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NUTRITION AND HEALTH CLAIMS FROM THE ECONOMIC PERSPECTIVE

Application of the economic
theories and models

Presentation outline

- Introduction
 - Neoclassical Economics
 - Economics of information
 - Institutional economics

- Asymmetric information and market failure
 - “Lemons” and Food Labeling
 - New Institutional Economics

- Economic models



Introduction: Neoclassical Economics

- ❑ Vilfredo Pareto
 - ❑ Alfred Marshall
 - ❑ John Hicks
 - ❑ George Stigler
 - ❑ Carl Menger
 - ❑ William Stanley Jevons
 - ❑ John Bates Clark
-
- Perfect market leads to optimal price and quality structures

NEOCLASSICAL ECONOMICS

Reference point – perfect market

Consumer, as well as producer, is a rationally performing economic subject (Individuals maximize utility and firms maximize profits).

Consumer behavior is determined by

- individual income,
- individual preference orders (e.g. taste),
- the goods available along with their prices.

The prices of (homogenous) goods include all relevant information for the consumer. People act independently on the basis of full and relevant information.

RESULT: Consumer is aware of his needs as well as which goods give him satisfaction.



Introduction: Economics of Information

- George Arthur Akerlof
- Joseph E. Stiglitz
- Michael Spence
- Harvey Leibenstein

- Market failures occur due to imperfect information of market processes.

- “The economics of consumer protection is the economics of information”. (Shapiro)

ECONOMICS OF INFORMATION

Reference point – market failure

Inefficient behavior of market players, both consumers and producers.

Consumer behavior is determined by

- individual income,
- individual preference orders (e.g. expectations),
- the goods available along with their prices.

The prices of (heterogeneous) goods don't include all relevant information for the consumer.

RESULT: Consumer is aware of his needs and he believes that some (experience or credence) goods might give him satisfaction.



Introduction: Institutional Economics

- ❑ Thorstein Veblen
 - ❑ Wesley Mitchell
 - ❑ John R. Commons
 - ❑ John Kenneth Galbraith
 - ❑ Gunnar Myrdal
-
- ❑ Influence of formal as well as informal institutions on consumer behavior

Institutional Economics

Reference point – market failure and inefficient behavior of market players

Consumer

- cannot assess service quality
- assesses it at too high cost
- after using the good effects are not fully verified
- potential risks become apparent when it is too late.

Human-made institutions have to interrupt with intervention in shaping economic behavior

Heterodox Institutional Economics

New Institutional Economics

Loos and Economics

Behavioral Economics

RESULT: Economics cannot be separated from the political and social system



“The Market for Lemons” (Akerloff)

- ❑ The market for used cars was observed. The problem of quality uncertainty is present:
 - good used cars and
 - defective used cars ("lemons").
- ❑ INFORMATION: The seller knows much more than the buyer of the car.
- ❑ EXPECTATION: Buyer's best guess for a given car is that the car is of average quality on average price.
- ❑ CONCLUSION: Owners of good cars will not place their cars on the market.

The Economics of information and Food market

- Types of goods
 - Homogeneous goods
 - Heterogeneous goods
 - Search/Experience goods
 - **CREDENCE GOODS**

- Difference
 - Level of *ex ante* available information.
 - Position of producer and consumer is not equal.

Homogeneous goods

- Perfect market:
 - Homogeneity
 - Quality is perfectly observable ex ante
 - Full information
 - Examples

- Full information impossible (Economics of information)
 - Ex ante:
Buyer usually less informed than seller
 - Ex post:
Buyer receives more information



Flour – homogeneous or not, experience or credence good?



Heterogeneous goods

- ❑ Search/Experience goods
 - Seller: fully informed
 - Buyer: expects average quality due to high costs for observing the true quality
 - Willingness to buy – Willingness to produce

- ❑ Do the “lemons” exist at the food market too?
 - Credence goods/Potemkin goods
 - Buyer and seller: Costs for observing the true quality are very high.
 - If non-observable property is costly, strong incentive to cheat.

Remedies

- Reduction of informational asymmetry:
 - Branding
 - Reputation
 - Labelling

- Binding commitments
 - Guidelines for nutritional/health claims are the subject to control

Food safety and labeling

- Food safety
 - how farmers produce food (including what chemicals they use when growing plants and what they feed their animals),
 - how food is processed,
 - how it is sold and
 - **WHAT SORT OF INFORMATION IS PROVIDED ON THE LABELING.**

- Food labeling
 - Traditional approach: provision of consumer information.
 - Contemporary approach: a way to convey information regarding all relevant quality attributes.

- Labeling would provide consumers with informed choices.
- **PUBLIC CONSIDERATIONS:** Choices will lead to public health benefits.

Food sector and New Institutional Economics

❑ Asymmetric information

Traditional assumption: THE SELLER OF A PRODUCT MAY KNOW MORE about product safety than consumers.

Contemporary assumption: THE SELLER MAY NOT HAVE BETTER INFORMATION about the safety attribute of a product than consumer.

New assumption: CONSUMERS, PRODUCERS AND REGULATORS all may have imperfect information.

- ❑ **CONCLUSION:** The market for food safety is likely to function differently than the market for other quality characteristics where information is asymmetric.

Market for food safety

- Model is a theoretical construct that represents economic processes
 - by a set of variables and
 - a set of logical and quantitative relationships.

- It is a simplified framework designed to illustrate complex processes by using structural parameters (e.g. prices, income, household's health capital, health-related knowledge, food risk, technology progress...)

- Food Safety models related to labeling
 - Demand
 - Supply
 - Market regulation

MODELS FOR ANALYSIS OF FOOD SAFETY - Demand

Carriquiry, Jensen and Nusser	1991
Choi and Jensen	1991
Falconi and Roe	1991
Eom	1995
Weaver	1995
Van Ravenswaay and Hoehn	1996
John M. Antle	2001



Market demand

- Model simplifications
 - abstract from the household's allocation of time.
 - assume that all decisions are made *ex ante*.
- Given money income and prices the household's choice problem is

$$\max_{y_f, y_n, a, m} \mathcal{L} = \iint U(y_f, y_n, h(e(r(y_f, \delta)a, \rho), m, \varepsilon)) dR(\rho | \kappa) dH(\varepsilon | \chi) \\ + \lambda(I - p_f y_f - p_n y_n - p_a a - p_m m).$$

Variables

- ❑ Consuming perfectly safe foods leads to a value of $r = 0$, whereas consuming foods with some positive health risk results in $r > 0$.
- ❑ The household's beliefs about health variation are embodied in the random variable, which is distributed according to the cumulative distribution function $H(\varepsilon / \chi)$, where
 - χ is a parameter representing the household's health-related human capital, p is the stochastic element in exposure to food-related health risks.
- ❑ The household is assumed to hold subjective beliefs regarding the risks of exposure represented by the cumulative distribution function where k represents the household's knowledge of health risks.

Expected marginal health risk and expected marginal utility of food

The first-order conditions for the above problem can be expressed as

$$\partial \mathcal{L} / \partial y_f = \lambda^{-1} \iint \{U_f + U_h h_e e_r r_f\} dR(\rho | \kappa) dH(\varepsilon | \chi) - p_f = 0,$$

$$\partial \mathcal{L} / \partial y_n = \lambda^{-1} \iint U_n dR(\rho | \kappa) dH(\varepsilon | \chi) - p_n = 0,$$

$$\partial \mathcal{L} / \partial a = \lambda^{-1} \iint U_h h_e e_a dR(\rho | \kappa) dH(\varepsilon | \chi) - p_a = 0,$$

$$\partial \mathcal{L} / \partial m = \lambda^{-1} \iint U_h h_m dR(\rho | \kappa) dH(\varepsilon | \chi) - p_m = 0.$$

The first-order condition can then be interpreted as stating that

$$\text{EMUF} = p_f + \text{EMHR}.$$

Implications

- In the conventional model of consumer demand, the quantity of food demanded is found by equating the price of food to the expected

$$EMUF = pf$$

- But when a food poses a health risk recognized by the consumer, the quantity of food demanded is less than in the no-risk solution.
- The greater is the perceived marginal health risk, the lower is the demand for the risky food.

Demand for the risky food

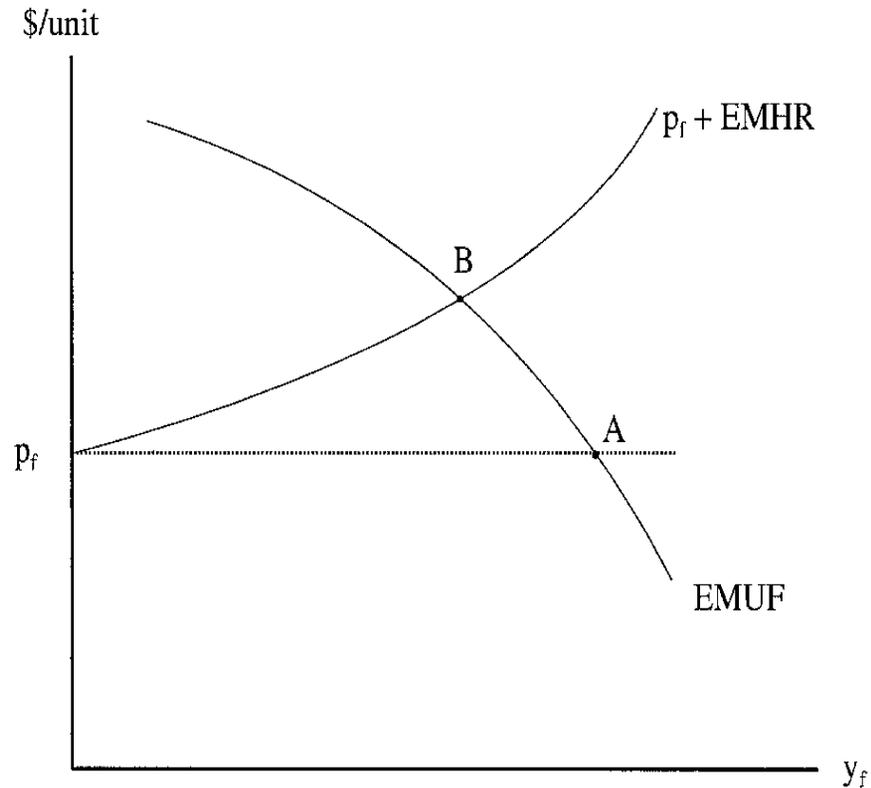


Figure 1. Expected marginal disutility of health risk per dollar (EMHR) and expected marginal utility of food consumption (EMUF).



Implications on food with health claims

- Food with health claims = positive property
- Expected marginal health benefit (EMHB)
- The greater is the perceived marginal health benefit, higher is the demand for the food with health claim.

Aggregate demand

- Perspective of the population of households
 - characteristics
 - income status,
 - demographic characteristics (age, education...)
 - health characteristics
 - knowledge of health risks
 - policy parameters affecting distribution of knowledge (consumer education programs and product labeling regulations).
- Letting the number of persons in the population be N , market demand functions for food, non-food, and averting activities are given by

$$Y_f(\mathbf{p}, \delta, I, \Delta, \Psi, N) = N \int y_f(\mathbf{p}, \delta, I, \kappa, \chi) dG(I, \chi, \kappa | I, \Delta, \Psi).$$

Summary

- ❑ The Economics of Information and Food market
- ❑ Problems
 - Market failure
 - Inefficient behavior of market players
- ❑ Institutional Economics
- ❑ Role of different players at the market
 - Consumers and their associations
 - Producers, retailers (economic sector)
 - Regulatory institutions
 - Government (Public Health, Food system, Trade, Innovations and Technology, Education, Information...)



Thanks for your attention!

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