PRICE DIFFERENCES IN A EUROPEAN SINGLE MARKET
– AND HOW TO MEASURE THEM?

Ville AALTO–SETÄLÄ*
University of Helsinki and
National Consumer Research Centre, Finland
University of Helsinki, PO Box 56, 00014 Helsinki, Finland
email: ville.aalto-setala@helsinki.fi

Executive Summary

A significant objective of European integration is to form a unified market where goods and services move freely. Several studies have shown, however, that there are substantial price differences between countries. Price differences are regarded as an indication of the non–functioning of the single market – trade between countries should eliminate or at least decrease price differences.

This paper focuses on the price differences of food products in Helsinki and Tallinn. This is only one example of the functioning of the internal market within EU, but it has several interesting special features. Firstly, Helsinki and Tallinn are close to each other and people move a great deal between the two cities. Secondly, we know that the price differences between Finland and Estonia are substantial. Thirdly, Finnish retail groups have a significant position in the Estonian daily consumer goods market. Thus, we can look at the price of the same product marketed by the same company in two countries with notably different price levels. Lastly, the study provides an interesting case in a sense of price level measurement between countries.

The results of the study further strengthen the notion of substantial differences in the prices of food products in Estonia and Finland. However, the price differences vary a great deal between food products. Finnish brands cost 12% less in Estonia than in Finland. Products of Estonian origin are, on an average, as much as 44% less expensive in Estonia than similar products of Finnish origin in

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Finland. Price variations in these product groups can be interpreted so that the cost structure or competitive situation of retailers does not have a decisive impact on the price differences between the two countries. Instead, starting from primary production, price differences in the entire food supply chain grow to considerable proportions.

The results of the study give rise to several interesting questions about the functioning of the internal market in Europe. For example, the results indicate that the preferences of consumers are a significant barrier to trade between countries. The fact that Estonian products are not present in the Finnish market implies that Finnish consumers do not consider Estonian products equal to Finnish products.

The results are also interesting in terms of methods used in comparing price differences between countries. How should we measure price differences of food products between Finland and Estonia or more generally price differences between any two countries? Should we consider price differences of products of the same brands produced in the same country, or should we consider price differences of domestic products in each country? As seen from the results of this study the different approaches may lead to very different results about price differences.

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**Introduction**

Many empirical studies have shown that the law of one price does not hold even within one market. Furthermore, the law of one price does not hold between countries (Engel and Rogers, 1996; Asplund and Friberg, 2001). Instead, the same products often have different prices. Further, the deviations from the law of one price have been surprisingly constant over hundreds of years (Froot, Kim and Rogoff, 2001). Although the European Union (EU) has attempted to develop as a single market area there are still price differences between the member states (European Commission, 2001; Eurostat, 2002). It also seems that even a single European currency has not caused price differences between European countries to converge significantly (Eurostat, 2004).

Figure 1. Price convergence between European countries

This study examines price differences between Tallinn and Helsinki, and also measurement of price differences. Price differences between these two cities are interesting because (1) the distance between these cities is only 80 kilometres by sea, (2) we know that there is a large difference in prices, (3) people travel a lot between these cities and thus the large price difference is recognised at least at some level, and (4) both Estonia and Finland are members of
the European Union and thus the import and export of most products are free between these countries. Further, Finnish retail chains also operate in Estonia. Thus, we are able to examine identical products sold in both of these countries by the same retailer.

1. Some factors that explain food price differences among European countries

Europe does not form one single market for agricultural and food products. In principle, food products move freely inside the European Union. However, the country of origin has been shown to be an important consumer selection criterion for food products; typically consumers prefer domestic food (Orth and Firbasova, 2003; Scarpa... Lopez, Pagoulatos and Gonzales, 2004). In actual practice, therefore, the market area of most food products is a great deal smaller than the whole of Europe or the EU, with the consequence that local production and distribution costs are important factors affecting food price. The most important local costs affecting the price level are labour costs: normally food prices are high in countries or regions where labour costs are high as well (Bergman et al. 2001; Engel et al, 2003). This is because high labour costs increase the cost of supply. On the other hand, if labour costs are high, consumers have buying power and firms can charge higher prices. Furthermore, labour costs correlate with many other important costs like rental costs and the cost of energy.

The endowments of natural resources for agricultural production vary a great deal among European countries, and this variation affects the competitiveness of agricultural production (Honma and Hayami, 1986). Some of the European countries (like Spain) export significant amounts of food products, and others (like countries in Northern Europe) have to import, for example, most of the fruits. It is likely that differences in agricultural production affect producer prices and also the price of food. Of course, agricultural producer prices may also be seen as one component of local costs.

Another factor that is likely to affect levels of food prices is the structure of grocery retailing and the food processing industry. According to the European Commission (2001) the price level of food is lower in the countries where the share of hypermarkets and discount stores is high. According to Clarke et al. (2002) the structure of grocery retailing has been converging among countries of Northern and Western Europe: both the average size of the stores and market concentration have increased. However, in Southern and Eastern Europe stores are smaller and concentration is lower, creating doubts about the impact of increased store size and concentration on prices. While larger units have lower costs per sold unit, lessened competition may increase prices.
Another potential reason for price differences between countries is differences in value added taxes. For example, the value added tax of food varies within the European Union from 0 (UK and Ireland) to 25 percent (Denmark). The European Union and Eurostat normally make available consumer prices (including taxes), with obvious price differences. One has to remember, however, that normally product taxation affects also tax–free prices. One very obvious example of that is the cheapest tax–free car prices in countries of the highest taxes (Denmark and Finland) in Europe. Engel, Rogers and Wang (2003) even show that the level of sales tax is not a significant factor explaining price differences among metropolitan areas of the US and Canada.

Finally, Europe is not a homogenous area in terms of consumption patterns; consumption shares of food products vary greatly among European countries. For example, the consumption of bottled water is quite small in Northern Europe but much higher in Southern Europe. It is natural to assume that these kinds of consumption differences affect prices of food products.

2. The data

The study data consist of prices of homogenous grocery products in Helsinki and Tallinn. We have divided the data into three groups. Group 1 consists of strictly specified grocery brands (also private labels) produced in Finland. Group 2 consists of identical groceries produced and sold in Estonia or produced and sold in Finland. The group includes, for example, Coca Cola and many Finnish brands which are produced both in Estonia and Finland. The group also includes vegetables. Group 3 consists of groceries produced in some third country and sold both in Estonia and Finland. For example, Uncle Ben’s rice, Lipton tea and some private labels belong to this group. Our aim was also to compare prices of strictly defined grocery brands produced in Estonia. Unfortunately, very few Estonian grocery brands are sold in Finland and thus we could not compare prices of these products. Group 1 includes 60 products, group 2 includes 41 products, and group 3 includes 35 products.

Price observations were collected from 9 Finnish and 9 Estonian stores. All of these stores in Finland belong to Finnish grocery chains S–group or K–group. The stores in Estonia belong to S–group or Rimi Baltic group which is co–owned by K–group and Swedish ICA. Altogether the data include 1680 price observations (903 from Finland and 770 from Estonia).
3. Results

Table 1 provides results on average price levels of groceries in Helsinki and Tallinn divided by different groups. In Estonia, for Finnish grocery brands produced in Finland (group 1) the average price is 88% of the price for the same goods in Finland. The average price of domestic products (Group 2) in Estonia is 56% of the prices for the equal Finnish products in Finland. The average price of foreign products (Group 3) in Estonia is 80% of the prices for the same products in Finland (value added tax on food is 17% in Finland and 18% in Estonia). Calculated averages are geometric means. Arithmetic mean is biased measure in this kind of downwards restricted price distribution.

Table 1. Prices in Estonia compared to Finland

<table>
<thead>
<tr>
<th>Group 1: Finnish brands</th>
<th>88%</th>
</tr>
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<tbody>
<tr>
<td>Group 2: Domestic products</td>
<td>56%</td>
</tr>
<tr>
<td>Group 3: Foreign products</td>
<td>80%</td>
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</tbody>
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There are large differences not only between product groups but also within groups. Figure 2 shows average prices of different product groups within Group 1. According to the Figure about half of the Finnish products are clearly cheaper in Estonia than in Finland. The biggest price difference is in the prices of biscuits. Also margarine, cheese, candies and rye bread are clearly cheaper in Estonia. About half of the Finnish products are about as expensive in Tallinn as in Helsinki. Those products are bier, ice–cream and other frozen products, macaroni, sugar and coffee.

Bier is an extraordinary product between Helsinki and Tallinn. Alcohol tax has been traditionally high in Finland and low in Estonia. That is why Finnish consumers have imported (typically Finnish bier brewed in Finland) bier from Estonia to Finland. However, the price of bier has decreased sharply in recent years in Finland. In the study data, the average price of bier per litre in Helsinki was 1.67 euros and in Tallinn 1.56 euros. The point is that after alcohol tax and value added tax, the price of bier was 0.47 euros in Helsinki and 1.15 euros in Tallinn. Thus, the tax free price of bier in Tallinn was about 2.5 times higher than the tax free price of bier in Helsinki (remember that we compared in both countries the same brand of bier brewed in Finland).
Figure 2. Prices of Finnish grocery brands in Estonia compared to prices in Finland.

Figure 3 shows average prices of different product groups within Group 2. The result is that Estonian products sold in Estonia are markedly cheaper than identical Finnish products sold in Finland. The price difference of vegetables is the largest one: the price of the Estonian vegetables is only 46% of the Finnish price. The price difference of eggs is the smallest one in the group of domestic products: the price of the Estonian eggs is “only” 16 lower than the price of Finnish eggs. It is notable that many products in Group 2 are products made by the same company and sold with the same brand name in both countries. Bread, beverages (for example Coca Cola) and milk products are this kind of products.

Figure 3. Prices of domestic products in Estonia compared to prices in Finland.
Variation in the prices of foreign products is also large. The largest price difference is in biscuits: the price of foreign biscuits in Estonia is only 54% compared to prices of the same biscuits in Finland. Another extreme is macaroni: the price of macaroni is 3% higher in Estonia than in Finland.

![Price in Estonia, foreign products](image-url)

Figure 4. Prices of foreign products in Estonia compared to prices in Finland.

### 4. Concluding Remarks

This study has examined price differences of groceries between Helsinki and Tallinn. The results of the study show that grocery price differences between these two cities are large. However, variation of price differences among different kind of products is large: the price difference of Finnish brands is “only” 12%, price difference of domestic products 44%, and price difference of foreign products 20%.

These results have several interesting implications. First, what is the price difference of groceries between Finland and Estonia? Typically price differences between countries are measures based on domestic production and thus the difference would be 44%. However, price difference of exactly the same products (same brands produced in the same country) is only 12%. Thus, the true price difference depends on homogeneity of the products. If Finnish and Estonian products are homogenous “the true price difference” is 44%. If the products are not homogenous the true difference is a lot smaller – somewhere between 12% and 44%.
The second implication is the question about European single markets. In principle the European Union is an internal market where the import and export of products (including food) is free between member states. If there is a price difference of 44% in groceries between Estonia and Finland, it is amazing that Estonian groceries are not exported to Finland – in fact export of food from Finland to Estonia is larger than export from Estonia to Finland. Thus, it looks quite evident that Finnish consumers do not consider Estonian groceries as a substitute for Finnish groceries. This is not surprising because existing literature has shown that consumers prefer domestic groceries. Further, the country of origin is an important characteristic of food for consumers (Orth and Firbasova, 2003; Scarpa, Philippidis, Spalatro 2005). On the other hand, it looks probable that physically many groceries, for example, milk, potatoes or sugar, are identical in both of these countries. Thus, we have the situation where products are physically homogenous but consumers do not consider them homogenous because of the country of origin. Should we then follow physical homogeneity or consumer preferences? Probably in most cases we should follow physical homogeneity. However, from the viewpoint of Finnish consumers the result “price of food is 44% lower in Estonia” is somehow misleading. If Finnish consumers do not consider it possible to equally substitute Finnish and Estonian groceries, we are comparing the price level of two different things.

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