

Price differences for supermarket goods in Europe¹

Prices for toothpaste, frozen vegetables, flour, pasta and other supermarket goods in the EU are the result of many different factors that influence each product and brand differently. To understand price differences for these goods it is therefore necessary to study the particular situation for each product in each country.

Borders still seem to matter in Europe. Price differences across Europe are five to six times bigger than price differences inside countries – even in the biggest of the Member States. All in all, the EU remain divided into 15 separate markets for supermarket goods, where prices even in neighbouring countries, are not much related.

However, only a limited part of the price differences seem to be explained by national characteristics such as taxes, wages, income level and to a certain extent retail structure and market power of retailers and manufactures affecting all the products in the same way.

These are the main conclusions from an analysis of supermarket prices in the EU done by the Internal Market Directorate General. The analysis is based on electronic data (scanner data) collected in supermarkets in 14 Member States (excluding Luxembourg) and covers the period July 1999 to June 2000. A more detailed description of the database can be found in box 1 at the end of the paper.

The analysis is structured as follows. In the next section, we look at price differences for supermarket goods in the EU. Then we look at the factors behind price dispersion identifying three general causes behind price dispersion. Finally, we compare the price dispersion inside countries with the dispersion at the EU-level.

1. Large price differences remain in the EU

During the nineties, price dispersion in the EU has been reduced significantly on the aggregate level. Price dispersion has been reduced from around 22 percent in the beginning of the nineties to around 15 percent at the end of the decade². Price convergence was strongest in the beginning of the decade, but seems to have slowed down in recent years. Significant price dispersion therefore remains in the EU.

¹ This paper is an internal working document of the Internal Market Directorate General. The views expressed in this document do therefore not necessarily reflect the views of the Commission.

² Price dispersion is for private final consumption (PPP-data, Eurostat (2001)) and is measured by the co-efficient of variation. The co-efficient of variation measures the price dispersion around the mean. A co-efficient of variation of 22 percent therefore means that prices vary 22 percent around the mean in the EU.

Table 1. Price differences in the EU for selected supermarket products – including VAT (EU14=100)

	AT	BE	DK	FIN	FR	DE	GB	GR	IRE	IT	NL	PT	ES	S	Price dispersion
Pan European brands¹															
COCA COLA - BIG BOTTLE	90	99	139	112	78	73	113	91	92	88	116	82	93	135	19
FANTA - BIG BOTTLE	95	90	145	120	85	81		95	115	82	77	81	88	146	23
SINGLE MARS BAR	98	73	143	95		85	78			98	80	106		142	24
BARILLA SPAGHETTI		112		106	89	109	94		99	59		102	92	138	19
NESCAFE	103	93	113	108	93	88	94	77	100	133	86	117	87	107	14
EVIAN STILL - BIG BOTTLE	116	63		189	44	85	99	76	98	58	95			176	44
KELLOGG'S CORN FLAKES	123	91	88	112	94	100	71	152		115	93	85	82	93	20
ELVITAL SHAMPOO	98	88	107	112	100	82	111		126	83	125	91	76		16
COLGATE TOOTHPASTE	101	94		95	88	102	126	108	109	101	101	76	76	124	14
Generic brands¹															
BUTTER	102	98	127	79	99	87	102		77	124	84	98	121		16
DRINKING CHOCOLATE	78		118	91	76	56	104			147		97	76	157	31
FLOUR	117		114	72	118	116	126			144	63	75	87	66	27
FROZEN PIZZA	103	100	103	107	99	71	110	83		89	78	152	96	108	19
GROUND COFFEE AND COFFEE BEANS		82	87	87	107	80	145	129	178	75	69	98	54	108	33
GRANULATED SUGAR	106	89	113	96	120		77		114		87	100	89	110	13
MARMALADE	119	80	154	119		100	75		81	88	65	142	79	97	27
MILK (UHT) Full Fat	113	65		137	121	75	133			126	64	84	78	106	26
MILK (UHT) Half Fat		90		139	103	97				123	88	80	82	99	19
MINERAL WATER	60	79	139	153	57	109	129	73	145	49	68		39	199	47
OLIVE OIL	118	126		166	108	94		81	113	69	89	58	51	127	32
WASHING UP DETERGENTS (concentrated)	118	119		116	110	114	89	82		86	63	102	79	122	18

1) Pan-European brands are defined as brands available in a minimum of seven EU-countries. Generic brands are brands available in *less* than seven countries, see also Box 1.

Note: The table shows the national price levels relative to the EU14 average (for the countries for which there are information). Prices are including VAT and other exercise taxes. The price of the generic products is a *simple* average of the price for all generic brands. The dispersion is the standard deviation of the price levels. See box 1 for further details.

Source: Internal Market DG based on ACNielsen.

Simple comparisons of prices for different goods show that large price differences still exist for some supermarket products (see table 1). Prices for fresh food vary on average by about 20 percent around the EU-average. For most products the difference between the cheapest and the most expensive country is more than 50 percent. The price difference between the cheapest country (Belgium) and the most expensive country (Denmark) for Mars chocolate bars is almost 100 percent. For mineral water even larger price differences are found.

The prices of homogenous products vary less than the prices of differentiated goods as one might expect. For instance, the lowest price dispersion is found for granulated sugar. However, this is not always the case. Flour and UHT milk are both homogenous goods with a relatively high price dispersion across the EU³.

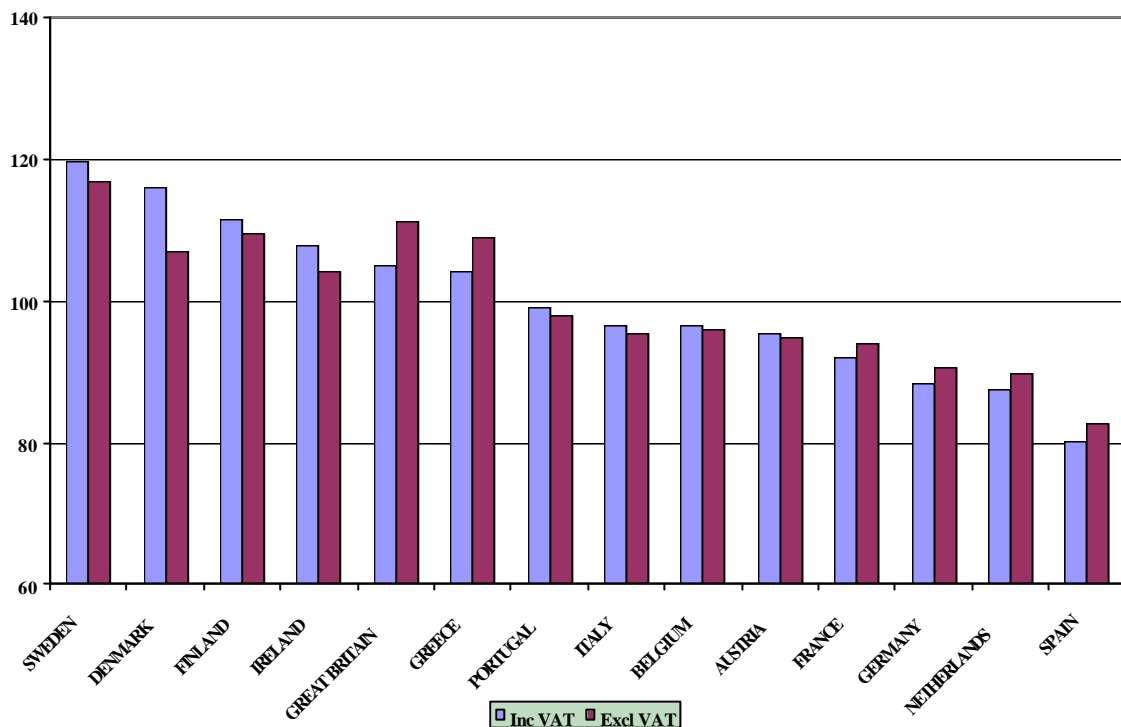
No country is consistently a high or a low price country. The price level in the UK seems to be in general above the EU-average, however, for Kellogg's Cornflakes the UK is one of the cheapest countries in Europe. On the other hand the German price level is in general below the EU-average, but for Barilla spaghetti the price in Germany is above the EU-average.

However, on average some countries are more expensive than others. Figure 1 shows the average price level in each Member States with respect to the EU14-average for the supermarkets products included in the database. The price level is shown both including and excluding VAT. It should be noted that the comparisons of price levels between countries should be done with caution, because of missing observations. The products compared are therefore not consistently the same for all countries.

The figure, however, suggests that Sweden, Denmark and Finland are the three most expensive countries in Europe for supermarket goods when prices including VAT are compared. On the other hand Spain seems to be the cheapest country in Europe followed by the Netherlands, Germany and France.

³ These conclusions are documented in the Commissions Cardiff report from December 2001 «Economic Reform : Report on the functioning of Community product and capital markets » (COM(2001)736).

Figure 1. Price level for the supermarket goods in the EU14 – including VAT (EU14=100)



Note: The graph shows the average price level for supermarket goods in different countries relative to the simple EU-average. Both generic brands and Pan-European brands have been included in the calculations. Products for which there is information for less than seven countries have been dropped. Comparisons of the price level between countries should therefore be done with caution because of the differences in the product coverage from country to country.

Source: Internal Market DG based on ACNielsen.

Excluding VAT changes the relative position of individual countries. Generally, when comparing VAT free prices countries with low VAT-rates have a higher relative price level and vice versa for countries with high VAT-rates. It is interesting to note that the price dispersion for the EU is almost the same whether measured with or without VAT. This indicates that VAT does not seem to add much to price dispersion in Europe. It should however be noted that the calculations do not take into consideration other indirect taxes like exercise taxes, which might be important for some products. Differences in taxation can therefore play a larger role than indicated in figure 1.

2. What explains remaining price differences in EU?

The former section suggests that there is no single factor responsible for the price differences in Europe. A number of factors with different effects from country to country and product to product seem to be behind price differences. These potential factors can be divided into three groups: Natural factors, structural factors and market conditions.

2.1 Natural causes

Natural causes behind price differences are factors like local preferences, consumer search costs and transport costs. They are not the result of differences in regulation, market structure nor structural differences.

Local preferences and culture seem to play an important role in explaining price differences for some products. For instance, butter is more often used for cooking in the North European countries than in the South European countries (see table 1). Sales per inhabitant of butter in Denmark are almost 6 times greater than in Spain and twice the sales in Italy. The smaller market in the South European countries seems to imply a higher price. The price for butter in both Italy and Spain is close to the Danish price for butter although Denmark seems to be more expensive than both countries in general. The negative correlation between relative quantities and relative prices is known as the “Gerschenkron effect”.

Local preferences are also reflected by differences in the presentation of the same product of the same brand in different national markets. Differences in size, weight, volume and/or units per package are found across countries. Therefore, even though the prices compared are unit values per litre, kilo etc., the size of the product compared might vary across countries and since larger representations often have a lower unit value this affects the price level in the countries, see box 1.

Prices can differ between regions due to transport costs. Price differences between two regions will have to exceed the transport costs between the two regions before arbitrage will take place and this can create price differences between two geographical locations. Transport costs can also directly affect the price of some goods like for instance Italian pasta or French mineral water. Looking at table 1 it is clear that Italian spaghetti is cheapest in Italy costing 60 percent of the average price in the EU. In countries close to Italy (France and Spain) the price is around 90 percent of the EU-average. A bit further away from Italy, in Germany and Belgium, the price is around the EU-average, while the highest price is found in Sweden. However, it is clear that transport costs cannot explain all price differences; Italian dry pasta is slightly cheaper in Finland than in Belgium although Finland is one of the EU-countries the furthest away from Italy.

2.2 Structural causes

Structural causes include VAT and excise taxes, income differences, regulation on shop opening hours, regulation on land use and shop sizes, labour regulation, advertising rules and other types of regulation affecting the cost of selling supermarket goods.

VAT and income differences are both factors that could potentially explain price differences in the EU. As figure 1 points out VAT-rates do play a role for a country's price level, but price dispersion across the EU remains large whether measured with or without VAT. VAT therefore seems to account for only a part of price differences in the EU.

Price differences appear not to be much related to income differences. For all consumer goods and services as a whole, there is a high correlation between living

standards and a country's price level⁴, but this correlation is a lot less clear for supermarket goods. Both Germany and the Netherlands have an income per capita above the EU-average, but are among the cheapest countries for supermarket goods. Portugal has an income level below the EU-average, but Portuguese prices of supermarket goods are around the EU-average. All in all, VAT and especially income seems to explain only a limited part of price dispersion in Europe.

Retail structures vary significantly across Europe and this seems to add to price differences. For instance, larger outlets can often offer economies of scale which, if passed on to consumers, can lead to lower prices. Discounters, which are shops with a business model based on low-prices, can increase competition in the retail sector, which puts a downward pressure on prices in other competing outlets.

Figures 2 and 3 provides some indication of the impact of distribution on price differences. Figure 2 shows the average price levels for half fat UHT milk in three Member States and figure 3 shows the market share of different outlet types within them.

The countries selected for figure 2 are the country with the highest price difference between hyper- and supermarkets (Italy), the second highest price difference (Sweden) and a country among the countries with the lowest price difference (Spain).

In Sweden the price of a litre of milk is four percent higher in supermarkets than in hyper-markets. Prices in traditional shops are slightly higher than in supermarkets. In Spain the price difference is only one percent. The price in traditional shops is about the same as in the other outlets.

However, in Italy the price difference for milk between hyper- and supermarkets is large compared to other EU countries. Italians shopping in supermarkets pay 15 percent more for their milk compared to the average EU-price. However, if Italians instead bought their milk in hyper-markets, they would pay a price close to the EU-average. Traditional stores in Italy are much more expensive compared to other countries, which increases the average price paid for milk in Italy. But it is also important to note here that differences in the price of milk in Italy across outlet types is much higher than anywhere else in the EU.

⁴ See for instance European Economy, supplement A, No 7, July 2001.

Figure 2: Price level for UHT milk in hyper-, supermarkets and traditional shops in Italy, Spain and Sweden with respect to the EU-average price (including VAT)

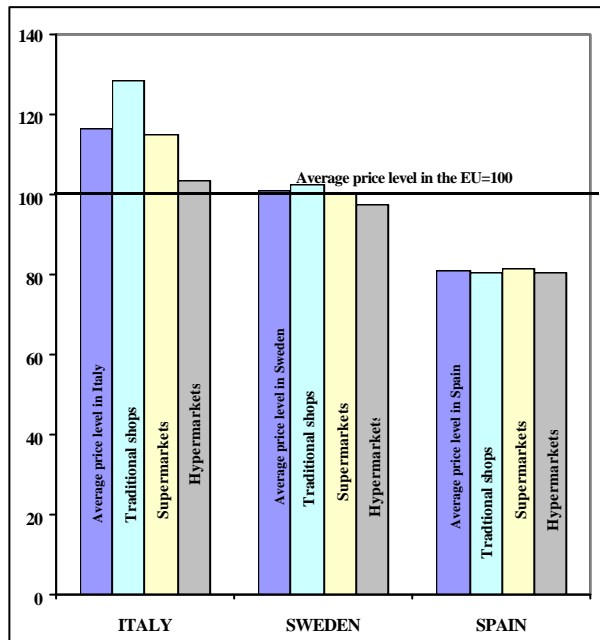
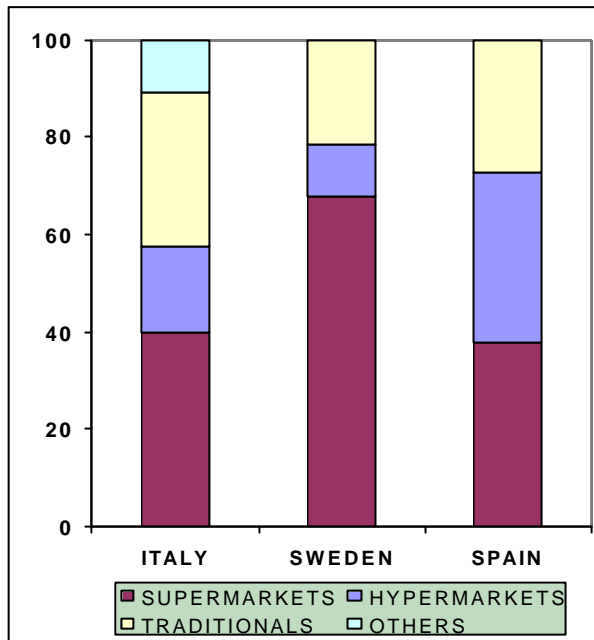


Figure 3: Market share on the market for UHT milk of hyper-, supermarkets and traditional shops in Italy, Spain and Sweden



Note: Supermarkets are defined as shops selling groceries with a sales area between 400 and 2500 sqm. Hyper-markets are defined as shops selling groceries with a sales area larger than 2500 sqm. Traditional shops are defined as small shops with a sales area that is in general less than 400 sqm. For some countries in the EU it is not possible to make this distinction.

Source: Internal Market DG based on ACNielsen.

Figure 3 shows the market share of supermarkets, hyper-markets and traditional shops on the market for milk in the three countries and reveals that the retail structure is quite different in the three countries for this product. It is clear that most Italian goes to a supermarket or a traditional shop to buy their milk. For this they pay a higher price. Swedish consumers mainly buy their milk in supermarkets and pay a price a little higher than the price in hyper-markets. Finally, Spanish consumers seem to buy most of their milk in hyper-markets. The high market share of hyper-markets in Spain on the milk market seems to force down the price of milk in other outlet types too. Price differences are therefore almost non-existent across the three outlet types in Spain.

In France and Germany hyper-markets and discounters also have a large market share and prices in hyper- and supermarkets are also quite close. This could indicate a more competitive retail structure in these countries and that potential economies of scale are passed on to consumers. It is also interesting to note, that six out of the 30 biggest retailers in the world in 2000 (measured by sales) are German and five are French⁵.

⁵ « Consumers in Europe – facts and figures », Eurostat, 2001

A more general comparison confirms the picture presented in figure 2⁶. These examples illustrate the importance of the distribution structure in explaining price differences across Member States.

2.3 Market conditions

Market conditions relate to factors that might allow retailers, wholesalers and producers to deviate from the price you would expect to find in a perfectly competitive market, where prices would just differ due to the natural and structural reasons described above.

The concentration in the retail sector varies across countries. The market share of the five leading groups in food retailing is around 90 percent in Finland and Sweden while it is only 25 percent in Italy (see table 2). The market share of producers also varies significantly across countries and from product group to product group. A high concentration in an industry can facilitate collusion and lead to higher prices. It is interesting to note that the highest concentration of retailers is found in Sweden, Denmark and Finland, which are also the three countries with the highest price level.

Table 2: Concentration at the producer and retail level in the EU14.

	Retail concentration*	Producer concentration**		
		Median concentration	75 percentile concentration	25 percentile concentration
AUSTRIA	68	57	70	46
BELGIUM	66	55	80	37
DENMARK	76	67	82	44
FINLAND	89	59	72	47
FRANCE	61	54	69	39
GERMANY	61	45	64	33
GREAT BRITAIN	57	42	64	30
GREECE	38	61	72	48
IRELAND	54	66	74	46
ITALY	25	53	70	38
NETHERLANDS	68	56	69	35
PORTUGAL	52	63	68	54
SPAIN	50	44	64	35
SWEDEN	95	69	81	46

* Market share of five leading groups in retailing

** Market share of the three biggest producers within each product category

Source: The retail concentration is provided by Eurostat. The producer concentration is calculated by the Internal Market DG based on ACNielsen data.

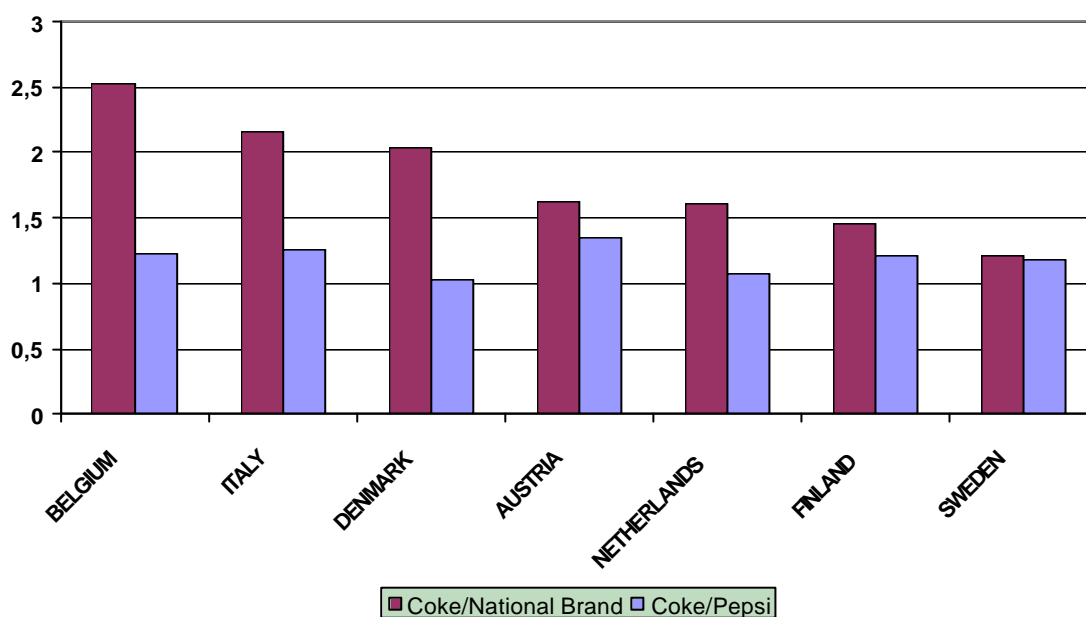
It should be noted however that the relationship between market shares of manufactures and retailers and price is by no means straight forward. The behaviour of manufactures, wholesalers and retailers matters for the final price of a product. The final price reflects to a large extent the bargaining power and skills of the market players. Larger retailers can also have lower costs that benefit consumers. Looking at

⁶ See the Commissions Report on the Functioning of Community Product and Capital Markets (COM (2001)736)

individual products there is no clear relationship between market share the manufactures and the price of a product.

It is though clear that strong brands can charge consumers a higher price. In almost all product categories Pan-European brands are more expensive than the generic brand. This is illustrated in figure 4 that shows the price difference between Coca Cola and Pepsi Cola and Coca Cola and a national brand of cola for selected countries⁷. In all the countries Coca Cola is more expensive than the national brand and Pepsi Cola. But in these cases, price differences can also reflect differences in advertising expenditures, at least to a certain extend.

Figure 4: The price of Pepsi and the national brand of cola relative to Coca Cola for countries



Note: The figures shows the price of Pepsi and the leading national brand of cola divided by the price of Coca Cola. The term “national brand” is used as opposed to generic brand, because the brands selected are found in only *one* Member State.

Source: Internal Market DG based on ACNielsen.

Figure 4 shows that the premium that Coca Cola can charge relative to other brands of cola varies significantly from Member State to Member States probably reflecting different market conditions including both distribution conditions and market power of national competing brands. It is for instance interesting to note that the price of Coca Cola in Denmark is 2,5 times higher than the national brand while the differences is only 1,2 in Sweden. The final price of Coca Cola is however almost the same in the two Member States.

⁷ The term « national brand » is used here because only brands found in *one* Member States is used here.

3. How much do prices vary inside countries?

As indicated above there are large differences between the retail sectors in the EU and these differences seem to contribute to price dispersion. It is difficult to estimate the exact importance of these differences. However, by comparing the price differences *within* Member States with the price differences *across* Member States, one can get an indication of the importance of the large structural differences in the EU.

Price differences inside Member States are in general four to six times smaller than across countries (see table 3). For example, the price dispersion for one brand of toothpaste is 14 percent at the EU-level while it is only 4 percent on average inside EU-countries. However, for some products the difference is even bigger. The price of a Mars bar varies 21 percent around the EU-average, while the variation inside countries is only 2 percent on average.

Table 3: Relative difference in intra- and inter-country price dispersion for selected products (excluding VAT)

	Dispersion across countries (inter-country)	Average dispersion inside countries (intra-country)	Relative difference
EVIAN MINERAL WATER	42,7%	3,6%	11,8
REXONA DEODORANT	21,4%	1,8%	11,7
SENSODYNE TOOTHPASTE	21,0%	2,0%	10,7
MARS BARS (SINGLE)	21,0%	2,1%	10,1
MARS BARS (MULTIPACK)	22,0%	2,9%	7,6
COCA COLA	20,8%	3,8%	5,5
PEDIGREE PAL DOG FOOD	9,7%	2,2%	4,3
PLENITUDE FACE CARE	20,6%	4,9%	4,2
COLGATE TOOTHPASTE	14,0%	3,6%	3,9
BONNE MAMAN MARMELADE	18,7%	5,6%	3,3

Note: The table shows the price dispersion across countries, inside countries and the relative difference between the two. Products with a very high, intermediate and low relative difference have been selected.

Source: Internal Market DG based on ACNielsen.

Mineral water (Evian) and a number of personal care items like deodorants (Rexona) and toothpaste (Sensodyne) have the highest relative difference between inter- and intra-country price dispersion. However, it is interesting to note that for another brand of toothpaste (Colgate) the relative difference between the dispersion across countries and inside countries is one of the lowest. This indicates that for at least some of the products, the differences found are brand specific, although in the case of mineral water, other “natural factors” like transport costs may have a significant influence too.

There are though also differences that seem to be product-specific. For instance, the cross-country price dispersion for chocolate bars and carbonated drinks is in general around 20 percent. The price of carbonated drinks though seem to vary more inside countries than the price of chocolate bars (both single and multipacks). This could be because carbonated drinks are often used as promotion items for supermarkets with offers like “Three for the price of two”. If these promotions do not run in all regions, they will increase the intra-country price dispersion.

Although price dispersion is much lower inside countries than across countries, the pattern of price differences inside countries resembles the patterns found at the EU-level. No region seem to be consistently the most expensive or the cheapest inside a country. Again local preferences as well as demand and supply side factors for individual products seem to play an important role.

However, some regions seem to be on average more expensive than others. This is documented in table 4. Not surprisingly dispersion increases with the size (in square meters) of the country. The large countries like France, Germany, Great Britain, Sweden and Spain all have large intra-country price dispersion. The exception is Italy, but this might be due to the fact that the regional information for Italy is not very detailed.

Table 4. Regional price differences in the EU

	No. of regions	Most expensive region	Cheapest region	Average price difference between most expensive and cheapest region	Average price dispersion	Second largest price dispersion
AUSTRIA	5	WEST AUSTRIA	EAST AUSTRIA	2,2%	1,5%	3,3%
BELGIUM	5	NORTH EAST	SOUTH WEST	1,6%	1,2%	2,4%
DENMARK	2	EAST	WEST	1,0%	n.a.	n.a.
FINLAND	7	NORTH	WEST	2,2%	1,9%	5,0%
FRANCE	9	REGION PARISIENNE	NORMANDIE BRETAGNE	3,5%	1,7%	4,7%
GERMANY	8	BERLIN	THURINGIA & SAXONY	5,1%	2,7%	5,5%
GREAT BRITAIN	10	SOUTH WEST	NORTH EAST	3,0%	3,2%	10,2%
IRELAND	4	DUBLIN	REST OF LEINSTER	1,8%	3,5%	7,9%
ITALY	4	CENTRE	SOUTH & SARDINIA	1,6%	2,9%	8,1%
PORTUGAL	6	SOUTH INTERIOR	GREATER PORTO	3,9%	2,4%	5,9%
SPAIN	8	NORTH WEST	GREATER MADRID	6,4%	4,2%	10,2%
SWEDEN	6	SOUTH	WEST	8,7%	4,4%	8,3%

Note: The table shows the most expensive and the cheapest region in each Member State for the products for which there is regional information in each Member State. It should be noted that for some of the Member States the price differences between the two-three most expensive (or least expensive) regions are very small, however, only the most expensive region is shown. No regional information is available for Greece and the Netherlands. The table also shows information on the price dispersion inside Member States. Price dispersion is measured by the co-efficient of variation.

Source: Internal Market DG based on ACNielsen.

Among the large Member States, Germany and Spain have a particularly large intra-country price dispersion. For Germany this may be the result of the significant differences between East and West Germany that still exists. Prices in the new länder seem to be significant lower than prices in the rest of the country.

A statistical analysis of the price dispersion inside four of the larger countries shows that around one fifth of the variation can be explained by region-specific factors⁸. The

⁸ See the Commissions Report on the Functioning of Community Product and Capital Markets (COM (2001)736).

analysis does not reveal clearly which region-specific factors are relevant, but differences in income, shop density, market share of retail chains, consumer preferences or other factors seem to matter.

In almost all countries a few products have a price dispersion close to the dispersion on the EU-level. For instance, although price dispersion in France is in general less than 2 percent the dispersion for frozen vegetables is around 7 percent. Similarly in Great Britain the dispersion is around 3 percent, but for a particular brand of dry pasta dispersion it is around 10 percent. The products with high intra-country dispersion varies from country to country and there seem to be no clear pattern.

4. Conclusion

Large price differences remain in the EU for supermarket goods. These price differences are much larger than price differences inside Member States. The market size, the differences in consumer tastes, landscape, climate etc. can probably explain some of the larger price dispersion found on the EU-level and these factors will continue to exist even in a perfectly functioning Internal Market. The price differences at the EU-level however seem to be significantly larger than what would could be explained by natural factors. This suggests that there still is considerable scope for further price convergence in the EU. Structural differences, like the ones described in section 2.2 and differences in distribution in particular, are an important factor behind price differences.

Box 1 Price comparisons

The price comparisons in this article are based on electronic data from supermarkets in 14 Member States (Luxembourg not included). The database is constructed by ACNielsen and covers the period July 1999 to June 2000. The database contains information on both *pan-European brands*, defined as brands available in more than seven countries, and *generic brands*, available in less than seven countries. Four brands are available in each product category. The database contains information on 68 product categories in total. When interpreting the results one should keep in mind that:

- The prices used for the calculations are *average unit values* and not off-the-shelf prices. Average unit values are average prices taking into consideration sales, special offers like “three items for two’s price”, seasonal variations in prices etc. Unit prices therefore reflect what consumers on average pay for the good in each Member State.
- Products of the same brand are sold in different presentations varying in size, weight or volume. For instance, corn flakes are sold in presentations of different weight (between 375g and 750g in most cases). Differences in presentation have an impact on the price per physical unit, say kg. To correct for these differences, weighted averages taking into account presentation characteristics and sales of each presentation have been calculated. This calculation is based on a consistent size (across countries) and the popular size in each country. Only presentations with a similar range have been considered.
- Although generic products have been selected to be as homogeneous in characteristics as possible quality might differ across countries. To minimise the effect of quality differences a weighted price (volume) of all these products is used in comparisons unless other is noted.
- Local prices are calculated into Euro using exchange rates as of 4 June 2000. It should be noted that exchange rate fluctuations influence the price level of the countries outside the EMU. The price level for Denmark, Sweden and the UK should therefore be interpreted with caution.

In addition, it should be noted that the database is constructed as part of a *pilot project* involving the Health and Consumer Protection DG, Eurostat and the Internal Market DG. The price data from this project is the first scanner data used by the Commission for price comparisons. Scanner data offers a new interesting source of price information and has the advantage of a high market coverage and detailed regional and outlet information. However, the coverage of scanner data is still very different from country to country, which can introduce biases. Also, the coverage is depending on agreements with supermarkets in the Member States. Although, ACNielsen in general covers a large share of the markets in most Member States, the German discount chain “Aldi”, for instance, have no agreement with ACNielsen.

Two other studies of consumer electronic products and fresh food have also been conducted. Results from these two product groups are reported in the Internal Market Scoreboard no. 8, May 2001, and in a working paper from DG Internal Market “Price dispersion in the Internal Market”

(http://europa.eu.int/comm/internal_market/en/update/economicreform/pricestudy.pdf).

