

# Consumer's behaviour on food markets

## *Chování spotřebitele na trhu potravin*

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**Abstract:** The article is interested in the problems of consumer's behaviour in the food market and namely the determining factors of his (her) behaviour according to the neoclassical theory approaches and its modern modifications, which are compared here with the concepts of other authors. It also is interested in the possibilities of the marginalist analytical apparatus in the consumer's decision-making.

**Keywords:** Cardinalism, ordinalism, neoclassical theory, agricultural products, food markets, marginalist analysis

**Abstrakt:** Příspěvek se zabývá problematikou chování spotřebitele na trhu potravin, činiteli determinujícími jeho chování především podle přístupů neoklasické teorie a jejích moderních modifikací. Jsou porovnávány s koncepcemi jiných teoretiků. Zabývá se také možnostmi použití marginalistického analytického aparátu v rozhodování spotřebitele.

**Klíčová slova:** Kardinalismus, ordinalismus, neoklasická teorie, zemědělské produkty, trh potravin, marginalistická analýza

Consumer's preferences and wealth (income, resources) are viewed as exogenous quantities in the neoclassical theory. They are not explained in the framework of the model, but they are viewed as the given ones. Methodological individualism, rational behaviour, equilibrium and perfect information of consumer are the further features of this concept. Simple precautions are the necessary condition for model application.

Methodological individualism means that the principles of the individual subjects behaviour are the most important determining factors of the model functioning. These subjects act according to maximizing of the total utility in the given conditions. The concept of equilibrium is static. The perfect information precondition need not to be necessary fulfilled because the contemporary concepts of the consumer's behaviour function in the conditions of risk and uncertainty.

Institutional concepts of consumption are derived from the T. Veblen's theory of the leisure class consumption. The preferences are influenced by the position of the consumer subject in the social hierarchy and by activity of firms. According to J.

Galbraith, firms can create partially the desires of the consumers. Not only the preference, resources and the individual behaviour, but also social institutions are important factors of consumption in the institutionalism concepts. Consumption is viewed also as a social behaviour. Psychological aspects of the consumer subjects' behaviour are also important. In the modern concept of consumption, there must be viewed all aspects of it.

Consumer behaviour is based on the decision-making of individuals spending their own resources (i.e. time, money and efforts) in order to obtain the items associated with consumption. This form of behaviour involves the reasons why, when, where, how often and what people buy, how often they use the purchased items, how they evaluate them after the purchase and in which way these factors influence their future purchases (Stávková et al. 2007).

## MATERIAL AND METHODS

Models resulting from the Pareto's equilibrium concept are the basic part of the neoclassical theory

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of consumer's behaviour. This article is interested in their application. Indifference curves, the budget line of consumers and other tools of marginal analysis are used in it. The previous models are deterministic.

Some of the contemporary theories of consumer's behaviour are the models of expected utility that means the total utility functions under the conditions of risk and uncertainty, which are based on the neo-cardinalist theory of Carter (1972). Carter's models are probabilistic. The models based on the cumulative prospect theory of Kahneman and Tversky use important psychological knowledge as a new dimension of the consumer's behaviour analysis.

For the EU, the problems of food consumption and its circumstances are regarded as very important. At the first sight, there is an obvious difference between the matter of activity of agricultural business and for example services, and the influence on the wage level is shown without question also by the fact whether it regards the branches of private entrepreneurial subjects (Boháčková and Hrabánková 2008).

## RESULTS AND DISCUSSION

### Basic models of consumer's behaviour on food markets

#### *Finding models*

Finding models analyze the subject's behaviour in the situation in which he/she has a basic idea about the possible alternatives but does not know exactly the results of given alternatives. Finding is viewed as the analysis of limited alternatives of choice. The goal of a finder is to find out what result he/she can expect after the choice has been made. In the models with the full return, the consumer can choose any of the accessible alternatives and he/she decides about the optimal number of the alternatives previews in the given conditions.

Based on the results of this analysis, it can be concluded that the annual income of the household reflects to a certain degree the effect of the aforementioned factors on their purchases of home appliances and that the strongest were the effects of price, technical parameters and the quality of the purchased goods. There is therefore no doubt that the requirements of households with higher annual incomes are much higher (Foret and Procházka 2007).

Returns of the next preview must be higher than the costs of it. If the returns are not higher than the costs, the process of finding will be stopped and the choice will be realized according to the reached

knowledge. From the mathematical point of view, the function of net returns is maximized according to the preview number (Edgeworth 1981).

#### *Expectations creation models*

The models of the expectation creation analyze the consumer's behaviour if he/she does not know any one of the important data influencing his/her decision-making process, but he/she can predict this missing parameter. This idea is the base of the term expectation. These models can be classified according to the concept of the unknown quantity:

- pure expectations mean that this quantity can reach one of two values, 0 or 1
- combined expectations mean that more levels could exist (for example 0, 0.5, 1)
- expectations according to the framework (which quantities and data influence the consumer's decision-making) – static, adaptive or rational expectations

#### *Sufficient models*

A specific kind of the consumer's behaviour models are sufficient models, for instance Simon's model of limited rationality. Sufficient models analyze the consumer's behaviour not only from the point of view of following the final situation (result), but also from the point of view of finding steps.

The main idea of these models is that the subject chooses the alternatives which are sufficient for him/her. These alternatives are better than the given level (for example the minimal total utility level) but worse than the maximal utility in the given conditions. This minimal acceptable level of utility expresses the consumer's idea about his/her possibilities in the given situation and about his/her rational idea about the reachable result of choice.

A characteristic feature of these models is the precondition of imperfect information and limited rationality. The consumer does not have 100% knowledge about the situation, but he/she makes his/her choice in the simple situation which he/she determines according to his/her abilities.

The main representative of this attitude is H. Simon. His concept can be characterized as a sufficient model without expectations and with adaptation. The subject makes his/her choice according to the sufficient level and sufficient activity. If he/she finds this alternative, he/she will take it. If he/she does not find it, he/she will decrease the minimal level of utility that means that he/she will decrease the level of one of the quantities which is more insufficiently fulfilled.

If he/she finds this alternative very quickly, he/she will increase the quantity level which is successfully fulfilled. Various subjects will invest different level of time and effort to this finding. Simon's theory is developed by Hawkins et al. (1989).

According to them, people do not act as rational subjects according to standard models of rational behaviour but they often make their choices using a random spectre of information and after reaching the minimal level of them. They do not find the maximum satisfaction level, but a sufficient one.

Deterministic models (neo-cardinalist or ordinalist) of consumer's equilibrium regard the marginalistic methods not as he only theory explaining consumer's behaviour, but as a very important part of it.

### Consumer's optimal choice – Deterministic models

Now we will concentrate on deterministic models. Consumer with specific preferences decides about the consumption of the quantity of two goods and he/she is limited by his/her income level and prices. His/her goal is to reach the maximal level of the total utility.

The theoretical model of modern food consumption is built on the assumption that the utility from different food characteristics is accumulated over time. The characteristics considered include the energy content, taste, health, status and environmental (as well as political and ethical) proprieties, time and the financial costs (Horská and Sparke 2007).

The basic model of optimal combination in simple choice of consumer is known. We can use it as a basis for the mathematical model with wider possibilities of the consumer's choice analysis.

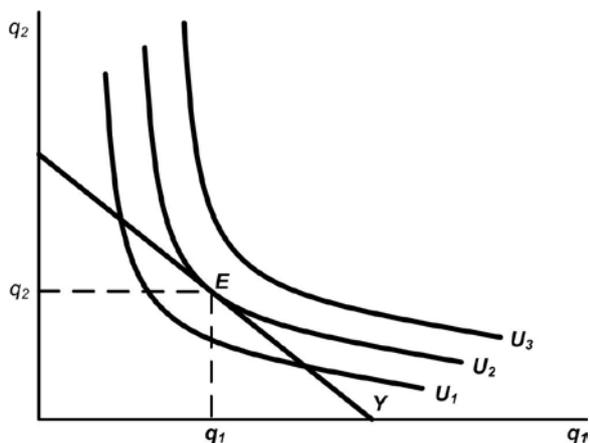


Figure 1. Indifference curve and optimal point in the model of two goods

Indifference curves express the consumer's preferences of two goods. The indifference curve which lies far from 0 expresses a higher level of utility. The consumer prefers the combination on  $U_3$ , not  $U_2$ , combination on  $U_2$ , not  $U_1$ . His/her budget limit is given by line  $Y$ . If he/she uses his/her income, he/she will choose combination on this line. Point  $E$  is optimal form him/her, because he/she reaches the highest utility level which is achievable (Figure 1).

### Choice of consumer with complicated preferences

In simple models, the preference coefficients in utility functions are constant. We can use one of the more complicated functions.

$U$  is the total utility;  $q_1, q_2$  are quantities of the consumed goods,  $P_1, P_2$  are prices for one unit of the first and second good,  $Y$  is income.

$$U = (a + eq_1)q_1 + bq_2 + q_1q_2; \quad a > 0, b > 0 \quad (1)$$

Constant  $e$  can be higher, lower or equal to 0. If  $e = 0$ , the preference coefficients are constant, but if  $e \neq 0$ , we get the situation in which one of the preferences coefficient depends on the used quantity of the consumed good.

Now we will use comparing of marginal utilities and prices and the equation of budget limits.

$$MU_1 = a + 2eq_1 + q_2 \quad (2)$$

$$MU_2 = b + q_1 \quad (3)$$

$$Y = P_1q_1 + P_2q_2 \quad (4)$$

$$\begin{aligned} \frac{a + 2eq_1 + q_2}{b + q_1} &= \frac{P_1}{P_2} = \frac{a + 2eq_1 + \frac{Y}{P_2} - \frac{P_1}{P_2}q_1}{b + q_1} \\ &= \frac{a + \frac{Y}{P_2} + (2e - \frac{P_1}{P_2})q_1}{b + q_1} \end{aligned} \quad (5)$$

$$bP_1 + P_1q_1 = aP_2 + Y + 2eP_2q_1 - P_1q_1 \quad (6)$$

$$bP_1 + 2P_1q_1 = aP_2 + Y + 2eP_2q_1 \quad (7)$$

$$q_1 = \frac{Y + aP_2 - bP_1}{2(P_1 - eP_2)} \quad (8)$$

$$q_2 = \frac{(P_1 - 2eP_2)Y + (bP_1 - aP_2)P_1}{2(P_1 - e)P_2} \quad (9)$$

The following equation is for the first good elasticity:

$$|E| = \frac{1 + \frac{b}{2q_1}}{1 - e \frac{P_2}{P_1}} \quad (10)$$

If the consumer's preferences are simple ( $e = 0$ ), the utility function can lead to the demand function with a low elasticity ( $b < 0, 0 < |E| < 1$ ), to the demand function with a high elasticity ( $b > 0, |E| > 1$ ) or to the demand function with the elasticity equal to 1 ( $b = 0, |E| = 1$ ), the possibilities are wider now.

This situation is usual for the goods the necessity of which is not satisfied, for instance luxury goods.

The consumer would use a high (infinite) quantity of the good if the market price is near to the limit price. This behaviour is possible in specific cases in the long run (Figure 2a).

If the good price is near zero, the wanted quantity will be near infinity. This situation also exists in the goods markets.

This demand function could be used for the analysis of food markets (Figure 2b).

The necessity of the good is satisfied for the consumer if he/she uses the specific quantity. He/she does not want the next unit of the good even if its price is zero (Figure 2c).

### Application of the consumer behaviour model for the agricultural sector products

As an example of the use of the presented consumer behaviour model in the food market (for the agricultural sector products), we can demonstrate the price creation of agricultural products by using the Sweezy's model of oligopoly, where we assume

that firms produce differentiated products and the firm expects that its competitor will not react on the market price increase, but he/she will react on its decrease by decreasing as well. Also the shape and slope of the demand curve are important here.

If the oligopoly firms in the agricultural sector produce differentiated goods and services, reciprocally substitutable, we experience the heterogeneous oligopoly with differentiated market prices. The differences among the products of any oligopoly firm are not usually substantial, they are close substitutes. As an example of the differentiated product in food industry, we can mention meat and meat products, bakery, sweets etc.

Sweezy's duopoly model with its kinked demand curve arose as the cause of the need to explain the tendencies for the sticky price appearances, which occurred at some oligopoly markets, for example in the case of some food chain stores.

According to the unreality of price increase in this model of the oligopoly competition, the chain stores broaden their demand for the agricultural sector products, which they sell under their own brand. They expect that the demand for private products, which are somewhat cheaper than the branded articles, will increase. (As an example, we can mention the Ahold company which already placed more than 1000 new private products on the counters of its Albert shops; now, in the Tesco Stores ČR, it stands for almost 25 percent of the whole range of products.) At present, in the current economic situation, we can observe an increased interest in the private assortment brands, which are, understood in the price-quality ratio, a good alternative for the branded products. The biggest interest regards, according to the private brand sellers, the commodity food; e.g. milk, oil, rice and flour. The highest share of the private brands is in the

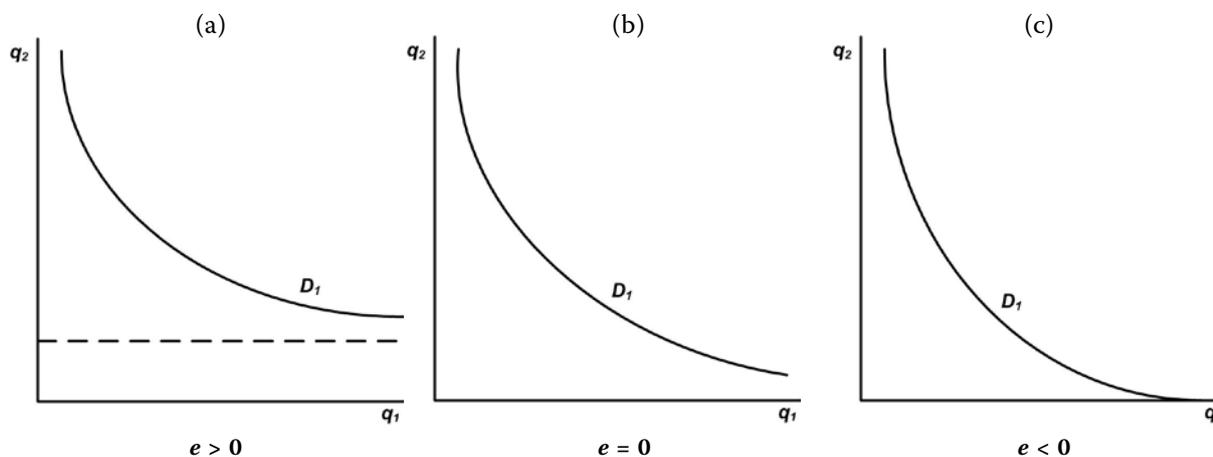


Figure 2. Elasticity

category of meat, where it reaches about 80 percent of the assortment.

According to the last year survey, more than one half of the Czechs buys the private brands of the chain stores, but it is still less than in Hungary or Slovakia.

## CONCLUSION

According to Woll (1990) and other authors for example Starmer (2000), the marginalist theory of consumer's behaviour is a too abstract concept especially in its deterministic form. They come with the following arguments:

Scarcity is a relative term and has different importance for various consumers. The impacts of the consumer's mutual relations, the interdependence of preferences or specific kinds of consumption are eliminated in this concept. Stability of preferences is questionable. The supposed perfect information and rational expectations of consumers' subjects are both the advantage and the limit of deterministic models. Difficult deriving of the indifference curves and the difficult testing of the utility functions are also characteristic features of this concept.

If we use the function for the analysis of a consumer subject with complicated preferences ( $2c, e < 0$ ), this specific case can be used for the analysis of consumer's behaviour in food markets. His/her behaviour is richer and more variable than it is shown by the lower

elasticity demand functions. The graph could be a better tool for explaining the consumer behaviour in the food market.

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