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Preliminary communications

PRICING, COSTS AND PROFIT IN FOOD RETAILING

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Viewed from a theoretical-economic approach, the consumer price contains the costs of production, processing and trading, as well as the profit share related to these activities. In practice, particularly in the food sector, this kind of linear accumulation has rarely succeeded. In the case of foods, due to a decrease in consumption and vertical competition, not only the profit share, but often some of the costs could not be made good either in the selling price. This failure has an impact on agricultural producers and the food industry, whereas in commerce, the profit-need could be realised easier. In the formation of a food consumer price there are diverse practices in use from the simple markup pricing method to the complex marketing strategies-based price-forming. This paper presents the results of price analyses done in the course of food retail activity investigation.

Keywords: economics of retailing, marketing costs, price analyses

Retail prices, especially those for food, are widely used as an indicator in business. From the approach of economic theory, the consumer price contains the costs of production, processing and trading, as well as the share of income related to these activities (and value added taxes). In practice, particularly in the food sector, this linear accumulation has rarely succeeded, because the demand and supply conditions (e.g. certain commitments, branch interests, etc.) greatly modified the structure and measure of food price. Below, I present the results obtained by examining food prices in which I lay special emphasis on analyses of retailing costs, profit and the most commonly used pricing techniques.

Pricing in theory

Economic theory tells us that profits are maximised when marginal costs are equated with marginal revenues. Conceptually, this is a very helpful idea, but its actual use is beyond the capabilities of most retail organisations. As with many business firms, the average retailer is unaware of the true nature of his cost and demand functions. He is firmly committed to a traditional markup system that largely ignores marginal considerations (DOUGLAS & DONALD, 1969).

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Markup (*Mup*) may be defined as the difference between the cost of an item and its retail price (*Rp*) and is usually expressed as a percentage of the retail price: *Mup%* = *Mup*/*Rp*. The retailer calculates selling prices for individual items by dividing the known cost *(C)* by one minus the markup percentage. DOUGLAS and DONALD (1969) created the following formulae:

$$C = Rp - Mup \qquad \text{or} \qquad C = Rp \times (1 - Mup\%)$$
$$C = Rp - (Mup\% \times Rp) \qquad Rp = C / (1 - Mup\%)$$

The major problem in the above case is the measurement of costs. In the food industry the precise definition of the average cost of any given product is easy to obtain, using the latest management support systems. However, it is very difficult to apply to the retail trade and merchandising because of the variety of products and almost impossible in the case of supermarkets where the number of commercialised products rises into the tens of thousands. Under market conditions, markup pricing may lead to optimal pricing behaviour, when the competitors have the same cost structure and use the same markups.

Target return pricing considers also those costs which show the planned return on investments related to products (REKETTYE, 1999). The method used for pricing is the following:

$$P = AFC + \frac{TFC}{Qs} + \frac{rI}{Qs}$$

Where: *AFC* – average fixed cost; *TFC* – total fixed costs; *Qs* – planned quantity; *r* – profit rate; *I* – invested capital.

This method can only be used in food commerce in specialised shops which sell small numbers of products e.g. in specialised shops, discount stores or in category management, with respect to a given group of products. It is not in use in domestic market.

Bulk products or the lower value-added products can be sold at low profit-share. The low profit earned per product purchase is balanced by selling in greater quantity. In general, the method of (markup based) market-lead pricing is the most widespread, as it is used not only by mini-markets (groceries) but also by discount stores and even hypermarkets.

The market circumstances in demand may vary depending on location, population, per capita net income, as well as on the willingness to consume and consumer habit. Also, competition in the region may be a factor. The starting point in pricing is the purchasing price, which may vary, depending on the purchasing source. The market-lead pricing methods are variable and differ from the commercial strategies for products (KOTLER, 1998), I will not go into further detail, about this matter, as it would bring us on to a different line of investigation.

It must be mentioned that pricing is not only an economic question, but it has legal aspects, which assure normal and honest competitive conditions (BAUER & BERÁCS, 1998).

Pricing in practice

At the beginning of the 1990s, average markup of retailed foods was 20 to 22%. These percentages increased until the middle of the decade. With the spread of multinational market-chains, the degree of markup slowly decreased, due to the increased intensity of competition. "Losses" were compensated by the chains by increasing quantity and applying modern commercial and marketing techniques (BELYÓ, 1998). According to the statistical data in 1997, markups in the food-wholesale sector ran 15–17% and 19–20% for the ratail trade (KUBIK, 1997).

The study of marketing costs, degree of markup and different sources of income are used to analyze the structure of food prices. Operational costs (e.g. energy, wages and logistics) set the lower limit for markups The upper limit varies according to payable demand.

In the framework of this price study, I analysed the economic situation and price-calculation system of supermarkets of two different commercial chains, emphasizing the investigation of marketing cost and profit. On the basis of collected data and related literature (TETRA PACK, 1996), it was possible to create a model which shows the real profit and profitability conditions of retailing for a given product or group of products.

This model not only allows the demonstration of the profitability of merchandising a certain specific product or group of products, but may also be useful in analysing food chains (from farmer to consumer), especially when comparing costs and earnings on (or between) different levels of the chain (NEMESSÁLYI & BUZÁS, 1996).

1. Material and methods

The data were collected using questionnaires and interviews from 18 stores of two different commercial chains with an average of 350–400 m^2 selling space. The ratio of food and non-food products was 70/30% and the number of merchandised products ranged between 4–6.000.

The costs and incomes of a particular store represent average values calculated from operation records. One part of the figures shown in the model (buying- and consumer price, quantity sold, working time input, hourly wages, logistic costs) also represent average values in the model and are independent variables. The costs of cooling, cleaning, direct selling, gross- and net markup are dependent variables of the model. The income – other than net markup (margin) – per product was calculated by adding the following variables: interest, listing (or shelf) fee and marketing contribution. These variables were calculated using the average of the fees applied by the studied chains.

2. Results and discussion

Table 1 shows the yearly turnover, the purchased value of sold products, the operational costs and income calculated from the averages of yearly account statements.

Table 1. The measure and structure of the yearly turnover in the studied stores (average data)

Denomination	Mill. HUF/year	%
Net turnover	183.35	100
Purchased value of sold products	141.04	76.9
Costs	34.23	18.7
Income (EBIT)	8.06	4.4

Source: Calculated by own data collection

All studied shops were profitable and on the average the net markup (which contains both the profit and cost) varied between 20–40% of the net turnover. Figure 1 indicates the structure of the average net markup.

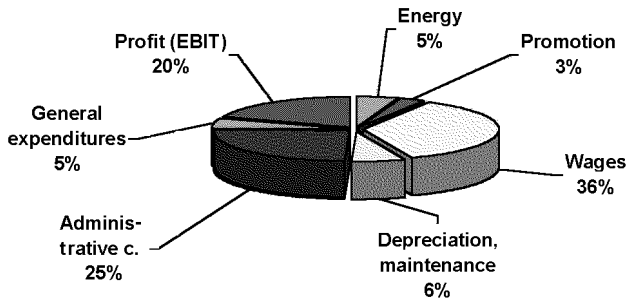

Fig. 1. Distribution of costs and profit in the ratio of net markup. Calculated by own data collection

Wages make up the largest portion of costs; business (administrative) expenses of the stores are also large and include the costs of logistics and storage. Depreciation, promotion and packaging show smaller ratios of the whole.

The pricing of most products is done centrally, on the basis of a markup, with the use of a price multiplier which is the quotient of the selling and purchasing price. In the case of some basic food products, the sales manager of a given shop can modify the price multiplier, depending of the conditions of supply and demand or competitors'

prices. Daily consumption goods (e.g. milk and bread) are purchased directly from the suppliers, while durable foods (e.g. sugar, sunflower oil and canned foods) are transported from a central warehouse by order, and are a burden on logistic costs. These were calculated as 4% of the net income, including the cost of transportation. My data largely corresponded with that in the related literature (STAUDER, 2000).

Price multiplier does not mean the profit or the profit-margin of products which were put into circulation. We need more information to determine the profit of the product. First of all, we have to determine the selling cost of the product. If we know the direct selling cost, we can calculate the net margin, which means the product's profit. In addition to profit margin, there are other incomes which have nothing to do with price factor, such as: interest (which comes from delayed payment) shelf-fee listing fee, or marketing contribution. Table 2 shows the cost and income situation of some selected foods with the help of a price-calculation model.

Model calculations show interesting results. As mentioned, the selling price is formed generally with the help of price-multiplicators (R), which in fact, are in accordance with gross markup (N_2).

The level of gross margin depends on consumer demand. In case of "everyday" products, which represent less added value (such as bread, poly-packed milk) small (less) margins are used because of the strong competition between the shops.

If we restrict a product's income-analysis only to price factor, we see that net-markup *(J_1)* – which in fact means the profit of the product – is negative, in the cases of bread and poly-milk, that is brought at a loss because of high average selling cost *(I)*.

There are also other incomes besides price factor, which are usually able to compensate this loss (J_2, J_3, J_4). Among these we have to mention the following:

– interest earnings (J_2) come from delayed payments (20–40 days or more)
– shelf (or listing) fee (J_3) (according to the model, this price is 50,000 HUF/year in the cases of bread and poly milk, and 100,000 HUF in the rest), for products of higher added-value or quality (marked) products, this fee can be more than 5-600,000 HUF/year.
– Marketing contribution (J_4) means a monetary contribution of suppliers to the retail business's advertising activity (publication of leaflets, local advertisements, facing), which is generally 2–4 per cent of the product's return from sales.

This is why even in cases of loss-making products considering these extra incomes, cost-rated profitability (P) is favourable and, in some cases, of incredibly high value. In addition to the aforementioned incomes, there are other incomes such as "list-holder fees", bonuses (depending on turnover), or "stores opening fees", multinational chains have introduced, which are not included in the model. This extra income does not appear in specific shops or supermarkets, but improves the profitability of the chain as whole.

Table 2. Price and markup calculation model in the case of selected foods

		Poly-packed milk	UHT Milk	White bread	Crystal sugar	Sun-flower oil
A	*Quantity sold per week (kg, l)*	845	390	455	780	520
B	*Purchasing price (HUF/kg, l)*	**140**	**156**	**136**	**143**	**235**
$\mathbf{c_1}$	*Reception time (minute/week)*	78	18	90	30	30
$\mathbf{c_2}$	*No. of engaged workers (head)*	3	3	2	3	3
$\mathbf{c_3}$	*Time for product setout (min./week)*	85	39	65	52	52
$\mathbf{c_4}$	*Nr. of engaged workers (head)*	2	1	2	1	1
C	*Direct labour cost (HUF/week)*	2485	574	1912	876	876
D	*Cooling costs (HUF/week)*	994	0	0	0	0
E	*Cleaning costs (HUF/week)*	350	0	0	0	0
F	*Direct selling costs (HUF/week)*	3829	574	1912	876	876
G	*Logistic costs (HUF/week)*	0	2758	0	4986	5441
$\mathbf{H_1}$	*Losses (% of purchased stock value)*	0.5	0.1	0.2	0.2	0.1
$\mathbf{H_2}$	*Losses (HUF/week)*	592	61	124	223	122
I	*Average selling cost (HUF/l, kg)*	5.23	8.70	4.47	7.80	12.38
$\mathbf{J_1}$	*Net (markup) profit-margin (HUF/l, kg)*	–1.48	12.09	–2.08	9.02	14.22
K	*Net price (HUF/l, kg)*	**143.8**	**176.8**	**138.4**	**159.8**	**261.6**
L	*VAT (HUF/l, kg)*	17.25	21.21	16.61	19.18	31.39
M	*Selling price-including VAT (HUF/l, kg)*	**161**	**198**	**155**	**179**	**293**
$\mathbf{N_1}$	*Net markup (%)*	2.68	13.32	1.76	11.76	11.32
$\mathbf{N_2}$	*Gross markup (%)*	15.00	26.92	13.97	25.17	24.68
$\mathbf{J_2}$	*Interest (7%/year) HUF/l, kg*	0.82	0.91	0.79	0.83	1.37
$\mathbf{J_3}$	*Listing (or shelf) fee (HUF/l, kg)*	1.18	5.13	2.20	2.56	3.85
$\mathbf{J_4}$	*Marketing contribution (2%) HUF/l, kg*	2.8	3.12	2.72	2.86	4.7
O	*Total profit (HUF/l, kg)*	0.52	18.13	0.91	12.42	19.44
P	*Cost-rated profitability (%)*	9.92	208.39	20.35	159.18	156.99
R	*Price multiplier*	**1.15**	**1.27**	**1.14**	**1.25**	**1.25**

Source: Calculated by data collected from retail stores

Where:

A, B, - variables

$\mathbf{C} = c_1/60 \times c_2 \times awe + c_3/60 \times c_4 \times awe$

$\mathbf{c_1}, \mathbf{c_3}, \mathbf{c_2}, \mathbf{c_4}$ – variables

awe = average wage (HUF/h)

D, E – calculated by own data

F = C + D + E

G = A × K × Loc%

Loc = logistic costs in % of net turnover

$\mathbf{H_1}$, **M** – variables

$\mathbf{H_2} = A \times B \times H_1$

I = (F + G + H) / A

$\mathbf{J_1} = K - I$

$\mathbf{J_2} = B \times (1 + r\%/12) - B$

r = interest (7% in every cases)

$\mathbf{J_3}$ = Lf / ww / A

Lf = listing (or shelf) fee (HUF/year)

ww = working week/year (50)

$\mathbf{J_4} = B \times (1+ Mco\%) - B$

Mco = marketing contribution in % of purchased value of product

K = M – L

L = M/1,12

$\mathbf{N_1} = (J_1 + I) \times 100/B$

$\mathbf{N_2} = (L + J_1 + I) \times 100/B$

$\mathbf{O = J_1+J_2+J_3+J_4}$

P = O/I × 100

R = M / B

3. Conclusions

The most important findings are the following:

– Model calculations show that a price that means real income cannot be created by markup pricing or using a price multiplier in every case;

– the model is suitable for considering the average selling costs and profit only as average non-price incomes;

– on the basis of real average costs and incomes, one may calculate the real profitability conditions. The data we calculated also show that by using efficient merchandising tools, a more advantageous assortment is creatable where supply-demand conditions are adequate;

– furthermore, the model can also be used to analyse different vertically integrated chains on the basis of studying costs and incomes, or even added value, in order to compare the economic situation of primary producers, processing industry and retail traders.

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