.36	0.28	-0.62	1.66
share^{supermarket}	5040	0.47	0.20	0.01	0.99
share^{discounters}	5040	0.10	0.14	0.00	0.93
share$^{local\ chain}$	5040	0.07	0.07	0.00	0.70
share$^{non\text{-}chain}$	5040	0.17	0.11	0.00	0.83
share$^{national\ chain}$	5040	0.14	0.12	0.00	0.88
share$^{one\_city}$	5040	0.20	0.11	0.00	0.87
share$^{multi\_city}$	5040	0.22	0.17	0.00	0.99
(share^{supermarket})^2	5040	0.26	0.20	0.00	0.99
(share^{discounters})^2	5040	0.03	0.10	0.00	0.86
(share$^{local\ chains}$)^2	5040	0.01	0.02	0.00	0.49
(share^{non})^2	5040	0.04	0.05	0.00	0.69
(share$^{national\ chain}$)^2	5040	0.03	0.06	0.00	0.77
(share$^{one\_city}$)^2	5040	0.06	0.06	0.00	0.75
(share$^{multi\_city}$)^2	5040	0.08	0.14	0.00	0.97

Table A. 8: Sector level descriptive statistics – Dairy products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	3136	1.50	0.38	0.31	3.42
ln(price_index)	3136	0.37	0.26	-1.18	1.23
share^{supermarket}	3136	0.59	0.24	0.01	1.00
share^{discounters}	3136	0.11	0.21	0.00	0.95
share$^{local\ chain}$	3136	0.09	0.10	0.00	0.83
share$^{non\text{-}chain}$	3136	0.21	0.15	0.00	0.98
share$^{national\ chain}$	3136	0.18	0.16	0.00	0.95
share$^{one\_city}$	3136	0.27	0.17	0.00	0.98
share$^{multi\_city}$	3136	0.26	0.24	0.00	0.95
(share^{supermarket})^2	3136	0.40	0.27	0.00	0.99
(share^{discounters})^2	3136	0.06	0.17	0.00	0.91
(share$^{local\ chains}$)^2	3136	0.02	0.05	0.00	0.68
(share^{non})^2	3136	0.07	0.08	0.00	0.97
(share$^{national\ chain}$)^2	3136	0.05	0.09	0.00	0.90
(share$^{one\_city}$)^2	3136	0.10	0.11	0.00	0.97
(share$^{multi\_city}$)^2	3136	0.13	0.20	0.00	0.91

Table A. 9: Sector level descriptive statistics – oil products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	2576	1.12	0.32	0.55	3.21
ln(price_index)	2576	0.08	0.24	-0.60	1.16
share^{supermarket}	2576	0.48	0.22	0.01	0.99
share^{discounters}	2576	0.06	0.14	0.00	0.83
share$^{local\ chain}$	2576	0.08	0.08	0.00	0.83
share$^{non-chain}$	2576	0.24	0.13	0.00	0.92
share$^{national\ chain}$	2576	0.11	0.11	0.00	0.66
share$^{one\_city}$	2576	0.28	0.14	0.00	0.94
share$^{multi\_city}$	2576	0.17	0.19	0.00	0.96
(share^{supermarket})^2	2576	0.28	0.23	0.00	0.99
(share^{discounters})^2	2576	0.02	0.09	0.00	0.69
(share$^{local\ chains}$)^2	2576	0.01	0.03	0.00	0.69
(share^{non})^2	2576	0.07	0.07	0.00	0.84
(share$^{national\ chain}$)^2	2576	0.02	0.05	0.00	0.44
(share$^{one\_city}$)^2	2576	0.10	0.09	0.00	0.88
(share$^{multi\_city}$)^2	2576	0.06	0.15	0.00	0.93

Table A. 10: Sector level descriptive statistics – paper products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	2408	1.15	0.35	0.16	4.67
ln(price_index)	2408	0.08	0.35	-1.86	1.54
share^{supermarket}	2408	0.59	0.21	0.02	0.99
share^{discounters}	2408	0.06	0.14	0.00	0.78
share$^{local\ chain}$	2408	0.08	0.08	0.00	0.83
share$^{non-chain}$	2408	0.27	0.17	0.00	0.93
share$^{national\ chain}$	2408	0.17	0.16	0.00	0.86
share$^{one\_city}$	2408	0.31	0.18	0.00	0.96
share$^{multi\_city}$	2408	0.23	0.23	0.00	0.97
(share^{supermarket})^2	2408	0.39	0.24	0.00	0.98
(share^{discounters})^2	2408	0.02	0.09	0.00	0.62
(share$^{local\ chains}$)^2	2408	0.01	0.03	0.00	0.69
(share^{non})^2	2408	0.10	0.11	0.00	0.86
(share$^{national\ chain}$)^2	2408	0.06	0.10	0.00	0.73
(share$^{one\_city}$)^2	2408	0.13	0.13	0.00	0.93
(share$^{multi\_city}$)^2	2408	0.10	0.19	0.00	0.94

Table A. 11: Sector level descriptive statistics – hair products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	1232	1.08	0.25	0.55	1.98
ln(price_index)	1232	0.05	0.23	-0.60	0.68
$\text{share}^{\text{supermarket}}$	1232	0.48	0.17	0.02	0.96
$\text{share}^{\text{discounters}}$	1232	0.03	0.05	0.00	0.43
$\text{share}^{\text{local chain}}$	1232	0.08	0.07	0.00	0.54
$\text{share}^{\text{non-chain}}$	1232	0.24	0.11	0.00	0.69
$\text{share}^{\text{national chain}}$	1232	0.13	0.10	0.00	0.95
$\text{share}^{\text{one\_city}}$	1232	0.27	0.12	0.00	0.71
$\text{share}^{\text{multi\_city}}$	1232	0.16	0.11	0.00	0.73
$(\text{share}^{\text{supermarket}})^2$	1232	0.26	0.17	0.00	0.92
$(\text{share}^{\text{discounters}})^2$	1232	0.00	0.01	0.00	0.19
$(\text{share}^{\text{local chains}})^2$	1232	0.01	0.02	0.00	0.29
$(\text{share}^{\text{non}})^2$	1232	0.07	0.06	0.00	0.48
$(\text{share}^{\text{national chain}})^2$	1232	0.03	0.06	0.00	0.91
$(\text{share}^{\text{one\_city}})^2$	1232	0.09	0.07	0.00	0.50
$(\text{share}^{\text{multi\_city}})^2$	1232	0.04	0.06	0.00	0.54

Table A. 12: Sector level descriptive statistics – body products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	2632	1.25	0.43	0.27	5.21
ln(price_index)	2632	0.18	0.31	-1.31	1.65
$\text{share}^{\text{supermarket}}$	2632	0.52	0.20	0.01	0.99
$\text{share}^{\text{discounters}}$	2632	0.06	0.09	0.00	0.80
$\text{share}^{\text{local chain}}$	2632	0.08	0.08	0.00	0.81
$\text{share}^{\text{non-chain}}$	2632	0.23	0.13	0.00	0.88
$\text{share}^{\text{national chain}}$	2632	0.15	0.13	0.00	0.89
$\text{share}^{\text{one\_city}}$	2632	0.27	0.14	0.00	0.88
$\text{share}^{\text{multi\_city}}$	2632	0.21	0.15	0.00	0.87
$(\text{share}^{\text{supermarket}})^2$	2632	0.31	0.21	0.00	0.98
$(\text{share}^{\text{discounters}})^2$	2632	0.01	0.04	0.00	0.64
$(\text{share}^{\text{local chains}})^2$	2632	0.01	0.03	0.00	0.66
$(\text{share}^{\text{non}})^2$	2632	0.07	0.08	0.00	0.78
$(\text{share}^{\text{national chain}})^2$	2632	0.04	0.07	0.00	0.80
$(\text{share}^{\text{one\_city}})^2$	2632	0.09	0.09	0.00	0.78
$(\text{share}^{\text{multi\_city}})^2$	2632	0.07	0.09	0.00	0.76

Table A. 13: Sector level descriptive statistics – detergents

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	2184	1.09	0.46	0.43	3.83
ln(price_index)	2184	0.02	0.35	-0.85	1.34
share^{supermarket}	2184	0.53	0.20	0.02	1.00
share^{discounters}	2184	0.05	0.11	0.00	0.70
share$^{local\ chain}$	2184	0.09	0.08	0.00	0.60
share$^{non\text{-}chain}$	2184	0.27	0.14	0.00	0.88
share$^{national\ chain}$	2184	0.13	0.12	0.00	0.66
share$^{one\_city}$	2184	0.32	0.15	0.00	0.88
share$^{multi\_city}$	2184	0.18	0.17	0.00	0.96
(share^{supermarket})^2	2184	0.32	0.21	0.00	0.99
(share^{discounters})^2	2184	0.01	0.05	0.00	0.49
(share$^{local\ chains}$)^2	2184	0.01	0.03	0.00	0.35
(share^{non})^2	2184	0.10	0.10	0.00	0.77
(share$^{national\ chain}$)^2	2184	0.03	0.05	0.00	0.43
(share$^{one\_city}$)^2	2184	0.12	0.11	0.00	0.78
(share$^{multi\_city}$)^2	2184	0.06	0.12	0.00	0.92

Table A. 14: Sector level descriptive statistics – other products

Variable	Obs	Mean	Std. Dev.	Min	Max
price_index	1344	1.13	0.33	0.38	2.49
ln(price_index)	1344	0.08	0.29	-0.98	0.91
share^{supermarket}	1344	0.57	0.17	0.02	0.98
share^{discounters}	1344	0.03	0.06	0.00	0.63
share$^{local\ chain}$	1344	0.09	0.08	0.00	0.57
share$^{non\text{-}chain}$	1344	0.31	0.16	0.00	0.88
share$^{national\ chain}$	1344	0.14	0.13	0.00	0.65
share$^{one\_city}$	1344	0.35	0.16	0.00	0.91
share$^{multi\_city}$	1344	0.18	0.15	0.00	0.76
(share^{supermarket})^2	1344	0.35	0.20	0.00	0.96
(share^{discounters})^2	1344	0.00	0.02	0.00	0.40
(share$^{local\ chains}$)^2	1344	0.01	0.03	0.00	0.32
(share^{non})^2	1344	0.12	0.12	0.00	0.78
(share$^{national\ chain}$)^2	1344	0.04	0.06	0.00	0.43
(share$^{one\_city}$)^2	1344	0.15	0.13	0.00	0.83
(share$^{multi\_city}$)^2	1344	0.06	0.07	0.00	0.58

Table A. 15: Estimates for "other products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.1706	-0.3549						
	[0.0527]***	[0.1532]**						
(share^{supermarket})^2		0.1944						
		[0.1521]						
share^{discounters}			-0.2093	0.3077				
			[0.1193]*	[0.2893]				
(share^{discounters})^2				-1.5378				
				[0.7856]*				
share$^{local\ chain}$					-0.1952	-0.236		
					[0.0999]*	[0.2046]		
(share$^{local\ chains}$)^2						0.0978		
						[0.4314]		
share$^{non\text{-}chain}$							0.0334	0.0068
							[0.0710]	[0.1948]
(share^{non})^2								0.0496
								[0.3573]
Constant	0.4006	0.4217	0.2711	0.2647	0.3137	0.3123	0.2741	0.2755
	[0.0757]***	[0.0769]***	[0.0710]***	[0.0707]***	[0.0721]***	[0.0722]***	[0.0707]***	[0.0712]***
Wald chi^2	1107.88	1115.27	943.58	950.48	985.83	984.09	991.39	1024.84
Log Likelihood	151.08	152.17	146.24	149.21	147.32	147.05	144.90	143.24
Observations	448	448	448	448	448	448	448	448
Number of products	8	8	8	8	8	8	8	8

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 15 (continued): Estimates for "other products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.153	-0.2958				
	[0.0682]**	[0.1703]*				
(share$^{national\ chain}$)^2		0.2035				
		[0.2229]				
share$^{one\_city}$			-0.0377	0.0035		
			[0.0640]	[0.1712]		
(share$^{one\_city}$)^2				-0.0682		
				[0.2645]		
share$^{multi\_city}$					-0.1453	-0.2415
					[0.0622]**	[0.1626]
(share$^{multi\_city}$)^2						0.1368
						[0.2140]
Constant	0.3396	0.3582	0.2852	0.2811	0.3344	0.3445
	[0.0739]***	[0.0760]***	[0.0707]***	[0.0716]***	[0.0737]***	[0.0751]***
Wald chi^2	1000.92	1004.92	995.71	1003.87	978.61	986.41
Log Likelihood	148.25	148.75	145.01	144.08	148.65	148.89
Observations	448	448	448	448	448	448
Number of products	8	8	8	8	8	8

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 16 : Estimates for "meat products" (price_index is the dependent variable),

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\text{share}^{\text{supermarket}}$	-0.041	-0.0044						
	[0.0195]**	[0.0612]						
$(\text{share}^{\text{supermarket}})^2$		-0.0369						
		[0.0590]						
$\text{share}^{\text{discounters}}$			-0.0004	0.1109				
			[0.0434]	[0.0848]				
$(\text{share}^{\text{discounters}})^2$				-0.2235				
				[0.1465]				
$\text{share}^{\text{local chain}}$					-0.0717	-0.0428		
					[0.0382]*	[0.0759]		
$(\text{share}^{\text{local chain}})^2$						-0.0804		
						[0.1903]		
$\text{share}^{\text{non-chain}}$							-0.0386	0.0214
							[0.0235]	[0.0640]
$(\text{share}^{\text{non}})^2$								-0.1048
								[0.1039]
Constant	1.2628	1.2609	1.2259	1.2178	1.2329	1.2309	1.2296	1.2247
	[0.0567]***	[0.0568]***	[0.0536]***	[0.0535]***	[0.0533]***	[0.0534]***	[0.0538]***	[0.0540]***
Wald chi^2	8019.07	8046.48	8118.80	8141.08	8183.53	8174.38	8045.04	8056.80
Log likelihood	1564.40	1564.63	1563.78	1564.97	1565.38	1565.33	1565.06	1565.74
Observations	2632	2632	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 16 (continued): Estimates for "meat products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
$\text{share}^{\text{national chain}}$	0.0164	-0.2958				
	[0.0293]	[0.1703]*				
$(\text{share}^{\text{national chain}})^2$		0.2035				
		[0.2229]				
$\text{share}^{\text{one\_city}}$			-0.0377	0.0035		
			[0.0640]	[0.1712]		
$(\text{share}^{\text{one\_city}})^2$				-0.0682		
				[0.2645]		
$\text{share}^{\text{multi\_city}}$					-0.1453	-0.2415
					[0.0622]**	[0.1626]
$(\text{share}^{\text{multi\_city}})^2$						0.1368
						[0.2140]
Constant	1.2161	0.3582	0.2852	0.2811	0.3344	0.3445
	[0.0560]***	[0.0760]***	[0.0707]***	[0.0716]***	[0.0737]***	[0.0751]***
Wald chi^2	8126.84	8130.16	8086.25	8095.39	8118.05	8122.64
Log Likelihood	1564.01	1564.51	1567.69	1568.35	1564.04	1564.23
Observations	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 17: Estimates for "food products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$share^{supermarket}$	-0.0093	0.0852						
	[0.0110]	[0.0381]**						
$(share^{supermarket})^2$		-0.0958						
		[0.0371]***						
$share^{discounters}$			-0.0257	0.0092				
			[0.0256]	[0.0432]				
$(share^{discounters})^2$				-0.0715				
				[0.0715]				
$share^{local chain}$					0.0129	0.0415		
					[0.0213]	[0.0426]		
$(share^{local chains})^2$						-0.0743		
						[0.0964]		
$share^{non-chain}$							-0.0047	-0.0433
							[0.0131]	[0.0384]
$(share^{non})^2$								0.0625
								[0.0599]
Constant	1.3908	1.3704	1.3873	1.3868	1.3855	1.384	1.3877	1.3917
	[0.0364]***	[0.0372]***	[0.0362]***	[0.0362]***	[0.0363]***	[0.0363]***	[0.0363]***	[0.0364]***
Wald chi^2	12580.20	12611.87	12539.59	12556.00	12516.02	12506.88	12557.82	12538.21
Log Likelihood	4452.42	4455.16	4455.01	4455.06	4455.00	4455.59	12557.82	4453.26
Observations	8456	8456	8456	8456	8456	8456	8456	8456
Number of products	151	151	151	151	151	151	151	151

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 17 (continued): Estimates for "food products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
$share^{national chain}$	-0.0105	-0.0677				
	[0.0178]	[0.0368]*				
$(share^{national chain})^2$		0.1154				
		[0.0651]*				
$share^{one\_city}$			-0.004	-0.0468		
			[0.0124]	[0.0376]		
$(share^{one\_city})^2$				0.0633		
				[0.0534]		
$share^{multi\_city}$					-0.0248	-0.0202
					[0.0152]	[0.0328]
$(share^{multi\_city})^2$						-0.0081
						[0.0512]
Constant	1.3884	1.3933	1.3877	1.3929	1.3909	1.3905
	[0.0365]***	[0.0367]***	[0.0362]***	[0.0366]***	[0.0362]***	[0.0363]***
Wald chi^2	12529.08	12533.24	12588.24	12575.26	12534.25	12541.62
Log Likelihood	4453.97	4455.37	4451.85	4451.65	4454.57	4453.94
Observations	8456	8456	8456	8456	8456	8456
Number of products	151	151	151	151	151	151

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 18: Estimates for "beverages" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	0.0237	-0.0191						
	[0.0158]	[0.0486]						
(share^{supermarket})^2		0.0468						
		[0.0500]						
share^{discounters}			0.0115	-0.0351				
			[0.0355]	[0.0547]				
(share^{discounters})^2				0.0984				
				[0.0906]				
share$^{local\ chain}$					-0.0004	-0.0084		
					[0.0306]	[0.0568]		
(share$^{local\ chains}$)^2						0.0253		
						[0.1567]		
share$^{non-chain}$							0.031	0.0127
							[0.0195]	[0.0477]
(share^{non})^2								0.0346
								[0.0819]
Constant	0.9132	0.9167	0.9294	0.9347	0.9315	0.932	0.9259	0.9274
	[0.0520]***	[0.0519]***	[0.0520]***	[0.0516]***	[0.0512]***	[0.0513]***	[0.0515]***	[0.0516]***
Wald chi^2	5803.40	5847.75	5767.44	5806.19	5733.78	5738.02	5704.04	5719.85
Log Likelihood	3114.11	3111.46	3116.78	3115.59	3117.70	3117.36	3119.53	3118.62
Observations	4424	4424	4424	4424	4424	4424	4424	4424
Number of products	79	79	79	79	79	79	79	79

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 18 (continued): Estimates for "beverages" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0037	0.059				
	[0.0236]	[0.0538]				
(share$^{national\ chain}$)^2		-0.1181				
		[0.1033]				
share$^{one\_city}$			0.0115	-0.0351		
			[0.0355]	[0.0547]		
(share$^{one\_city}$)^2				0.0515		
				[0.0798]		
share$^{multi\_city}$					0.0208	-0.0112
					[0.0207]	[0.0433]
(share$^{multi\_city}$)^2						0.0552
						[0.0656]
Constant	0.9304	0.926	0.9279	0.931	0.9215	0.9238
	[0.0514]***	[0.0511]***	[0.0514]***	[0.0512]***	[0.0517]***	[0.0517]***
Wald chi^2	5749.49	5813.20	5727.13	5773.26	5815.51	5830.99
Log Likelihood	3116.80	3113.55	3117.55	3114.70	3112.21	3111.96
Observations	4424	4424	4424	4424	4424	4424
Number of products	79	79	79	79	79	79

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 19: Estimates for "chocolates, candies and deserts" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0296	0.0187						
	[0.0146]**	[0.0506]						
(share^{supermarket})^2		-0.0516						
		[0.0518]						
share^{discounters}			-0.0096	0.0458				
			[0.0275]	[0.0477]				
(share^{discounters})^2				-0.1358				
				[0.0960]				
share$^{local\ chain}$					0.0164	-0.0523		
					[0.0296]	[0.0582]		
(share$^{local\ chains}$)^2						0.2304		
						[0.1686]		
share$^{non-chain}$							-0.0541	-0.0323
							[0.0192]***	[0.0531]
(share^{non})^2								-0.0467
								[0.1055]
Constant	0.6273	0.6208	0.6222	0.621	0.6221	0.623	0.6255	0.6245
	[0.0387]***	[0.0393]***	[0.0395]***	[0.0391]***	[0.0387]***	[0.0389]***	[0.0379]***	[0.0382]***
Wald chi^2	12638.90	12639.52	12618.33	12675.75	12749.24	12729.88	12760.08	12756.25
Log Likelihood	3851.59	3852.07	3849.34	3849.49	3849.17	3849.76	3852.57	3852.51
Observations	5040	5040	5040	5040	5040	5040	5040	5040
Number of products	90	90	90	90	90	90	90	90

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 19 (continued): Estimates for "chocolates, candies and deserts" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0027	-0.0836				
	[0.0211]	[0.0467]*				
(share$^{national\ chain}$)^2		0.1891				
		[0.0919]**				
share$^{one\_city}$			-0.0096	0.0458		
			[0.0275]	[0.0477]		
(share$^{one\_city}$)^2				-0.0566		
				[0.0921]		
share$^{multi\_city}$					0.0098	0.0332
					[0.0183]	[0.0435]
(share$^{multi\_city}$)^2						-0.0415
						[0.0700]
Constant	0.6221	0.6246	0.6252	0.6235	0.6214	0.6204
	[0.0388]***	[0.0388]***	[0.0381]***	[0.0382]***	[0.0391]***	[0.0392]***
Wald chi^2	12746.96	12767.42	12730.62	12741.83	12729.37	12739.70
Log Likelihood	3849.00	3851.23	3852.42	3852.35	3849.05	3848.91
Observations	5040	5040	5040	5040	5040	5040
Number of products	90	90	90	90	90	90

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 20: Estimates for "Dairy products" sector (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0319	0.0011						
	[0.0187]*	[0.0590]						
(share^{supermarket})^2		-0.0321						
		[0.0539]						
share^{discounters}			-0.0361	-0.0271				
			[0.0330]	[0.0595]				
(share^{discounters})^2				-0.0145				
				[0.0870]				
share$^{local chain}$					0.0446	-0.0554		
					[0.0334]	[0.0610]		
(share$^{local chains}$)^2						0.2546		
						[0.1311]*		
share$^{non-chain}$							-0.0686	0.0339
							[0.0238]***	[0.0632]
(share^{non})^2								-0.1956
								[0.1134]*
Constant	0.6405	0.633	0.628	0.6269	0.6215	0.6233	0.6384	0.6304
	[0.0382]***	[0.0401]***	[0.0370]***	[0.0368]***	[0.0369]***	[0.0368]***	[0.0365]***	[0.0371]***
Wald chi^2	8695.92	8826.49	8679.96	8903.05	8659.23	8885.59	8819.52	8810.76
Log Likelihood	2158.66	2155.85	2157.10	2151.21	2157.24	2155.35	2158.38	215995
Observations	3136	3136	3136	3136	3136	3136	3136	3136
Number of products	56	56	56	56	56	56	56	56

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 20 (continued): Estimates for "Dairy products" sector (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national chain}$	0.0139	-0.0109				
	[0.0236]	[0.0508]				
(share$^{national chain}$)^2		0.0461				
		[0.0822]				
share$^{one\_city}$			-0.0361	-0.0271		
			[0.0330]	[0.0595]		
(share$^{one\_city}$)^2				0.0327		
				[0.0905]		
share$^{multi\_city}$					-0.0003	0.0136
					[0.0216]	[0.0469]
(share$^{multi\_city}$)^2						-0.0207
						[0.0633]
Constant	0.6235	0.6253	0.6303	0.6324	0.625	0.6236
	[0.0368]***	[0.0369]***	[0.0368]***	[0.0375]***	[0.0372]***	[0.0373]***
Wald chi^2	8706.44	8706.50	8704.81	8654.34	8656.30	8707.92
Log Likelihood	2155.97	2155.90	2157.30	2157.05	2157.05	2155.95
Observations	3136	3136	3136	3136	3136	3136
Number of products	56	56	56	56	56	56

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 21: Estimates for "oil products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0033	-0.1269						
	[0.0118]	[0.0387]***						
(share^{supermarket}**)**^{2}		0.1401						
		[0.0416]***						
share^{discounters}			-0.0139	-0.0677				
			[0.0380]	[0.0563]				
(share^{discounters}**)**^{2}				0.1939				
				[0.1503]				
share$^{local\ chain}$					0.0103	0.0071		
					[0.0229]	[0.0427]		
(share$^{local\ chains}$**)**^{2}						0.0108		
						[0.0974]		
share$^{non-chain}$							-0.0028	-0.0545
							[0.0141]	[0.0432]
(share^{non}**)**^{2}								0.0942
								[0.0740]
Constant	1.1795	1.1978	1.1791	1.1798	1.1783	1.1782	1.1789	1.1821
	[0.0353]***	[0.0344]***	[0.0351]***	[0.0348]***	[0.0348]***	[0.0347]***	[0.0353]***	[0.0356]***
Wald chi^2	2831.96	3010.92	2839.03	2893.76	2881.49	2875.16	2824.33	2853.29
Log Likelihood	3184.48	3184.21	3184.52	3182.69	3182.44	3180.86	3184.40	3183.55
Observations	2576	2576	2576	2576	2576	2576	2576	2576
Number of products	46	46	46	46	46	46	46	46

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 21 (continued): Estimates for "oil products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0131	-0.0537				
	[0.0240]	[0.0510]				
(share$^{national\ chain}$**)**^{2}		0.1264				
		[0.1328]				
share$^{one\_city}$			-0.0139	-0.0677		
			[0.0380]	[0.0563]		
(share$^{one\_city}$**)**^{2}				0.102		
				[0.0619]*		
share$^{multi\_city}$					-0.0003	-0.03
					[0.0210]	[0.0421]
(share$^{multi\_city}$**)**^{2}						0.0763
						[0.0908]
Constant	1.1795	1.1803	1.1803	1.1854	1.1788	1.1801
	[0.0343]***	[0.0347]***	[0.0352]***	[0.0356]***	[0.0344]***	[0.0346]***
Wald chi^2	2947.63	2905.17	2836.55	2870.42	2916.71	2928.87
Log Likelihood	3180.11	3180.30	3184.09	3182.99	3181.15	3180.83
Observations	2576	2576	2576	2576	2576	2576
Number of products	46	46	46	46	46	46

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 22: Estimates for "paper products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0176	-0.1001						
	[0.0177]	[0.0636]						
(share^{supermarket})^2		0.0811						
		[0.0600]						
share^{discounters}			0.0053	-0.195				
			[0.0539]	[0.0865]**				
(share^{discounters})^2				0.6462				
				[0.2210]***				
share$^{local\ chain}$					0.0333	0.0264		
					[0.0343]	[0.0724]		
(share$^{local\ chains}$)^2						0.0258		
						[0.1994]		
share$^{non-chain}$							-0.0485	-0.0405
							[0.0192]**	[0.0578]
(share^{non})^2								-0.0105
								[0.0804]
Constant	1.0809	1.095	1.0703	1.0755	1.0674	1.0676	1.0786	1.0777
	[0.0379]***	[0.0393]***	[0.0365]***	[0.0364]***	[0.0361]***	[0.0358]***	[0.0361]***	[0.0369]***
Wald chi^2	3006.58	3031.63	3052.44	3079.05	3026.17	3080.71	3054.60	3030.73
Log Likelihood	1655.38	1655.69	1652.36	1657.40	1654.69	1653.28	1657.13	1653.72
Observations	2408	2408	2408	2408	2408	2408	2408	2408
Number of products	43	43	43	43	43	43	43	43

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 22 (continued): Estimates for "paper products" sector (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0409	0.0409				
	[0.0283]	[0.0596]				
(share$^{national\ chain}$)^2		0.0011				
		[0.1087]				
share$^{one\_city}$			0.0053	-0.195		
			[0.0539]	[0.0865]**		
(share$^{one\_city}$)^2				0.0755		
				[0.0753]		
share$^{multi\_city}$					0.0385	-0.0286
					[0.0254]	[0.0527]
(share$^{multi\_city}$)^2						0.1261
						[0.0864]
Constant	1.0571	1.0571	1.076	1.0838	1.0577	1.065
	[0.0373]***	[0.0377]***	[0.0365]***	[0.0375]***	[0.0372]***	[0.0375]***
Wald chi^2	3018.74	3026.26	3039.83	3032.94	3019.40	3034.05
Log Likelihood	1655.41	1655.56	1655.06	1654.84	1655.10	1655.77
Observations	2408	2408	2408	2408	2408	2408
Number of products	43	43	43	43	43	43

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 23: Estimates for "hair products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.069	0.1251						
	[0.0255]***	[0.0952]						
(share^{supermarket})^2		-0.198						
		[0.0940]**						
share^{discounters}			0.0519	-0.0462				
			[0.0836]	[0.1618]				
(share^{discounters})^2				0.5204				
				[0.7329]				
share$^{local\ chain}$					-0.0341	-0.0455		
					[0.0456]	[0.1076]		
(share$^{local\ chains}$)^2						0.039		
						[0.3352]		
share$^{non-chain}$							-0.0679	-0.0162
							[0.0293]**	[0.1025]
(share^{non})^2								-0.0976
								[0.1847]
Constant	1.1816	1.1406	1.1559	1.1561	1.1608	1.1606	1.1659	1.1615
	[0.0343]***	[0.0390]***	[0.0337]***	[0.0337]***	[0.0334]***	[0.0332]***	[0.0334]***	[0.0346]***
Wald chi^2	964.35	989.75	955.32	957.05	962.39	978.42	968.58	971.32
Log Likelihood	987.53	988.51	983.57	983.73	983.71	982.69	986.15	986.14
Observations	1232	1232	1232	1232	1232	1232	1232	1232
Number of products	22	22	22	22	22	22	22	22

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 23 (continued): Estimates for "hair products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0232	0.0509				
	[0.0362]	[0.0740]				
(share$^{national\ chain}$)^2		-0.1659				
		[0.1467]				
share$^{one\_city}$			0.0519	-0.0462		
			[0.0836]	[0.1618]		
(share$^{one\_city}$)^2				-0.049		
				[0.1737]		
share$^{multi\_city}$					-0.0145	-0.099
					[0.0347]	[0.0851]
(share$^{multi\_city}$)^2						0.1895
						[0.1749]
Constant	1.1618	1.1568	1.1703	1.1674	1.1612	1.1672
	[0.0336]***	[0.0339]***	[0.0336]***	[0.0353]***	[0.0337]***	[0.0339]***
Wald chi^2	955.75	959.09	970.98	972.09	960.62	980.60
Log Likelihood	983.52	984.38	987.63	987.57	983.33	982.71
Observations	1232	1232	1232	1232	1232	1232
Number of products	22	22	22	22	22	22

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 24: Estimates for "body products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.1141	-0.1236						
	[0.0219]***	[0.0848]						
(share^{supermarket})^2		0.0094						
		[0.0816]						
share^{discounters}			-0.1919	-0.2485				
			[0.0521]***	[0.0994]**				
(share^{discounters})^2				0.1819				
				[0.2704]				
share$^{local\ chain}$					-0.0407	-0.1956		
					[0.0422]	[0.0808]**		
(share$^{local\ chains}$)^2						0.4935		
						[0.2197]**		
share$^{non\text{-}chain}$							-0.0792	-0.2219
							[0.0259]***	[0.0784]***
(share^{non})^2								0.2632
								[0.1369]*
Constant	1.0539	1.0554	1.0496	1.0517	1.0436	1.0453	1.0451	1.0526
	[0.0279]***	[0.0310]***	[0.0279]***	[0.0281]***	[0.0284]***	[0.0284]***	[0.0284]***	[0.0289]***
Wald chi^2	3021.08	3024.01	3012.69	3014.74	2916.59	2902.23	2943.76	2918.89
Log Likelihood	1149.17	1149.14	1145.84	1146.03	1140.92	1142.91	1145.92	1146.22
Observations	2632	2632	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 24 (continued): Estimates for "body products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0102	-0.0283				
	[0.0308]	[0.0691]				
(share$^{national\ chain}$)^2		0.0371				
		[0.1267]				
share$^{one\_city}$			-0.1919	-0.2485		
			[0.0521]***	[0.0994]**		
(share$^{one\_city}$)^2				0.1882		
				[0.1142]*		
share$^{multi\_city}$					-0.076	-0.1646
					[0.0276]***	[0.0746]**
(share$^{multi\_city}$)^2						0.1576
						[0.1251]
Constant	1.0445	1.0457	1.0456	1.0527	1.048	1.054
	[0.0284]***	[0.0287]***	[0.0284]***	[0.0288]***	[0.0280]***	[0.0283]***
Wald chi^2	2951.20	2929.28	2947.24	2937.51	2990.93	3008.73
Log Likelihood	1139.73	1138.55	1146.36	1146.63	1140.83	1139.24
Observations	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 25: Estimates for "detergents" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	0.0241	-0.2529						
	[0.0195]	[0.0663]***						
(share^{supermarket})^2		0.281						
		[0.0648]***						
share^{discounters}			-0.0395	-0.0545				
			[0.0477]	[0.0902]				
(share^{discounters})^2				0.0319				
				[0.1642]				
share$^{local\ chain}$					0.0186	-0.0012		
					[0.0365]	[0.0796]		
(share$^{local\ chains}$)^2						0.0607		
						[0.2171]		
share$^{non-chain}$							0.0267	-0.1475
							[0.0222]	[0.0661]**
(share^{non})^2								0.2728
								[0.0976]***
Constant	0.561	0.6135	0.57	0.5698	0.5657	0.5667	0.5641	0.5793
	[0.0345]***	[0.0366]***	[0.0341]***	[0.0342]***	[0.0342]***	[0.0344]***	[0.0341]***	[0.0346]***
Wald chi^2	1753.55	1763.05	1751.13	1751.70	1754.97	1752.64	1755.02	1763.16
Log Likelihood	1371.91	1383.33	1371.24	1370.36	1370.93	1371.15	1371.56	1375.43
Observations	2184	2184	2184	2184	2184	2184	2184	2184
Number of products	39	39	39	39	39	39	39	39

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 25 (continued): Estimates for "detergents" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0128	-0.1206				
	[0.0343]	[0.0776]				
(share$^{national\ chain}$)^2		0.3254				
		[0.1698]*				
share$^{one\_city}$			-0.0395	-0.0545		
			[0.0477]	[0.0902]		
(share$^{one\_city}$)^2				0.2193		
				[0.0906]**		
share$^{multi\_city}$					0.0226	-0.0384
					[0.0291]	[0.0605]
(share$^{multi\_city}$)^2						0.1249
						[0.1090]
Constant	0.5679	0.5678	0.5638	0.5811	0.5662	0.5681
	[0.0339]***	[0.0339]***	[0.0343]***	[0.0352]***	[0.0340]***	[0.0339]***
Wald chi^2	1760.50	1774.83	1752.11	1755.26	1755.14	1780.59
Log Likelihood	1370.27	1371.14	1371.26	1374.35	1371.36	1370.35
Observations	2184	2184	2184	2184	2184	2184
Number of products	39	39	39	39	39	39

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 26: Estimates for "other cleaning products" (price_index is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.133	-0.2836						
	[0.0292]***	[0.1231]**						
(share^{supermarket})^2		0.1401						
		[0.1111]						
share^{discounters}			-0.108	-0.0925				
			[0.0780]	[0.1551]				
(share^{discounters})^2				-0.0565				
				[0.4532]				
share$^{local\ chain}$					-0.1507	-0.2957		
					[0.0579]***	[0.1365]**		
(share$^{local\ chains}$)^2						0.479		
						[0.4126]		
share$^{non-chain}$							-0.0757	-0.2902
							[0.0322]**	[0.0962]***
(share^{non})^2								0.3081
								[0.1307]**
Constant	1.6917	1.7224	1.6131	1.6129	1.5925	1.6232	1.6285	1.6281
	[0.0532]***	[0.0581]***	[0.0493]***	[0.0492]***	[0.0515]***	[0.0503]***	[0.0506]***	[0.0502]***
Wald chi^2	1509.90	1512.37	1494.31	1496.96	1482.90	1481.05	1494.97	1526.58
Log Likelihood	703.72	704.59	694.48	694.35	696.99	697.67	696.52	698.41
Observations	1344	1344	1344	1344	1344	1344	1344	1344
Number of products	24	24	24	24	24	24	24	24

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 26 (continued): Estimates for "other cleaning products" (price_index is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0366	-0.2323				
	[0.0474]	[0.1227]*				
(share$^{national\ chain}$)^2		0.4222				
		[0.2462]*				
share$^{one\_city}$			-0.108	-0.0925		
			[0.0780]	[0.1551]		
(share$^{one\_city}$)^2				0.175		
				[0.1271]		
share$^{multi\_city}$					-0.0807	-0.3539
					[0.0404]**	[0.1082]***
(share$^{multi\_city}$)^2						0.5067
						[0.1875]***
Constant	1.6548	1.6208	1.6334	1.6398	1.6581	1.6318
	[0.0514]***	[0.0513]***	[0.0520]***	[0.0507]***	[0.0523]***	[0.0509]***
Wald chi^2	1483.61	1486.82	1499.07	1509.87	1473.19	1471.45
Log Likelihood	694.07	695.49	698.67	699.35	695.59	698.94
Observations	1344	1344	1344	1344	1344	1344
Number of products	24	24	24	24	24	24

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 27: Estimates for "other products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.1219	-0.2156						
	[0.0464]***	[0.1329]						
(share^{supermarket})^2		0.1044						
		[0.1418]						
share^{discounters}			-0.1823	0.2247				
			[0.1015]*	[0.2425]				
(share^{discounters})^2				-1.2053				
				[0.6532]*				
share$^{local\ chain}$					-0.119	-0.1736		
					[0.0929]	[0.1829]		
(share$^{local\ chains}$)^2						0.1277		
						[0.3688]		
share$^{non-chain}$							0.0279	-0.0397
							[0.0609]	[0.1632]
(share^{non})^2								0.1322
								[0.3013]
Constant	-1.1007	-1.092	-1.1915	-1.1956	-1.1659	-1.166	-1.1936	-1.1922
	[0.0909]***	[0.0904]***	[0.0858]***	[0.0850]***	[0.0867]***	[0.0866]***	[0.0863]***	[0.0861]***
Wald chi^2	903.28	921.17	873.85	882.80	880.76	884.18	866.03	885.18
Log Likelihood	230.07	230.17	228.44	231.33	227.52	227.56	226.52	226.05
Observations	448	448	448	448	448	448	448	448
Number of products	8	8	8	8	8	8	8	8

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 27 continued: Estimates for "other products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.1392	-0.1609				
	[0.0661]**	[0.1589]				
(share$^{national\ chain}$)^2		0.036				
		[0.2376]				
share$^{one\_city}$			-0.1823	0.2247		
			[0.1015]*	[0.2425]		
(share$^{one\_city}$)^2				-0.024		
				[0.2207]		
share$^{multi\_city}$					-0.1304	-0.0983
					[0.0580]**	[0.1495]
(share$^{multi\_city}$)^2						-0.0511
						[0.2201]
Constant	-1.134	-1.1326	-1.1843	-1.1866	-1.1362	-1.1388
	[0.0890]***	[0.0896]***	[0.0862]***	[0.0865]***	[0.0887]***	[0.0894]***
Wald chi^2	872.13	884.45	877.14	886.30	868.72	869.10
Log Likelihood	228.66	228.60	226.52	226.03	229.99	229.97
Observations	448	448	448	448	448	448
Number of products	8	8	8	8	8	8

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 28 : Estimates for "meat products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.021	0.0133						
	[0.0140]	[0.0446]						
(share^{supermarket})^2		-0.0339						
		[0.0428]						
share^{discounters}			0.0243	0.1432				
			[0.0328]	[0.0633]**				
(share^{discounters})^2				-0.2561				
				[0.1175]**				
share$^{local\ chain}$					-0.0501	-0.0225		
					[0.0274]*	[0.0540]		
(share$^{local\ chains}$)^2						-0.0752		
						[0.1299]		
share$^{non-chain}$							-0.0246	0.0262
							[0.0167]	[0.0461]
(share^{non})^2								-0.0867
								[0.0733]
Constant	0.1435	0.1412	0.1221	0.1136	0.1297	0.1278	0.1272	0.123
	[0.0349]***	[0.0352]***	[0.0323]***	[0.0321]***	[0.0321]***	[0.0322]***	[0.0322]***	[0.0324]***
Wald chi^2	10553.46	10568.64	10694.63	10776.36	10764.69	10766.92	10649.82	10656.78
Log Likelihood	2443.05	2443.6	2443.03	2445.31	2444.60	2444.68	2443.99	2444.74
Observations	2632	2632	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 28 (continued): Estimates for "meat products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0168	0.0704				
	[0.0210]	[0.0434]				
(share$^{national\ chain}$)^2		-0.1018				
		[0.0730]				
share$^{one\_city}$			0.0243	0.1432		
			[0.0328]	[0.0633]**		
(share$^{one\_city}$)^2				-0.0345		
				[0.0637]		
share$^{multi\_city}$					0.026	0.0716
					[0.0188]	[0.0418]*
(share$^{multi\_city}$)^2						-0.0757
						[0.0636]
Constant	0.1146	0.1175	0.1327	0.1297	0.1089	0.1094
	[0.0343]***	[0.0344]***	[0.0323]***	[0.0328]***	[0.0340]***	[0.0341]***
Wald chi^2	10726.06	10745.61	10683.35	10683.44	10706.89	10753.19
Log Likelihood	2443.23	2444.07	2446.88	2447.03	2443.72	2444.10
Observations	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 29: Estimates for "food products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.011	0.0671						
	[0.0085]	[0.0296]**						
(share^{supermarket})^2		-0.0784						
		[0.0286]***						
share^{discounters}			-0.0143	0.0084				
			[0.0189]	[0.0321]				
(share^{discounters})^2				-0.046				
				[0.0530]				
share$^{local\ chain}$					0.0033	0.0257		
					[0.0166]	[0.0331]		
(share$^{local\ chains}$)^2						-0.0596		
						[0.0762]		
share$^{non-chain}$							-0.005	-0.0447
							[0.0101]	[0.0297]
(share^{non})^2								0.0649
								[0.0464]
Constant	0.25	0.233	0.2454	0.245	0.2448	0.2436	0.2461	0.2502
	[0.0224]***	[0.0233]***	[0.0222]***	[0.0222]***	[0.0222]***	[0.0223]***	[0.0223]***	[0.0224]***
Wald chi^2	16154.58	16207.13	16133.90	16151.77	16108.26	16137.68	16162.72	16170.47
Log Likelihood	6828.06	6830.47	6827.82	6828.00	6828.04	6827.54	6826.77	6827.89
Observations	8456	8456	8456	8456	8456	8456	8456	8456
Number of products	151	151	151	151	151	151	151	151

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 29 (continued): Estimates for "food products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0136	-0.0567				
	[0.0138]	[0.0288]**				
(share$^{national\ chain}$)^2		0.0877				
		[0.0516]*				
share$^{one\_city}$			-0.0143	0.0084		
			[0.0189]	[0.0321]		
(share$^{one\_city}$)^2				0.065		
				[0.0413]		
share$^{multi\_city}$					-0.0222	-0.0292
					[0.0117]*	[0.0253]
(share$^{multi\_city}$)^2						0.012
						[0.0394]
Constant	0.2472	0.2508	0.2464	0.2518	0.2487	0.2494
	[0.0223]***	[0.0225]***	[0.0223]***	[0.0226]***	[0.0222]***	[0.0223]***
Wald chi^2	16147.62	16153.78	16182.84	16183.67	16169.16	16191.86
Log Likelihood	6827.96	6829.46	6826.10	6827.84	6828.25	6827.36
Observations	8456	8456	8456	8456	8456	8456
Number of products	151	151	151	151	151	151

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 30: Estimates for "Beverages" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	0.016	-0.0012						
	[0.0123]	[0.0368]						
(share^{supermarket})^2		0.0191						
		[0.0386]						
share^{discounters}			0.0126	-0.0038				
			[0.0274]	[0.0418]				
(share^{discounters})^2				0.0352				
				[0.0712]				
share$^{local\ chain}$					-0.0075	-0.0133		
					[0.0238]	[0.0447]		
(share$^{local\ chains}$)^2						0.0179		
						[0.1287]		
share$^{non-chain}$							0.022	0.0059
							[0.0151]	[0.0378]
(share^{non})^2								0.0312
								[0.0674]
Constant	-0.0816	-0.0802	-0.0716	-0.0697	-0.0684	-0.068	-0.0732	-0.0719
	[0.0329]**	[0.0330]**	[0.0326]**	[0.0326]**	[0.0318]**	[0.0319]**	[0.0322]**	[0.0323]**
Wald chi^2	8758.73	8773.89	8694.48	8741.83	8684.42	8693.28	8639.98	8639.11
Log Likelihood	4443.88	4443.51	4447.59	4446.23	4446.98	4446.08	4450.25	4450.43
Observations	4424	4424	4424	4424	4424	4424	4424	4424
Number of products	79	79	79	79	79	79	79	79

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 30 (continued): Estimates for "Beverages" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0023	0.0555				
	[0.0183]	[0.0414]				
(share$^{national\ chain}$)^2		-0.1163				
		[0.0815]				
share$^{one\_city}$			0.0126	-0.0038		
			[0.0274]	[0.0418]		
(share$^{one\_city}$)^2				0.0347		
				[0.0645]		
share$^{multi\_city}$					0.0183	0.0083
					[0.0161]	[0.0332]
(share$^{multi\_city}$)^2						0.0177
						[0.0512]
Constant	-0.0699	-0.0738	-0.0711	-0.0689	-0.0781	-0.0775
	[0.0321]**	[0.0320]**	[0.0322]**	[0.0324]**	[0.0326]**	[0.0325]**
Wald chi^2	8742.21	8789.83	8632.20	8630.65	8821.22	8862.25
Log Likelihood	4445.22	4443.74	4449.47	4449.33	4441.78	4440.43
Observations	4424	4424	4424	4424	4424	4424
Number of products	79	79	79	79	79	79

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 31: Estimates for "Sugar, Candies and Deserts" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.025	0.0134						
	[0.0104]**	[0.0367]						
(share^{supermarket})^2		-0.0408						
		[0.0375]						
share^{discounters}			-0.0044	0.0187				
			[0.0192]	[0.0333]				
(share^{discounters})^2				-0.0564				
				[0.0669]				
share$^{local\ chain}$					0.0142	-0.0255		
					[0.0213]	[0.0420]		
(share$^{local\ chains}$)^2						0.134		
						[0.1226]		
share$^{non-chain}$							-0.0478	-0.0315
							[0.0139]***	[0.0387]
(share^{non})^2								-0.0354
								[0.0773]
Constant	-0.3119	-0.317	-0.3161	-0.3166	-0.3163	-0.3156	-0.3133	-0.3141
	[0.0315]***	[0.0319]***	[0.0320]***	[0.0319]***	[0.0319]***	[0.0319]***	[0.0311]***	[0.0313]***
Wald chi^2	15856.18	15870.03	15936.86	15963.95	15919.02	15892.83	15974.90	15989.89
Log Likelihood	5703.64	5704.04	5699.49	5699.86	5701.47	5701.7	5706.45	5706.03
Observations	5040	5040	5040	5040	5040	5040	5040	5040
Number of products	90	90	90	90	90	90	90	90

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 31 (continued): Estimates for "Sugar, Candies and Deserts" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0016	-0.0586				
	[0.0150]	[0.0333]*				
(share$^{national\ chain}$)^2		0.1314				
		[0.0655]**				
share$^{one\_city}$			-0.0044	0.0187		
			[0.0192]	[0.0333]		
(share$^{one\_city}$)^2				-0.0564		
				[0.0672]		
share$^{multi\_city}$					0.0042	0.0251
					[0.0130]	[0.0311]
(share$^{multi\_city}$)^2						-0.037
						[0.0502]
Constant	-0.3162	-0.3143	-0.3137	-0.3154	-0.3164	-0.3174
	[0.0319]***	[0.0319]***	[0.0313]***	[0.0314]***	[0.0319]***	[0.0320]***
Wald chi^2	15917.86	15940.48	15918.97	15921.45	15976.29	15975.86
Log Likelihood	5701.18	5703.27	5705.14	5705.46	5699.85	5699.96
Observations	5040	5040	5040	5040	5040	5040
Number of products	90	90	90	90	90	90

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 32: Estimates for "Dairy products" sector (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0287	0.0091						
	[0.0126]**	[0.0384]						
(share^{supermarket})^2		-0.0373						
		[0.0359]						
share^{discounters}			-0.0339	-0.0323				
			[0.0231]	[0.0416]				
(share^{discounters})^2				-0.0024				
				[0.0605]				
share$^{local\ chain}$					0.0512	-0.0097		
					[0.0231]**	[0.0424]		
(share$^{local\ chains}$)^2						0.1534		
						[0.0913]*		
share$^{non-chain}$							-0.0515	0.0367
							[0.0162]***	[0.0419]
(share^{non})^2								-0.167
								[0.0742]**
Constant	-0.283	-0.2913	-0.2942	-0.2945	-0.301	-0.3004	-0.287	-0.2941
	[0.0269]***	[0.0280]***	[0.0261]***	[0.0260]***	[0.0260]***	[0.0260]***	[0.0258]***	[0.0262]***
Wald chi^2	11801.22	11863.77	11701.95	11914.74	11675.88	11915.29	11899.10	11872.47
Log Likelihood	3363.71	3363.09	3360.62	3357.23	3361.90	3361.77	3363.91	3366.36
Observations	3136	3136	3136	3136	3136	3136	3136	3136
Number of products	56	56	56	56	56	56	56	56

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 32 (continued): Estimates for "Dairy products" sector (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0034	-0.0001				
	[0.0165]	[0.0349]				
(share$^{national\ chain}$)^2		-0.0052				
		[0.0577]				
share$^{one\_city}$			-0.0339	-0.0323		
			[0.0231]	[0.0416]		
(share$^{one\_city}$)^2				0.0019		
				[0.0601]		
share$^{multi\_city}$					-0.0077	0.0064
					[0.0150]	[0.0318]
(share$^{multi\_city}$)^2						-0.0218
						[0.0443]
Constant	-0.2968	-0.2969	-0.2926	-0.2923	-0.2957	-0.297
	[0.0260]***	[0.0260]***	[0.0260]***	[0.0265]***	[0.0262]***	[0.0262]***
Wald chi^2	11686.47	11654.20	11774.60	11644.89	11681.08	11699.02
Log Likelihood	3359.22	3358.56	3361.44	3360.49	3360.42	3359.18
Observations	3136	3136	3136	3136	3136	3136
Number of products	56	56	56	56	56	56

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 33: Estimates for "oil products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share$^{\text{supermarket}}$	-0.006	-0.1223						
	[0.0116]	[0.0376]***						
(share$^{\text{supermarket}}$)^2		0.1308						
		[0.0403]***						
share$^{\text{discounters}}$			-0.0285	-0.0638				
			[0.0353]	[0.0523]				
(share$^{\text{discounters}}$)^2				0.1282				
				[0.1386]				
share$^{\text{local chain}}$					0.0117	0.0111		
					[0.0226]	[0.0420]		
(share$^{\text{local chains}}$)^2						0.0032		
						[0.1018]		
share$^{\text{non-chain}}$							-0.0036	-0.0461
							[0.0138]	[0.0425]
(share$^{\text{non}}$)^2								0.0773
								[0.0730]
Constant	0.1534	0.1708	0.1527	0.1532	0.1514	0.1513	0.1523	0.155
	[0.0248]***	[0.0251]***	[0.0246]***	[0.0245]***	[0.0245]***	[0.0245]***	[0.0247]***	[0.0250]***
Wald chi^2	4412.34	4480.15	4437.75	4482.29	4468.59	4454.48	4419.98	4416.11
Log Likelihood	3361.25	3365.95	3360.92	3359.64	3359.64	3359.06	3361.03	3361.44
Observations	2576	2576	2576	2576	2576	2576	2576	2576
Number of products	46	46	46	46	46	46	46	46

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 33 (continued): Estimates for "oil products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{\text{national chain}}$	-0.015	-0.0604				
	[0.0229]	[0.0479]				
(share$^{\text{national chain}}$)^2		0.1337				
		[0.1227]				
share$^{\text{one\_city}}$			-0.0285	-0.0638		
			[0.0353]	[0.0523]		
(share$^{\text{one\_city}}$)^2				0.0918		
				[0.0613]		
share$^{\text{multi\_city}}$					-0.0017	-0.0228
					[0.0199]	[0.0402]
(share$^{\text{multi\_city}}$)^2						0.0509
						[0.0848]
Constant	0.1527	0.1538	0.1537	0.1585	0.152	0.1529
	[0.0245]***	[0.0246]***	[0.0247]***	[0.0252]***	[0.0246]***	[0.0246]***
Wald chi^2	4465.88	4438.99	4408.89	4417.20	4431.63	4432.78
Log Likelihood	3359.78	3360.88	3361.82	3362.29	3360.64	3360.82
Observations	2576	2576	2576	2576	2576	2576
Number of products	46	46	46	46	46	46

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 34: Estimates for "paper products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0245	-0.1035						
	[0.0158]	[0.0575]*						
(share^{supermarket}**)^2**		0.077						
		[0.0540]						
share^{discounters}			-0.0191	-0.15				
			[0.0472]	[0.0753]**				
(share^{discounters}**)^2**				0.4067				
				[0.1861]**				
share$^{local\ chain}$					0.0302	0.029		
					[0.0306]	[0.0627]		
(share$^{local\ chains}$**)^2**						0.0057		
						[0.1681]		
share$^{non-chain}$							-0.0484	-0.0396
							[0.0171]***	[0.0509]
(share^{non}**)^2**								-0.0125
								[0.0701]
Constant	0.0578	0.0715	0.0428	0.0467	0.0402	0.0402	0.0514	0.0503
	[0.0313]*	[0.0326]**	[0.0299]	[0.0299]	[0.0295]	[0.0295]	[0.0296]*	[0.0304]*
Wald chi^2	3321.25	3346.50	3326.05	3327.31	3346.16	3378.97	3373.15	3348.54
Log Likelihood	1982.76	1983.33	1978.14	1981.83	1981.20	1980.4	1984.56	1983.36
Observations	2408	2408	2408	2408	2408	2408	2408	2408
Number of products	43	43	43	43	43	43	43	43

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 34 (continued): Estimates for "paper products" sector (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	0.0296	0.0262				
	[0.0250]	[0.0528]				
(share$^{national\ chain}$**)^2**		0.0073				
		[0.0956]				
share$^{one\_city}$			-0.0191	-0.15		
			[0.0472]	[0.0753]**		
(share$^{one\_city}$**)^2**				0.0713		
				[0.0662]		
share$^{multi\_city}$					0.0234	-0.0297
					[0.0226]	[0.0466]
(share$^{multi\_city}$**)^2**						0.099
						[0.0758]
Constant	0.033	0.0332	0.0491	0.0566	0.035	0.0409
	[0.0306]	[0.0309]	[0.0299]	[0.0308]*	[0.0307]	[0.0309]
Wald chi^2	3335.63	3337.43	3348.43	3345.07	3307.71	3320.80
Log Likelihood	1982.11	1982.13	1982.49	1982.98	1980.41	1981.07
Observations	2408	2408	2408	2408	2408	2408
Number of products	43	43	43	43	43	43

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 35: Estimates for "hair products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.0606	0.129						
	[0.0238]**	[0.0868]						
(share^{supermarket})^2		-0.1951						
		[0.0864]**						
share^{discounters}			0.0798	-0.0149				
			[0.0797]	[0.1529]				
(share^{discounters})^2				0.4964				
				[0.6826]				
share$^{local\ chain}$					-0.029	-0.0473		
					[0.0430]	[0.1012]		
(share$^{local\ chains}$)^2						0.0633		
						[0.3171]		
share$^{non-chain}$							-0.068	-0.0139
							[0.0275]**	[0.0945]
(share^{non})^2								-0.1029
								[0.1715]
Constant	0.1473	0.1079	0.1229	0.1231	0.129	0.1291	0.1343	0.1295
	[0.0314]***	[0.0355]***	[0.0308]***	[0.0308]***	[0.0305]***	[0.0304]***	[0.0305]***	[0.0316]***
Wald chi^2	996.32	1024.26	992.11	993.65	996.20	1011.35	1003.39	1006.02
Log Likelihood	1065.81	1067.18	1062.67	1062.86	1062.43	1061.62	1065.37	1065.45
Observations	1232	1232	1232	1232	1232	1232	1232	1232
Number of products	22	22	22	22	22	22	22	22

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 35 (continued): Estimates for "hair products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0152	0.0586				
	[0.0334]	[0.0681]				
(share$^{national\ chain}$)^2		-0.1631				
		[0.1326]				
share$^{one\_city}$			0.0798	-0.0149		
			[0.0797]	[0.1529]		
(share$^{one\_city}$)^2				-0.0583		
				[0.1628]		
share$^{multi\_city}$					-0.0039	-0.0814
					[0.0322]	[0.0794]
(share$^{multi\_city}$)^2						0.1735
						[0.1632]
Constant	0.1293	0.1242	0.1388	0.1352	0.128	0.1335
	[0.0307]***	[0.0309]***	[0.0307]***	[0.0323]***	[0.0308]***	[0.0310]***
Wald chi^2	990.46	994.45	1005.37	1006.35	995.87	1012.28
Log Likelihood	1062.17	1063.05	1066.70	1066.70	1062.02	1061.70
Observations	1232	1232	1232	1232	1232	1232
Number of products	22	22	22	22	22	22

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 36: Estimates for "body products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.1017	-0.0895						
	[0.0183]***	[0.0702]						
(share^{supermarket})^2		-0.0121						
		[0.0679]						
share^{discounters}			-0.1583	-0.2165				
			[0.0412]***	[0.0773]***				
(share^{discounters})^2				0.1775				
				[0.2006]				
share$^{local\ chain}$					-0.0443	-0.1743		
					[0.0361]	[0.0710]**		
(share$^{local\ chains}$)^2						0.4414		
						[0.2085]**		
share$^{non-chain}$							-0.0695	-0.1762
							[0.0217]***	[0.0677]***
(share^{non})^2								0.2011
								[0.1212]*
Constant	0.0309	0.029	0.0252	0.0275	0.02	0.0214	0.0214	0.0272
	[0.0203]	[0.0231]	[0.0203]	[0.0204]	[0.0205]	[0.0205]	[0.0205]	[0.0209]
Wald chi^2	3453.62	3447.10	3434.73	3443.24	3350.64	3329.17	3366.86	3354.45
Log Likelihood	1712.50	1712.66	1705.61	1705.90	1699.46	1701.35	1704.58	1705.4
Observations	2632	2632	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 36 (continued): Estimates for "body products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0091	-0.0247				
	[0.0260]	[0.0588]				
(share$^{national\ chain}$)^2		0.0326				
		[0.1115]				
share$^{one\_city}$			-0.1583	-0.2165		
			[0.0412]***	[0.0773]***		
(share$^{one\_city}$)^2				0.1396		
				[0.1034]		
share$^{multi\_city}$					-0.067	-0.1502
					[0.0229]***	[0.0617]**
(share$^{multi\_city}$)^2						0.1483
						[0.1041]
Constant	0.0208	0.0217	0.0219	0.0272	0.025	0.0308
	[0.0206]	[0.0209]	[0.0205]	[0.0209]	[0.0204]	[0.0207]
Wald chi^2	3374.99	3355.50	3371.34	3370.73	3409.59	3442.97
Log Likelihood	1698.51	1697.78	1705.24	1705.93	1702.03	1701.68
Observations	2632	2632	2632	2632	2632	2632
Number of products	47	47	47	47	47	47

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 37: Estimates for "detergents" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share$^{\text{supermarket}}$	0.022	-0.2391						
	[0.0191]	[0.0644]***						
(share$^{\text{supermarket}}$)^2		0.2646						
		[0.0628]***						
share$^{\text{discounters}}$			-0.0404	-0.0426				
			[0.0514]	[0.0913]				
(share$^{\text{discounters}}$)^2				0.0051				
				[0.1741]				
share$^{\text{local chain}}$					0.0133	0.0113		
					[0.0365]	[0.0787]		
(share$^{\text{local chains}}$)^2						0.006		
						[0.2149]		
share$^{\text{non-chain}}$							0.024	-0.1441
							[0.0220]	[0.0649]**
(share$^{\text{non}}$)^2								0.262
								[0.0955]***
Constant	-0.641	-0.5917	-0.6333	-0.6333	-0.6368	-0.6367	-0.6384	-0.6241
	[0.0381]***	[0.0400]***	[0.0379]***	[0.0379]***	[0.0380]***	[0.0381]***	[0.0377]***	[0.0383]***
Wald chi^2	2536.08	2530.88	2528.22	2526.36	2533.59	2528.07	2535.87	2538.38
Log Likelihood	1447.56	1458.46	1447.80	1447.79	1447.36	1447.63	1447.54	1451.60
Observations	2184	2184	2184	2184	2184	2184	2184	2184
Number of products	39	39	39	39	39	39	39	39

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 37 (continued): Estimates for "detergents" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{\text{national chain}}$	0.0151	-0.0912				
	[0.0334]	[0.0764]				
(share$^{\text{national chain}}$)^2		0.2567				
		[0.1660]				
share$^{\text{one\_city}}$			-0.0404	-0.0426		
			[0.0514]	[0.0913]		
(share$^{\text{one\_city}}$)^2				0.2177		
				[0.0881]**		
share$^{\text{multi\_city}}$					0.0199	-0.0351
					[0.0289]	[0.0607]
(share$^{\text{multi\_city}}$)^2						0.1162
						[0.1121]
Constant	-0.6352	-0.6351	-0.6387	-0.6218	-0.6366	-0.6349
	[0.0377]***	[0.0376]***	[0.0380]***	[0.0389]***	[0.0376]***	[0.0376]***
Wald chi^2	2533.40	2537.55	2531.21	2525.48	2541.56	2554.75
Log Likelihood	1447.30	1448.54	1447.33	1451.05	1447.30	1447.11
Observations	2184	2184	2184	2184	2184	2184
Number of products	39	39	39	39	39	39

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 38: Estimates for "other cleaning products" (ln(price_index) is the dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share^{supermarket}	-0.1136	-0.2647						
	[0.0258]***	[0.1080]**						
(share^{supermarket})^2		0.1411						
		[0.0978]						
share^{discounters}			-0.1201	-0.1447				
			[0.0723]*	[0.1444]				
(share^{discounters})^2				0.0873				
				[0.4479]				
share$^{local\ chain}$					-0.1528	-0.305		
					[0.0507]***	[0.1220]**		
(share$^{local\ chains}$)^2						0.4975		
						[0.3650]		
share$^{non\text{-}chain}$							-0.0618	-0.2475
							[0.0282]**	[0.0847]***
(share^{non})^2								0.2575
								[0.1108]**
Constant	0.4746	0.5053	0.4073	0.4075	0.4181	0.4237	0.419	0.4439
	[0.0398]***	[0.0449]***	[0.0359]***	[0.0358]***	[0.0365]***	[0.0368]***	[0.0367]***	[0.0383]***
Wald chi^2	1645.70	1651.70	1647.18	1649.31	1638.84	1636.14	1636.61	1657.48
Log Likelihood	844.23	845.35	835.09	835.06	839.12	840.24	836.71	838.30
Observations	1344	1344	1344	1344	1344	1344	1344	1344
Number of products	24	24	24	24	24	24	24	24

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A. 38 (continued): Estimates for "other cleaning products" (ln(price_index) is the dependent variable)

	(9)	(10)	(11)	(12)	(13)	(14)
share$^{national\ chain}$	-0.0138	-0.1929				
	[0.0435]	[0.1064]*				
(share$^{national\ chain}$)^2		0.3943				
		[0.2157]*				
share$^{one\_city}$			-0.1201	-0.1447		
			[0.0723]*	[0.1444]		
(share$^{one\_city}$)^2				0.1616		
				[0.1069]		
share$^{multi\_city}$					-0.0736	-0.3028
					[0.0367]**	[0.0947]***
(share$^{multi\_city}$)^2						0.4403
						[0.1693]***
Constant	0.4084	0.4188	0.4292	0.4477	0.4241	0.4434
	[0.0380]***	[0.0385]***	[0.0372]***	[0.0391]***	[0.0375]***	[0.0384]***
Wald chi^2	1624.80	1626.42	1636.93	1644.03	1619.19	1612.02
Log Likelihood	834.34	836.11	838.94	839.70	836.27	839.74
Observations	1344	1344	1344	1344	1344	1344
Number of products	24	24	24	24	24	24

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

APPENDIX B: FIGURES
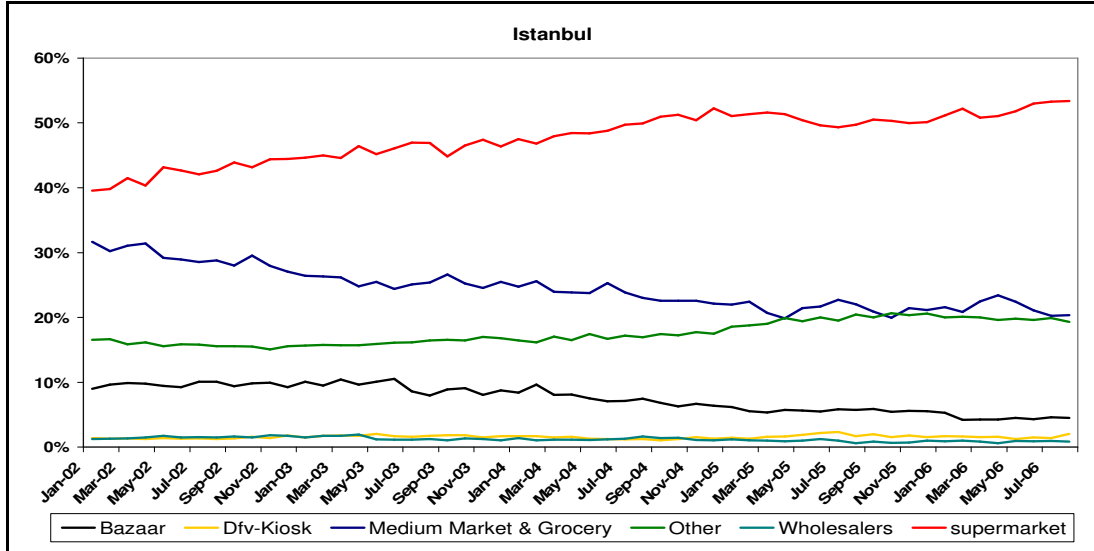
Figure A. 1: The market shares of specification1 stores in the FMCG market in Istanbul, January 2002-August 2006, seasonally adjusted series.
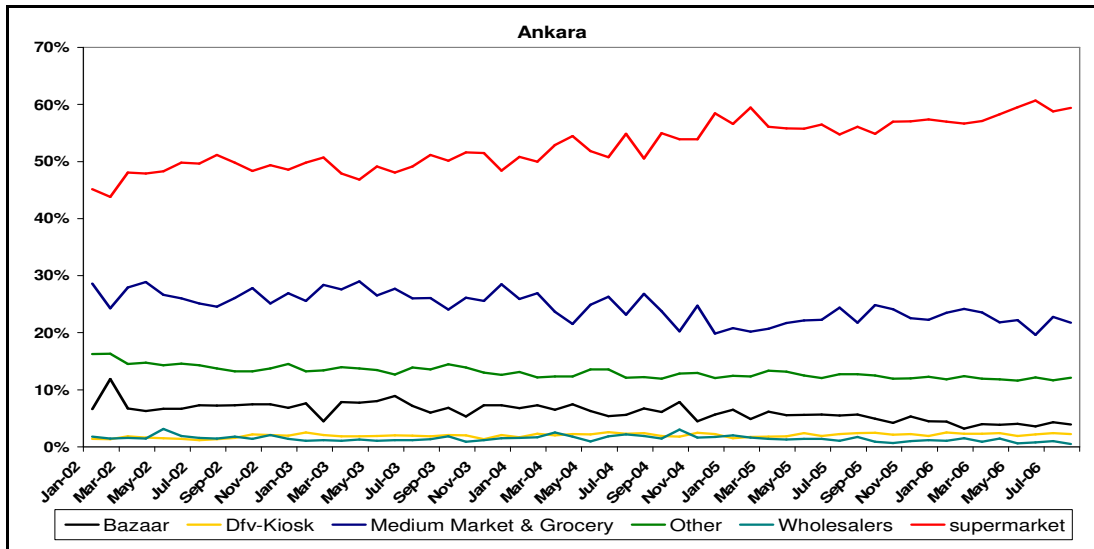
Figure A. 2: The market shares of specification1 stores in the FMCG market in Ankara, January 2002-August 2006, seasonally adjusted series
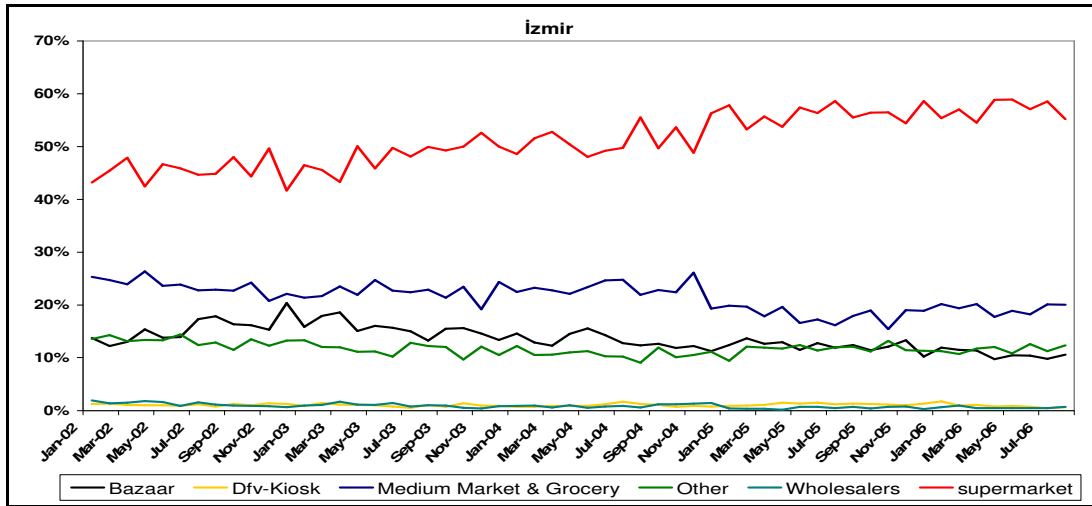
Figure A. 3: The market shares of specification1 stores in the FMCG market in Izmir, January 2002-August 2006, seasonally adjusted series.
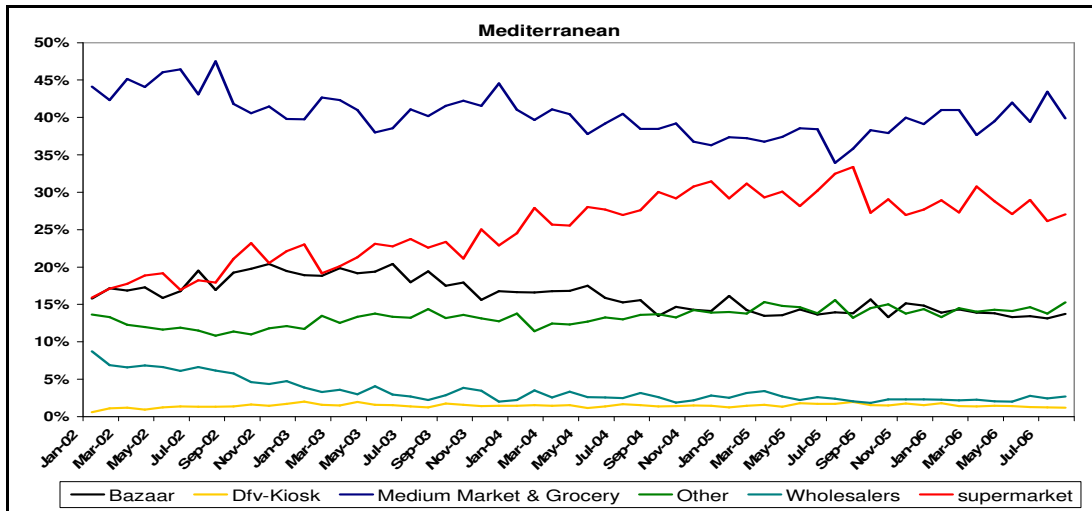
Figure A. 4: The market shares of specification1 stores in the FMCG market in Mediterranean region, January 2002-August 2006, seasonally adjusted series

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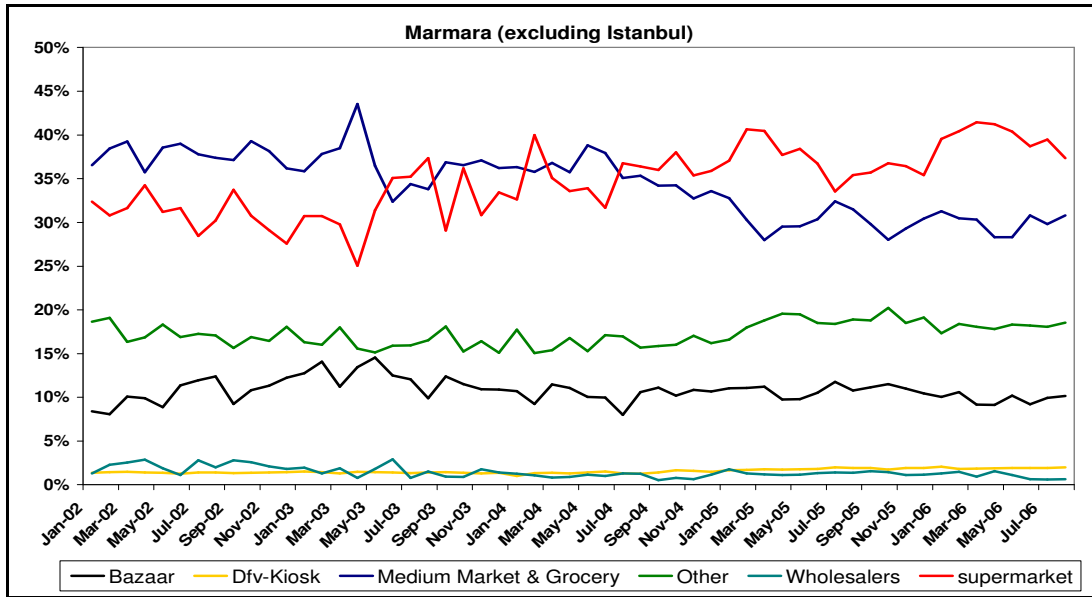
Figure A. 5: The market shares of specification1 stores in the FMCG market in Marmara region, January 2002-August 2006, seasonally adjusted series.
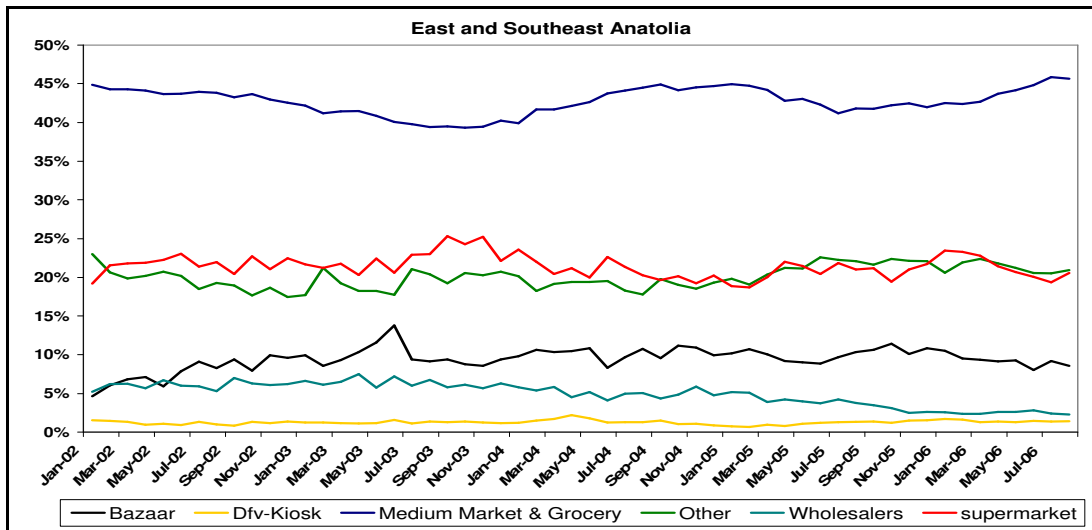
Figure A. 6: The market shares of specification1 stores in the FMCG market in East and Southeast Anatolia January 2002-August 2006, seasonally adjusted series.

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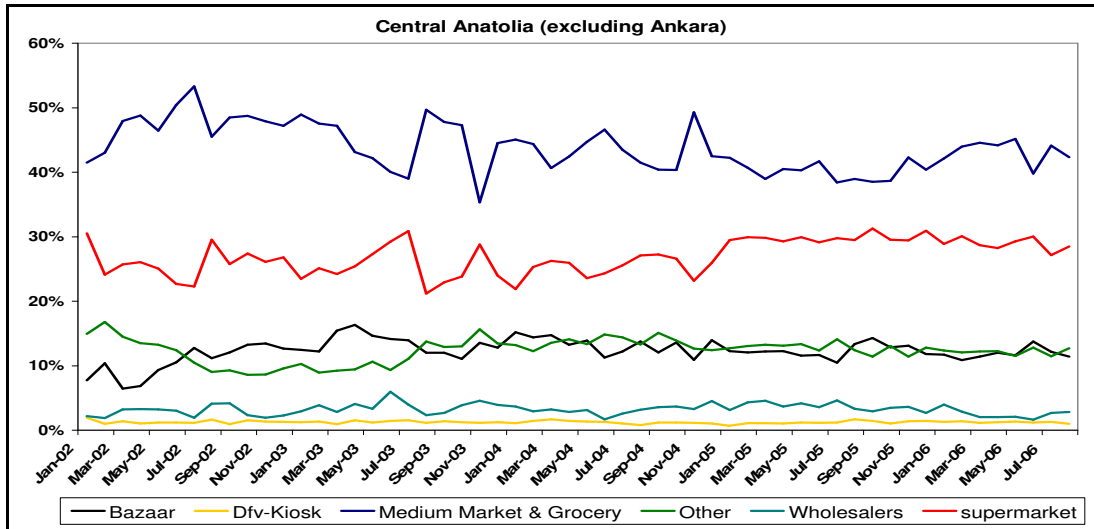
Figure A. 7: The market shares of specification1 stores in the FMCG market in Central Anatolia, January 2002-August 2006, seasonally adjusted series.
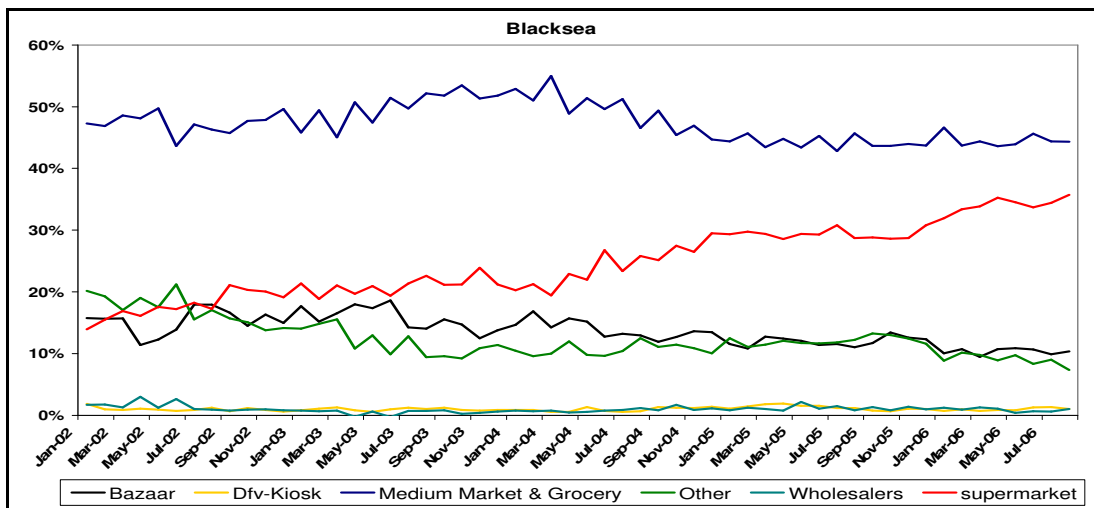
Figure A. 8: The market shares of specification1 stores in the FMCG market in Black sea region, January 2002-August 2006, seasonally adjusted series.

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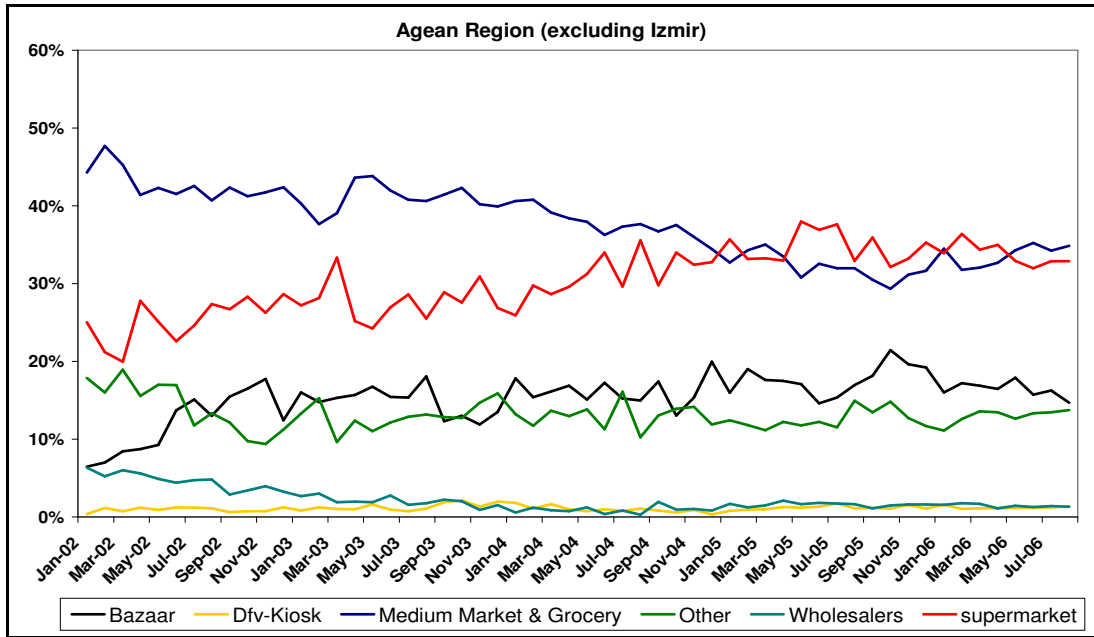
Figure A. 9: The market shares of specification 1 stores in the FMCG market in Central Anatolia, January 2002-August 2006, seasonally adjusted series.
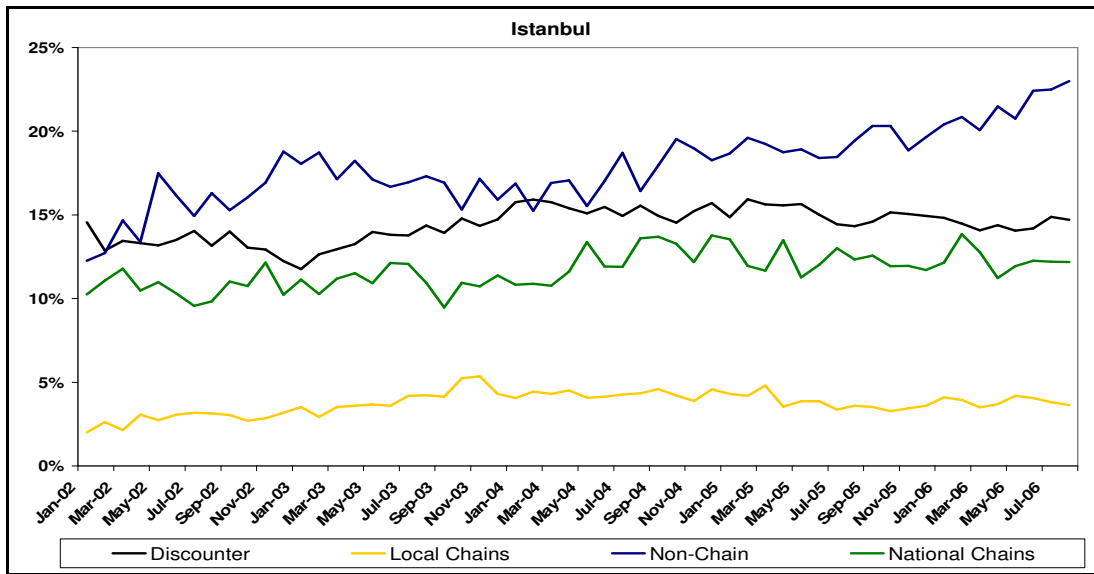
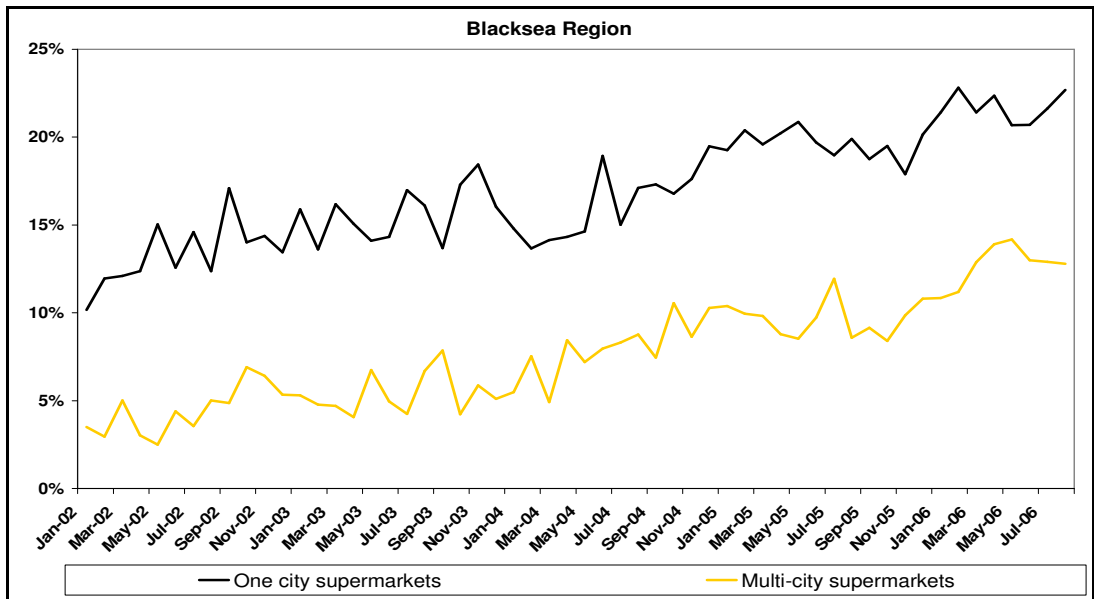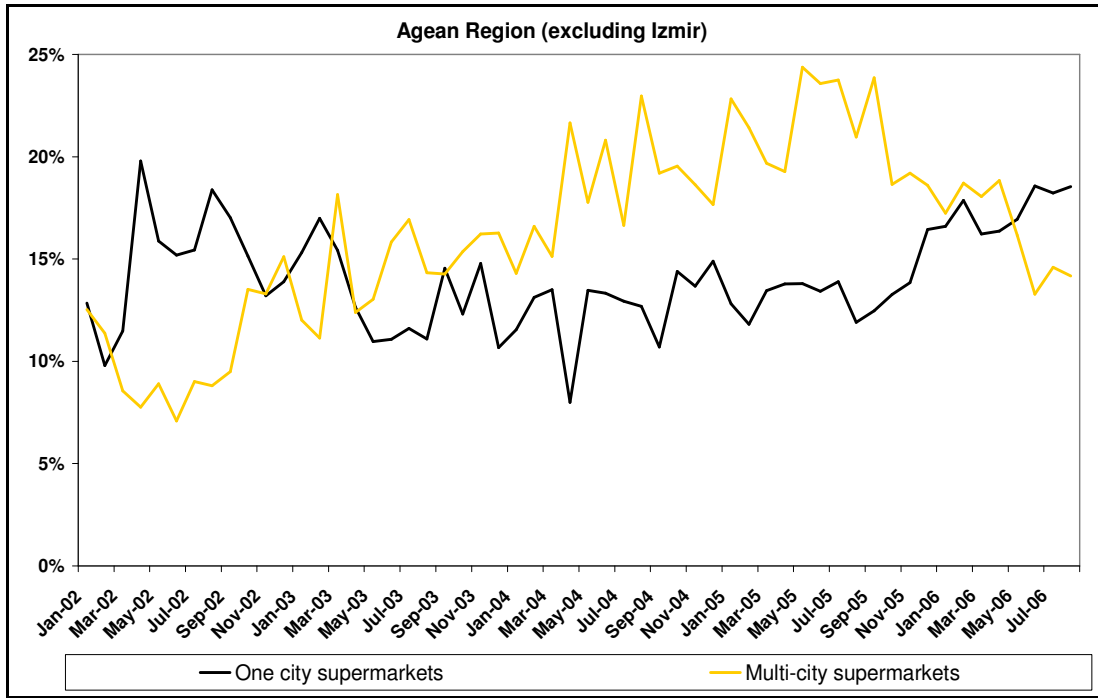**Figure A. 10: The market shares of supermarket formats in Istanbul FMCG market, January 2002-August 2006, seasonally adjusted series**
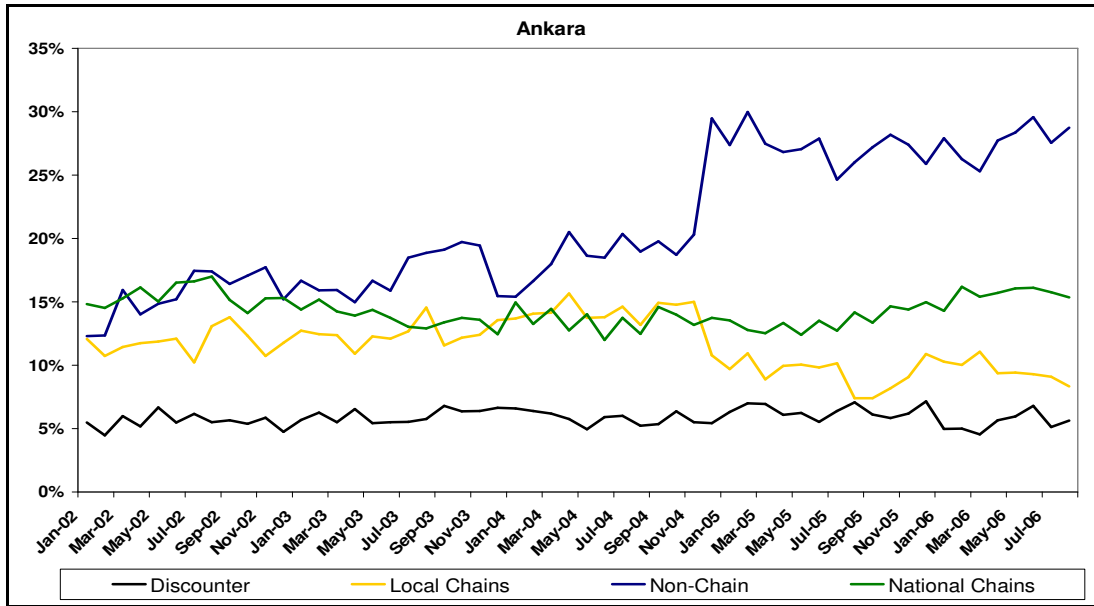
Figure A. 11: The market shares of supermarket formats in Ankara FMCG market, January 2002-August 2006, seasonally adjusted series
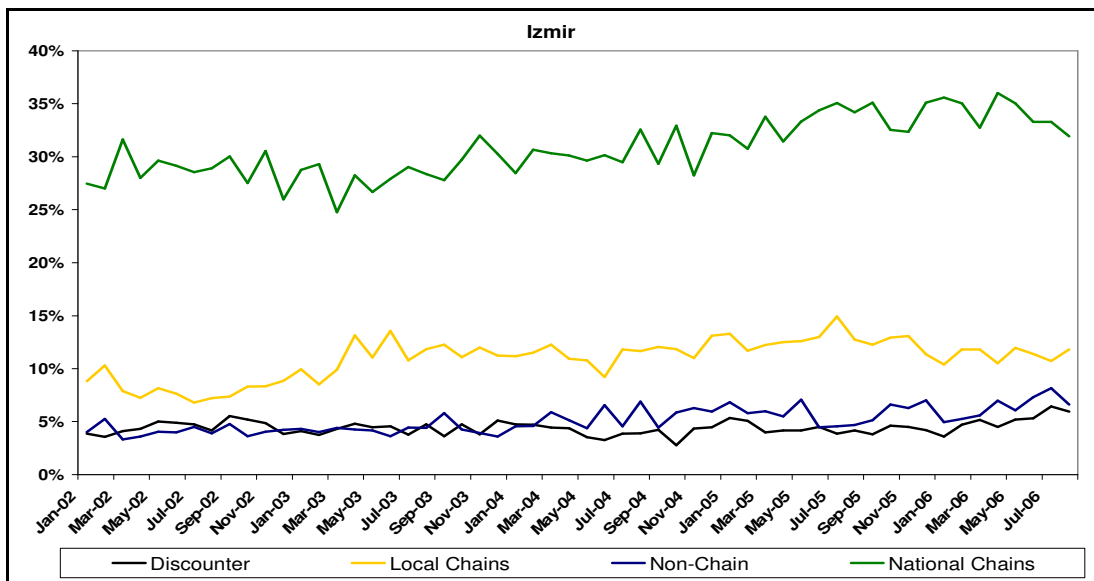
Figure A. 12: The market shares of supermarket formats in Izmir FMCG market, January 2002-August 2006, seasonally adjusted series

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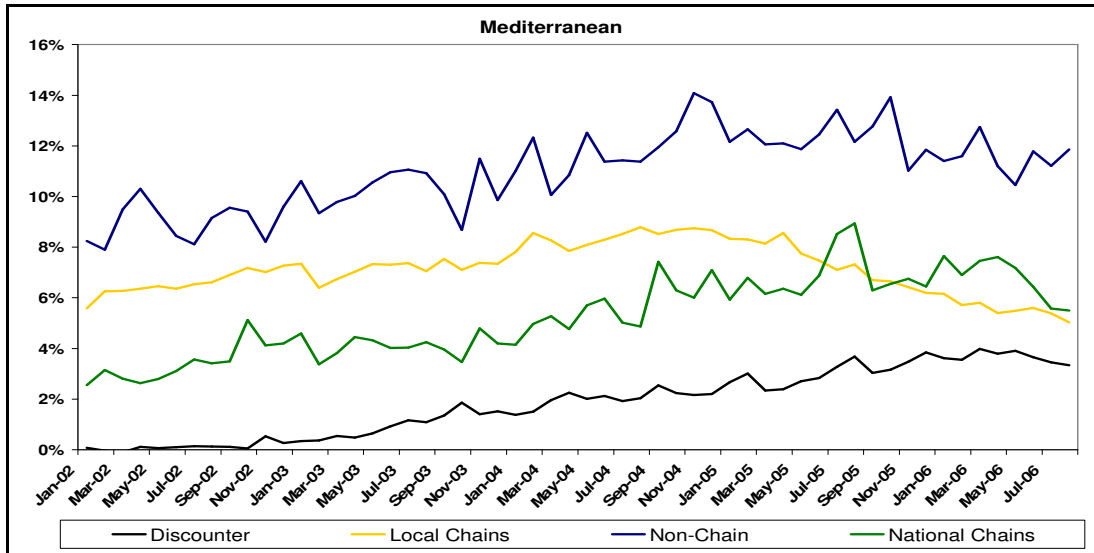
Figure A. 13: The market shares of supermarket formats in Mediterranean FMCG market, January 2002-August 2006, seasonally adjusted series
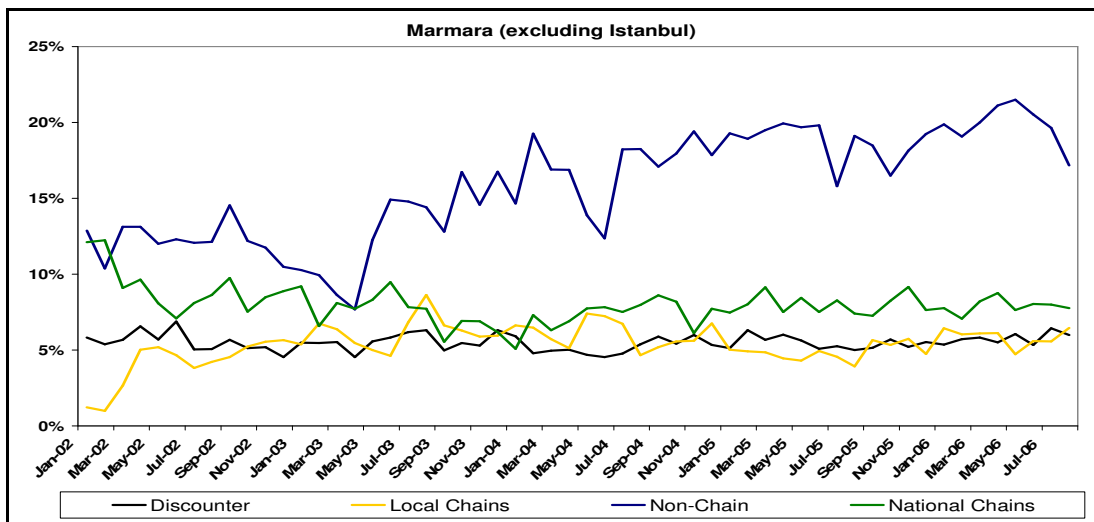

Figure A. 14: The market shares of supermarket formats in Marmara FMCG market, January 2002-August 2006, seasonally adjusted series
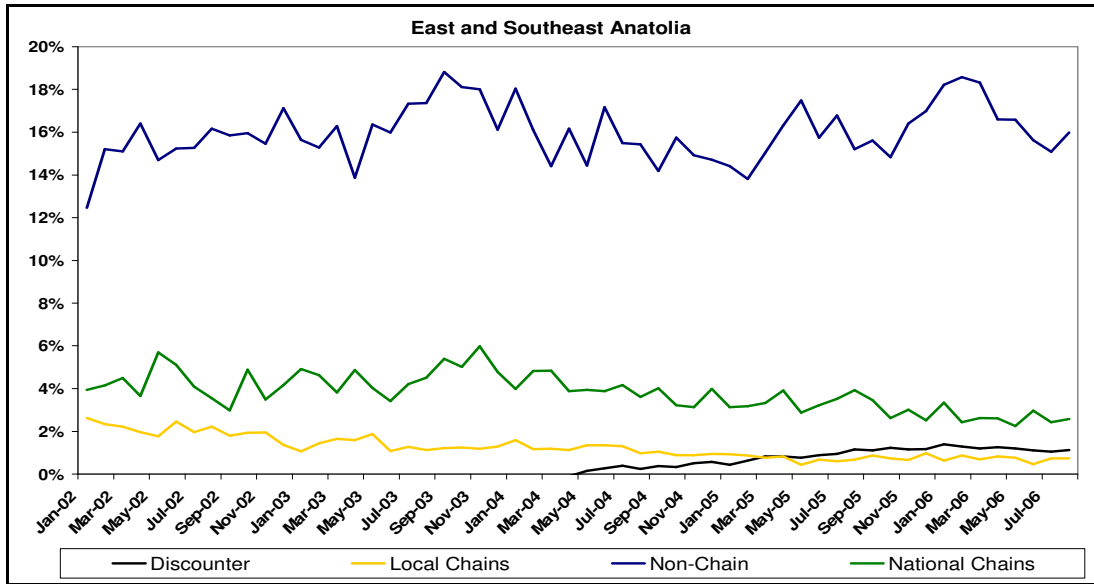
Figure A. 15: The market shares of supermarket formats in East and Southeast Anatolia FMCG market, January 2002-August 2006, seasonally adjusted series
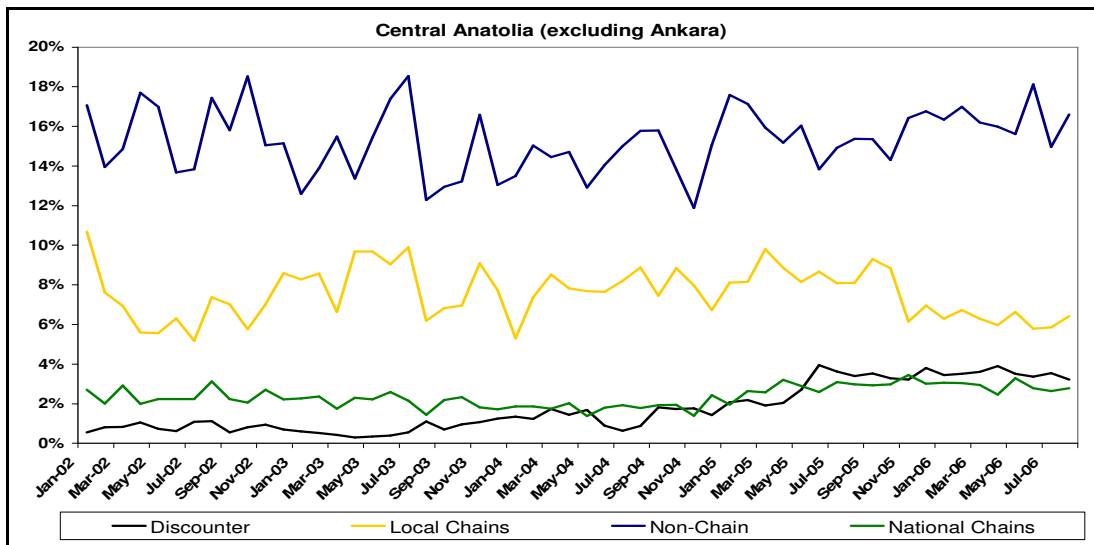
Figure A. 16: The market shares of supermarket formats in Central Anatolia FMCG market, January 2002-August 2006, seasonally adjusted series
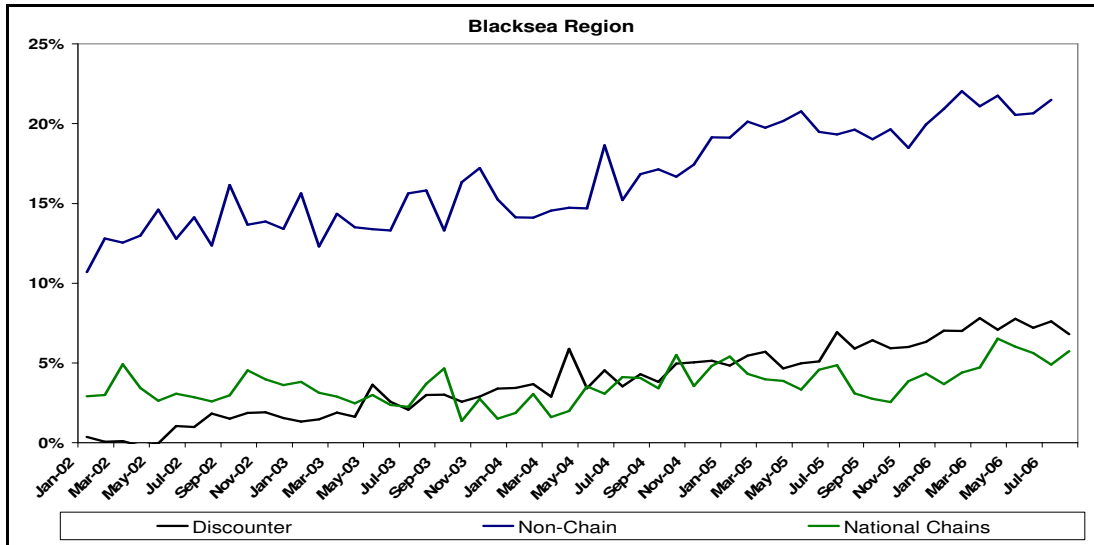
Figure A. 17: The market shares of supermarket formats in Black sea FMCG market, January 2002-August 2006, seasonally adjusted series
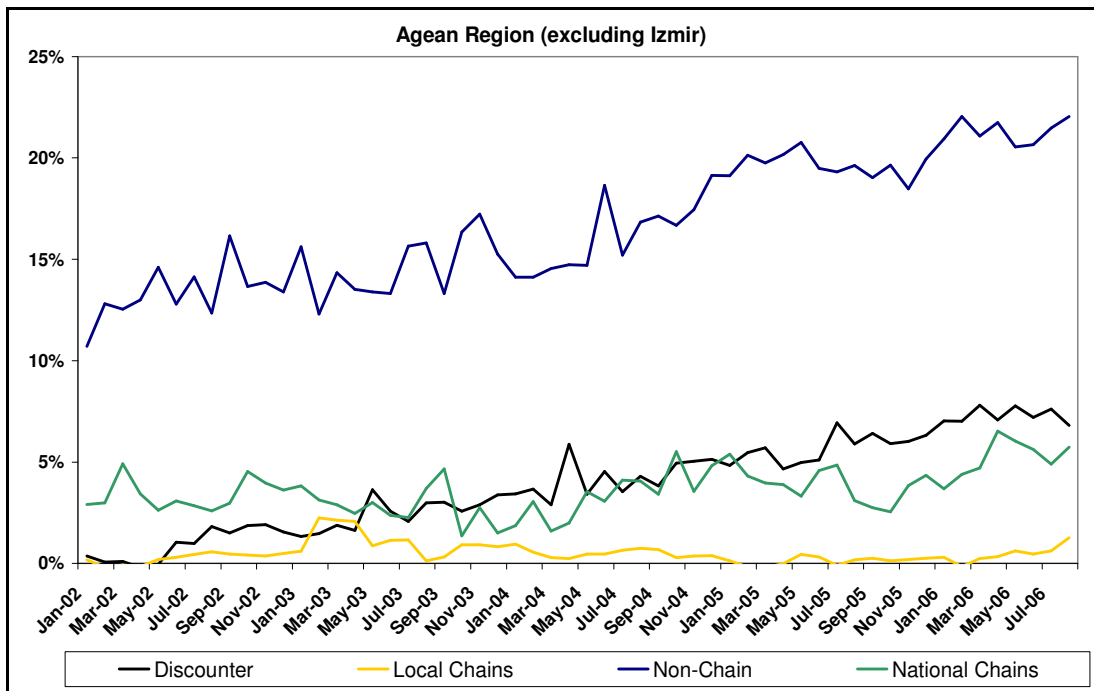
Figure A. 18: The market shares of supermarket formats in Aegean region FMCG market, January 2002-August 2006, seasonally adjusted series
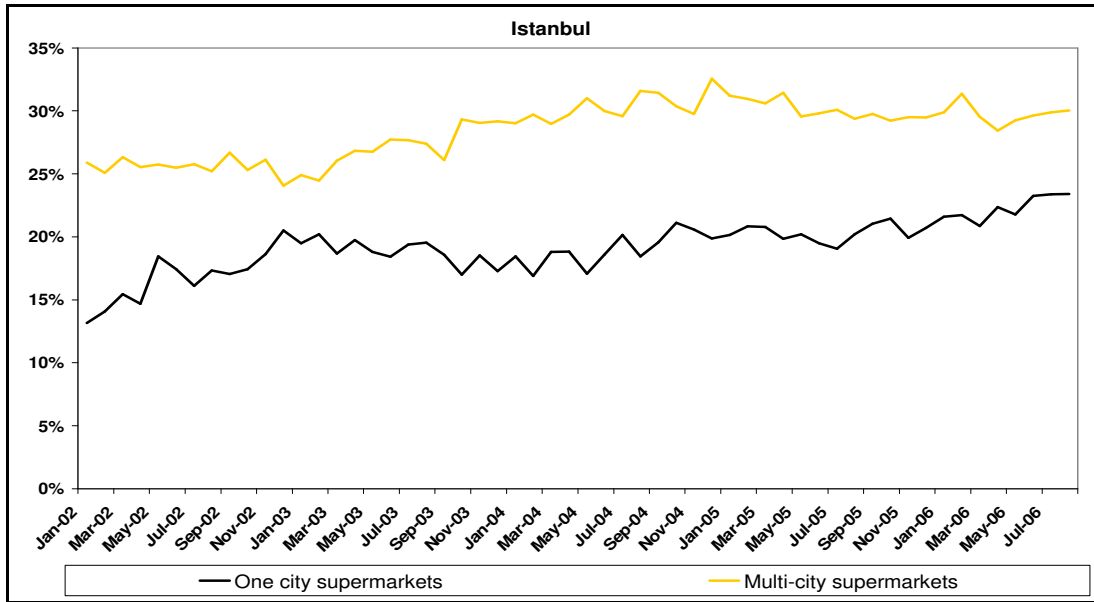
Figure A. 19: The market shares of city-based supermarket formats in Istanbul FMCG market, January 2002-August 2006, seasonally adjusted series.
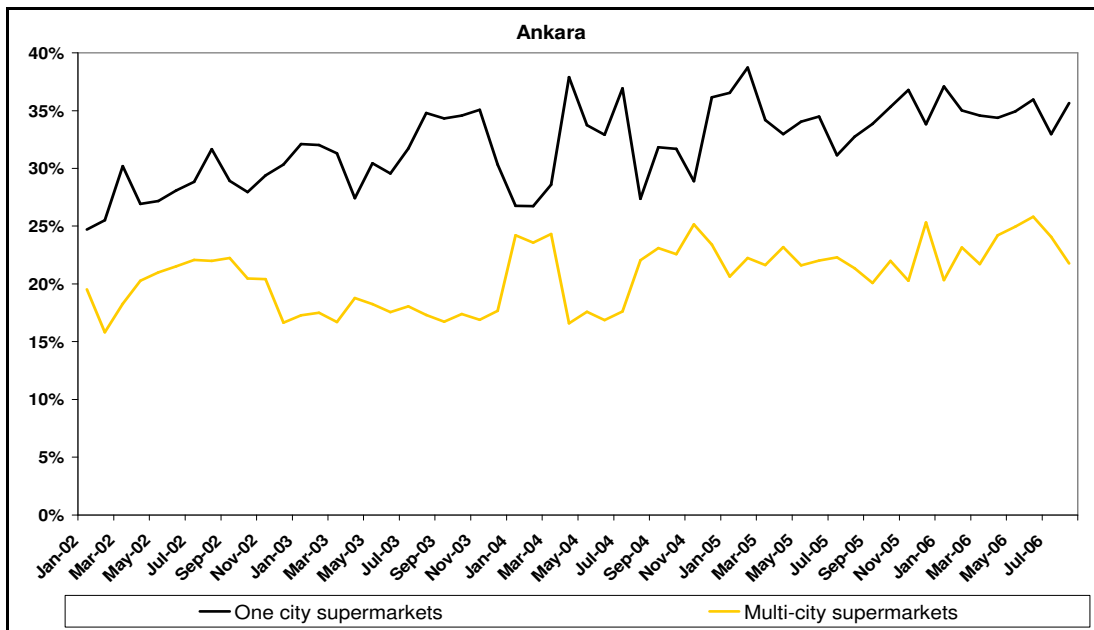
Figure A. 20: The market shares of city-based supermarket formats in Ankara FMCG market, January 2002-August 2006, seasonally adjusted series.

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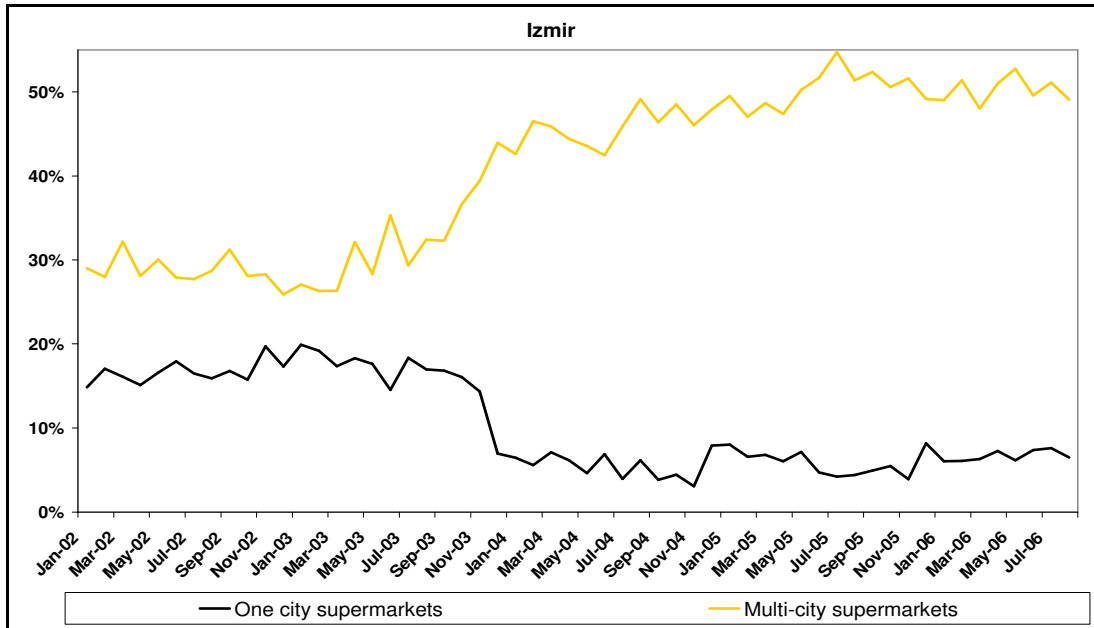
Figure A. 21: The market shares of city-based supermarket formats in Izmir FMCG market, January 2002-August 2006, seasonally adjusted series.
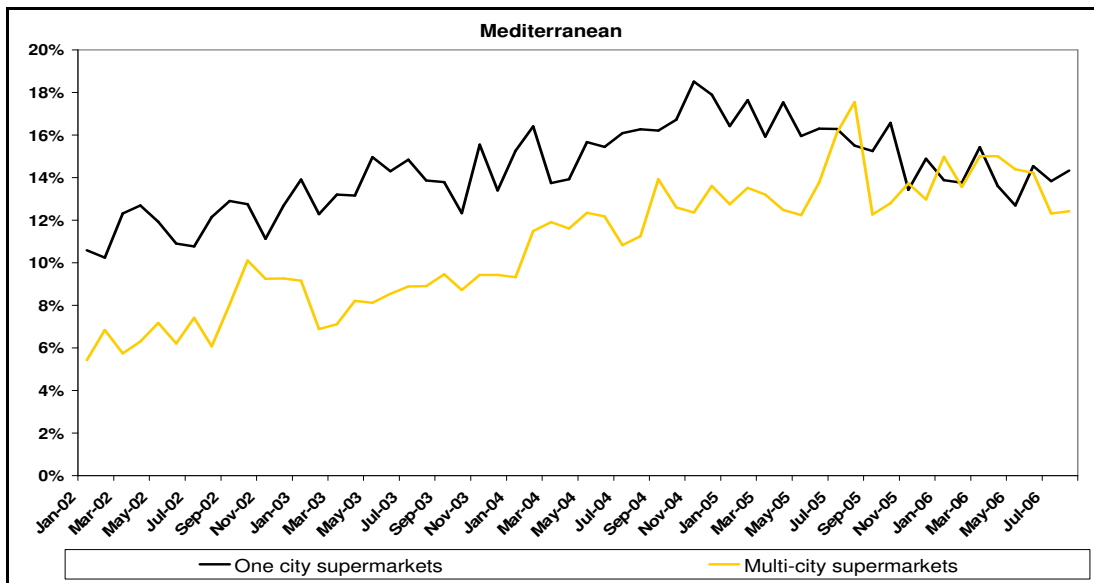
Figure A. 22: The market shares of city-based supermarket formats in Mediterranean Region FMCG market, January 2002-August 2006, seasonally adjusted series.

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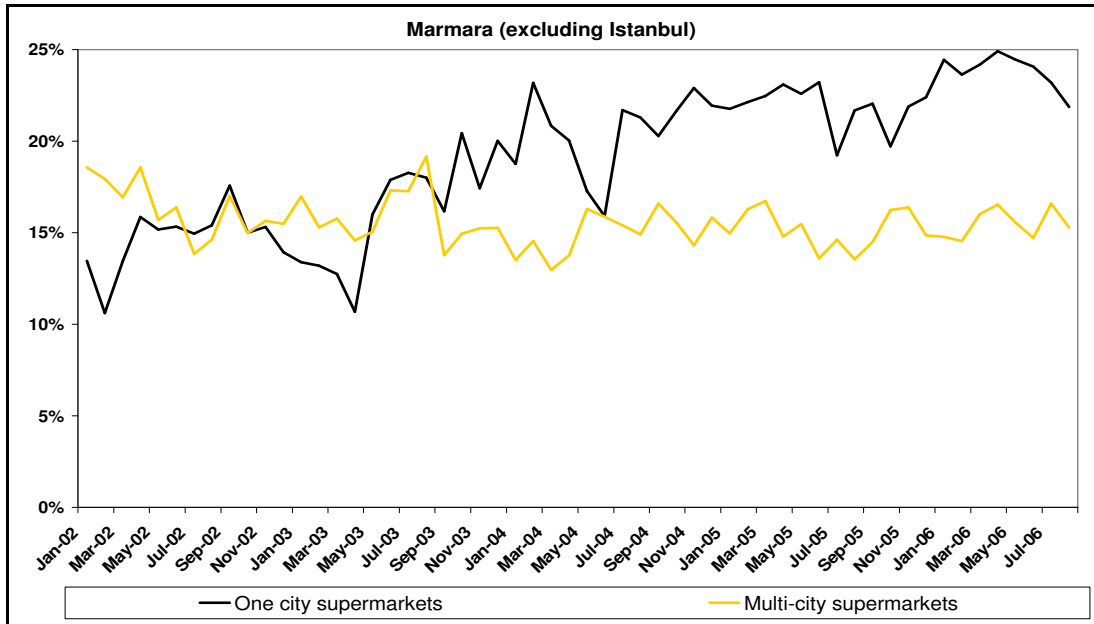
Figure A. 23: The market shares of city-based supermarket formats in Marmara FMCG market, January 2002-August 2006, seasonally adjusted series.
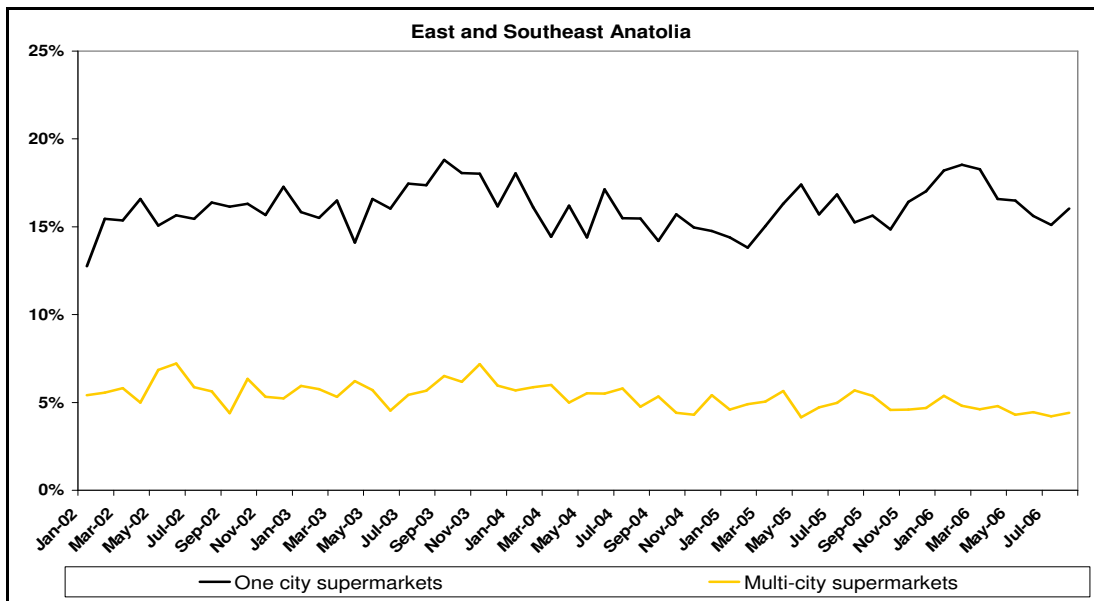
Figure A. 24: The market shares of city-based supermarket formats in East and Southeast Anatolia FMCG market, January 2002-August 2006, seasonally adjusted series.

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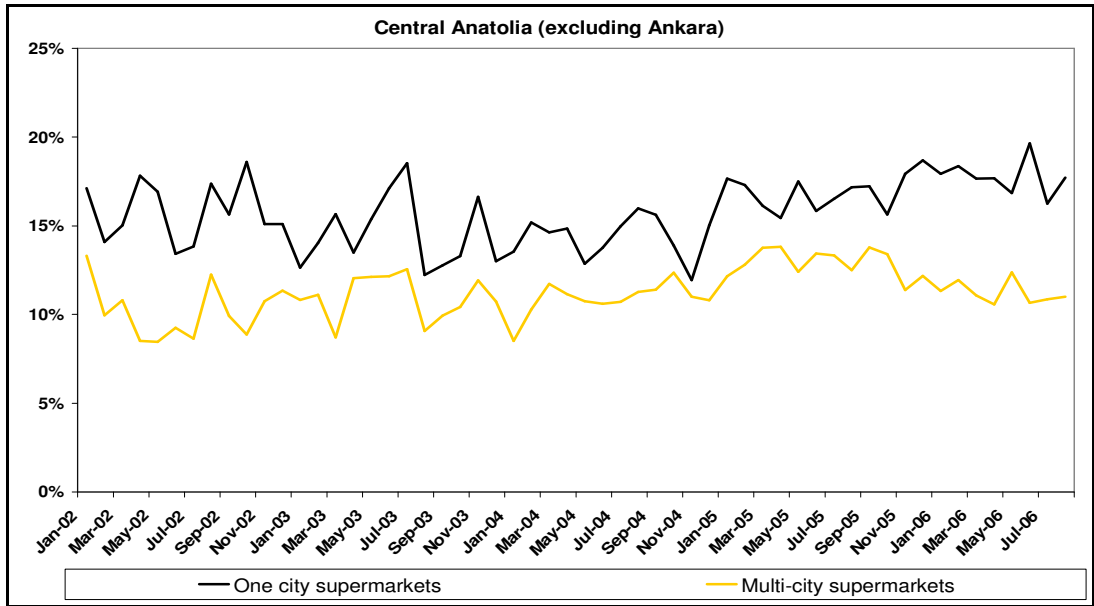
Figure A. 25: The market shares of city-based supermarket formats in Central Anatolia FMCG market, January 2002-August 2006, seasonally adjusted series.

Figure A. 26: The market shares of city-based supermarket formats in Black sea Region FMCG market, January 2002-August 2006, seasonally adjusted series.

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Figure A. 27: The market shares of city-based supermarket formats in Aegean Region FMCG market, January 2002-August 2006, seasonally adjusted series.
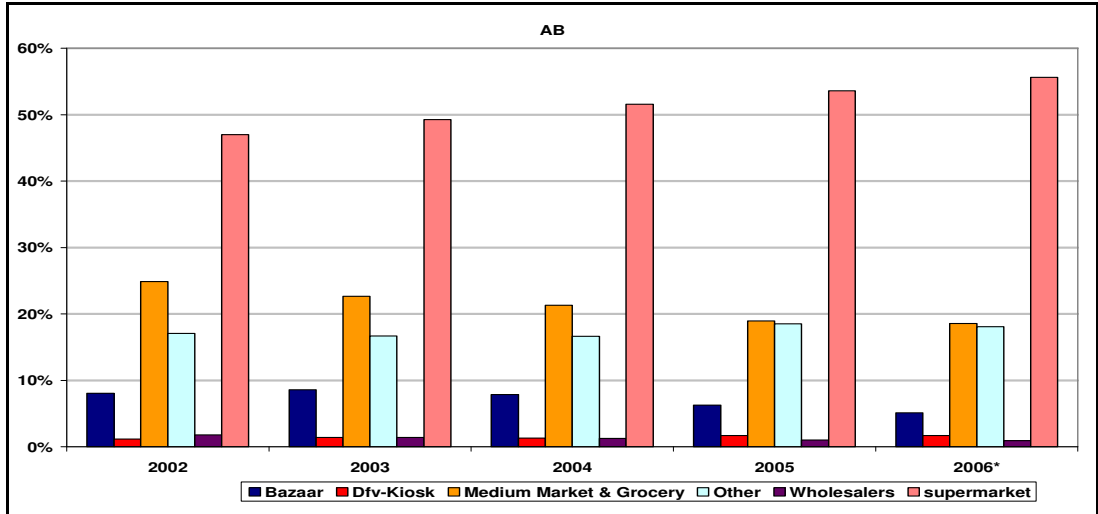
Figure A. 28: The shares of retailers in total FMCG consumption of socioeconomic group AB (2002-2006*, *first eight months are used for 2006)
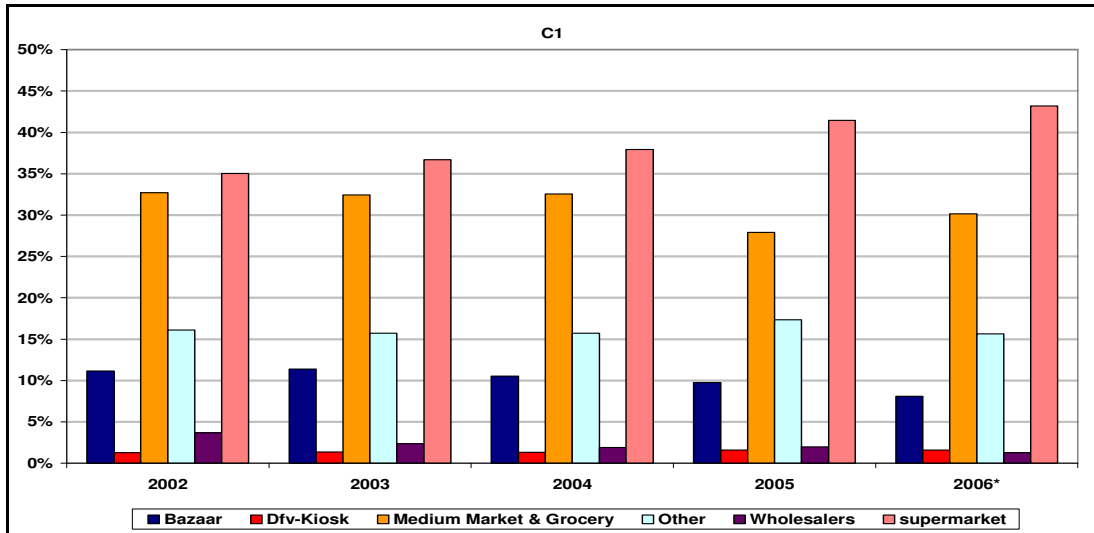
Figure A. 29: The shares of retailers in total FMCG consumption of socioeconomic group C1 (2002-2006*, *first eight months are used for 2006)
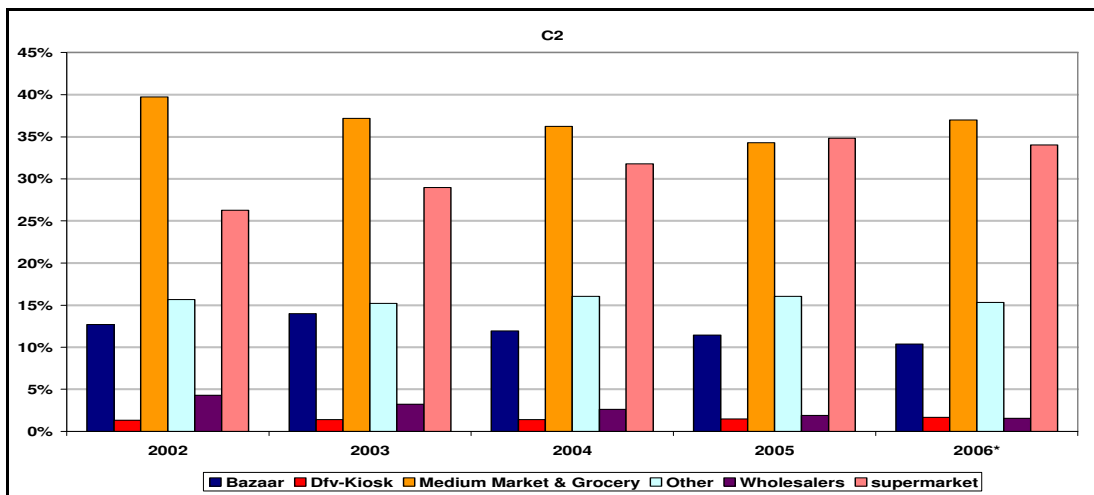
Figure A. 30: The shares of retailers in total FMCG consumption of socioeconomic group C2 (2002-2006*, *first eight months are used for 2006)
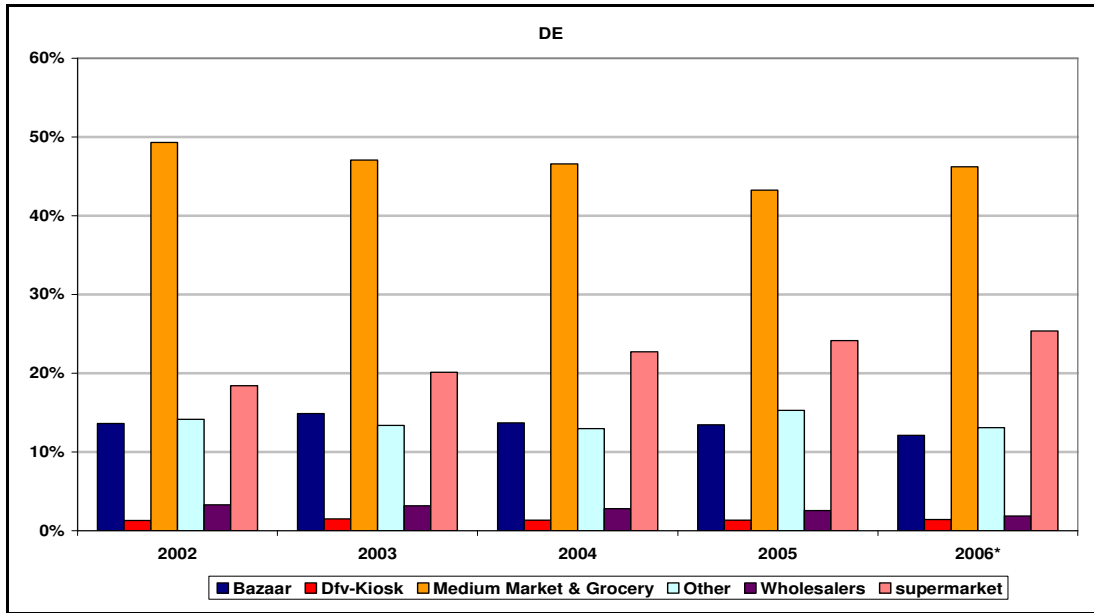
Figure A. 31: The shares of retailers in total FMCG consumption of socioeconomic group DE (2002-2006*, *first eight months are used for 2006)
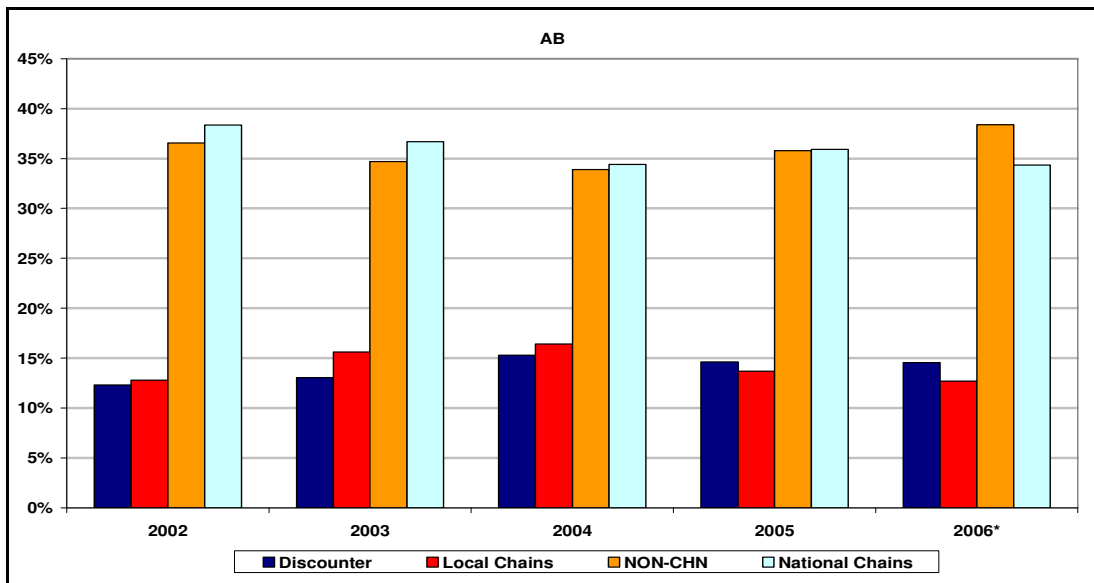
Figure A. 32: The shares of supermarket types as a share of total supermarket consumption of socioeconomic group AB (2002-2006*, *first eight months are used for 2006)
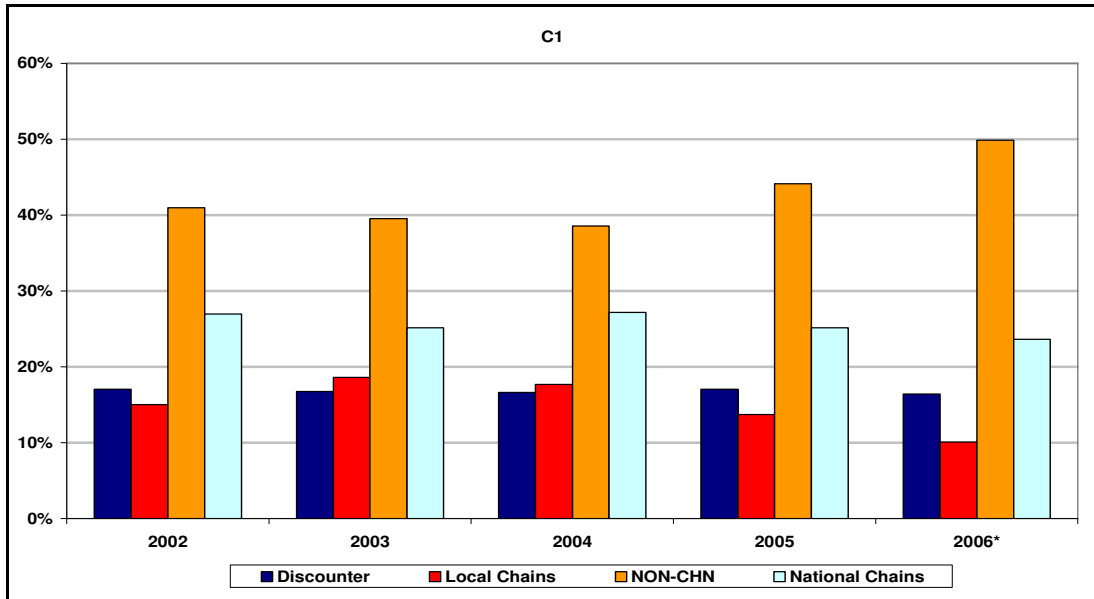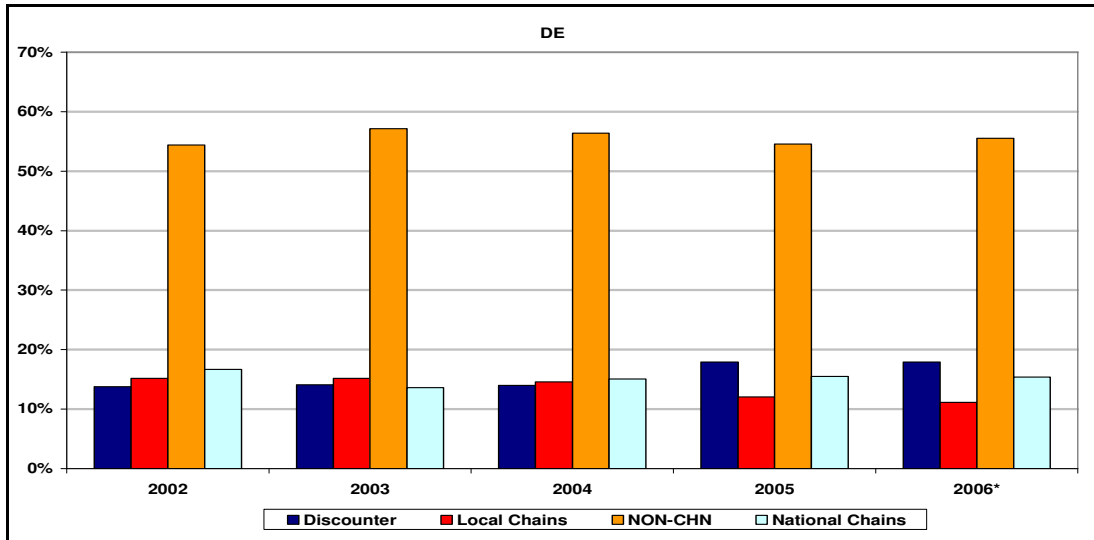
Figure A. 33: The shares of supermarket formats as a share of total supermarket consumption of socioeconomic group C1 (2002-2006*, *first eight months are used for 2006)
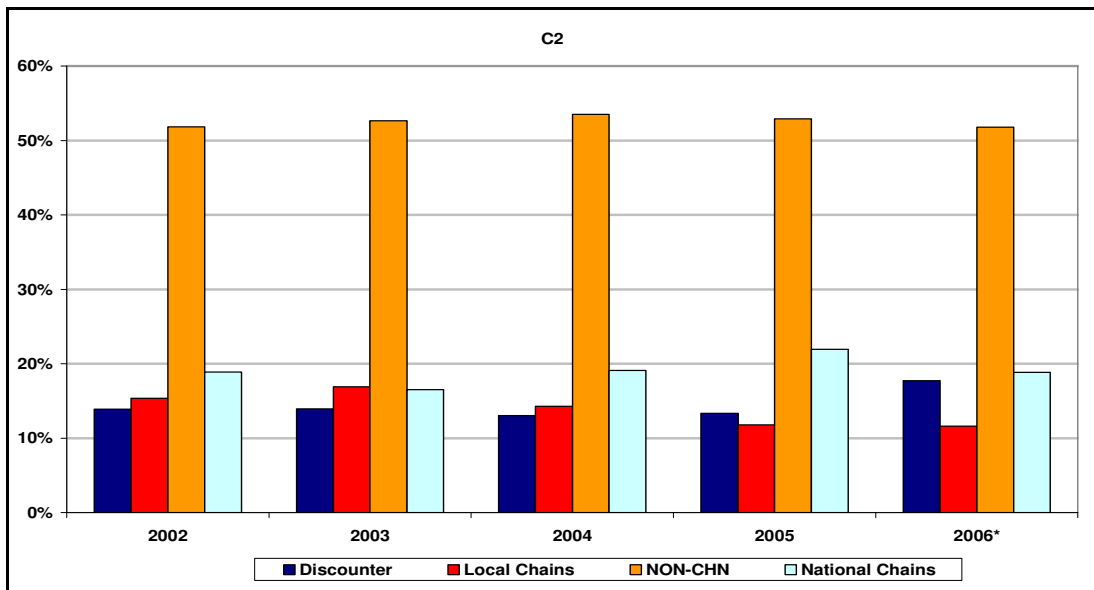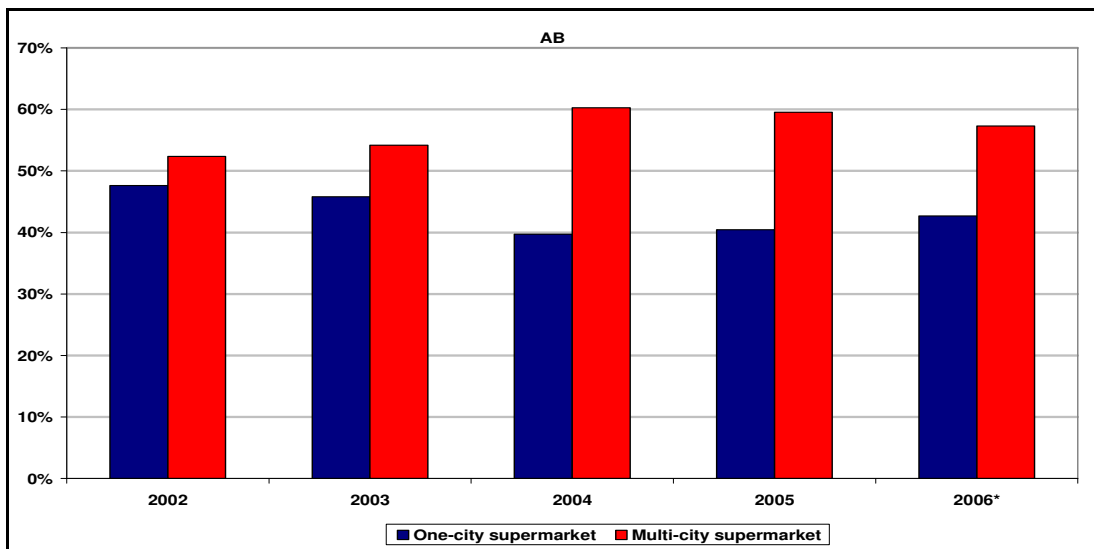

Figure A. 34: The shares of supermarket formats as a share of total supermarket consumption of socioeconomic group C2 (2002-2006*, *first eight months are used for 2006)

Figure A. 35: The shares of supermarket formats as a share of total supermarket consumption of socioeconomic group DE (2002-2006*, *first eight months are used for 2006)

Figure A. 36: The shares of supermarket formats with city classification as a share of total supermarket consumption of socioeconomic group AB (2002-2006*, *first eight months are used for 2006)
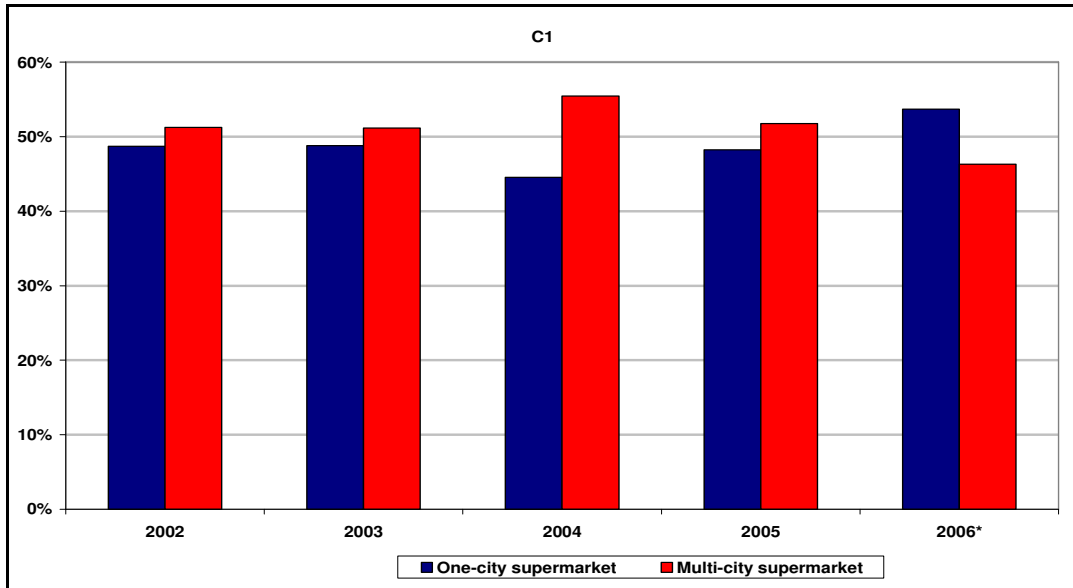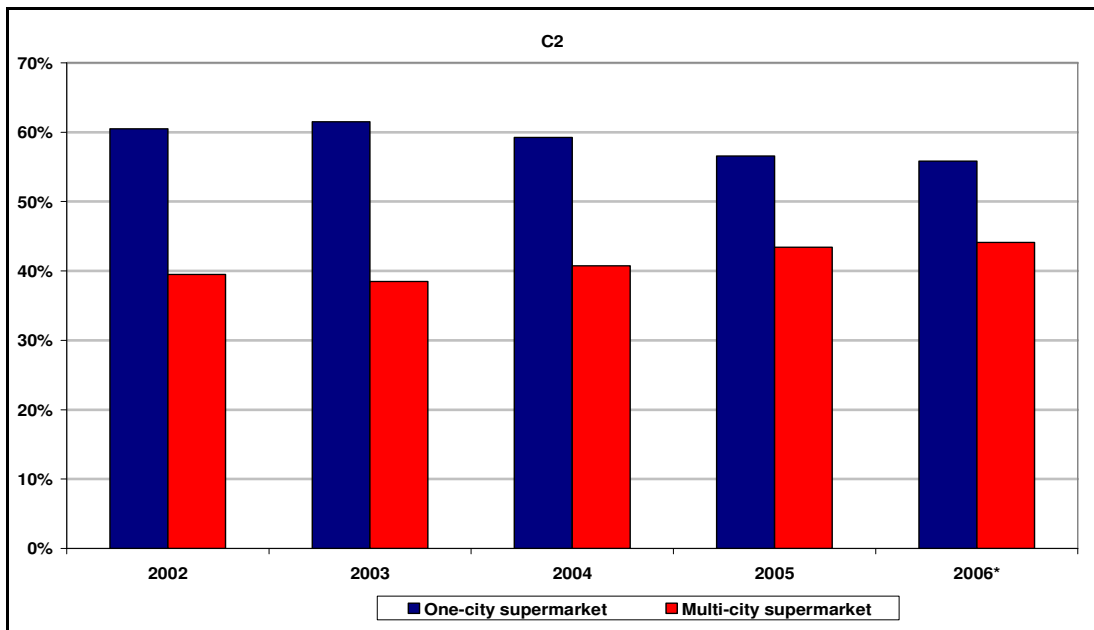
Figure A. 37: The shares of supermarket formats with city classification as a share of total supermarket consumption of socioeconomic Group C1 (2002-2006*, *first eight months are used for 2006)

Figure A. 38: The shares of supermarket formats with city classification as a share of total supermarket consumption of socioeconomic group C2 (2002-2006*, *first eight months are used for 2006)
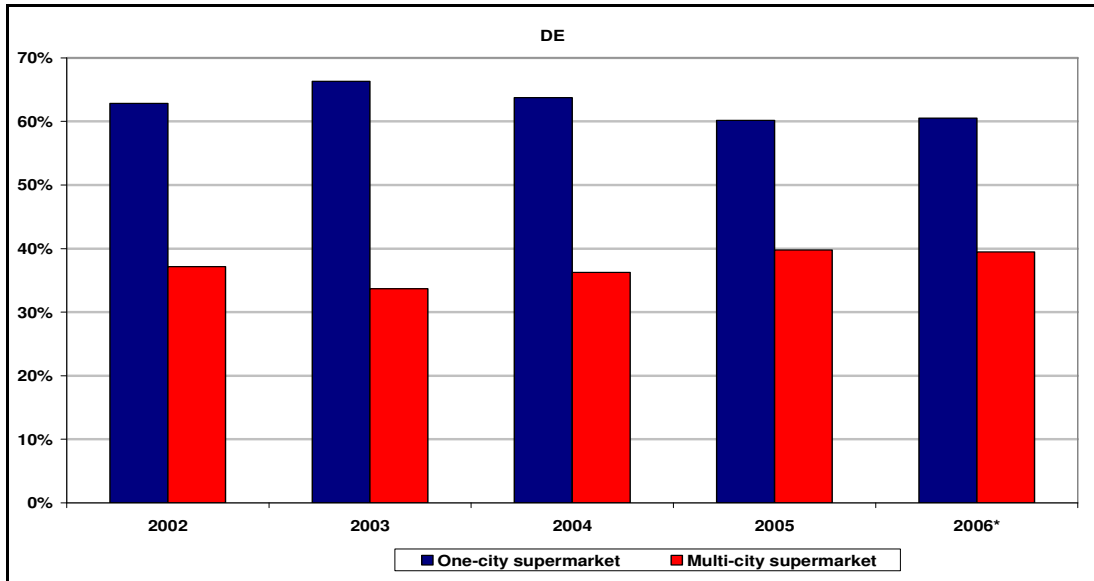
Figure A. 39: The shares of supermarket formats with city classification as a share of total supermarket consumption of socioeconomic group DE (2002-2006*, *first eight months are used for 2006)