The Demand for Nutrients in China: A Direct Approach

Xu Tian, Xiaohua Yu

Department of Agricultural Economics and Rural Development

And Courant Research Centre "Poverty, Equity and Growth"

University of Göttingen

xtian@uni-goettingen.de, xyu@uni-goettingen.de

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1 Background

- Dramatical change in the structure of food consumption in China along with its rapid economic growth.
- The demand for nutrients also changes significantly.
- Whether malnutrition can be eliminated by economic growth is still controversial.
- Current literature mainly focus on macronutrients.
- Estimation in indirect approach is biased.

2 Objective

- Using a direct approach to estmate income elasticity of nutrients.
- Comparing the nutrient elasticity of different income group.

3 Method

- There are two commonly used econometric approaches to estimate income elasticity of nutrient.
  - Indirect approach: convert food elasticity to nutrient elasticity.
  - Direct approach: covert food consumption to nutrient intake and then regress nutrient intake directly on income.

$$N_k = \sum_i C_{ki} * F_i \qquad E_i = F_i * P_i$$

$$\varepsilon_{N_k M} = \sum_i S_{ki} * \varepsilon_{F_i M} + \sum_i S_{ki} * \varepsilon_{C_{ki} M} \qquad S_{ki} = \frac{N_{ki}}{N_k} = \frac{C_{ki} * F_i}{\sum_i C_{ki} * F_i}$$

$$\varepsilon_{N_k M} = \sum_i S_{ki} * \varepsilon_{E_i M} + \sum_i S_{ki} * \varepsilon_{C_{ki} M} - \sum_i S_{ki} * \varepsilon_{P_i M}$$

$$\varepsilon_{N_k M} = \sum_i S_{ki} * \varepsilon_{E_i M} - \sum_i S_{ki} * \varepsilon_{q_{ki} M} \qquad q_{ki} = \frac{P_i * \theta_{ki}}{C_{ki}} \qquad \frac{d \ln \theta_{ki}}{d \ln C_{ki}} = 0$$

4 Results

Nutrients	Elasticity		
	Full sample	Below	Above
Energy	0.1224***	0.3222***	0.0637
Protein	0.1273***	0.2460**	0.0976
Fat	0.1487***	0.2099	0.0837
Carbohydrate	0.1066***	0.3076**	0.0731
Fiber	0.1305***	0.4406***	0.0566
Cholesterol	0.2927***	0.3089	0.4328**
Vitamin A	0.1397	0.3060	0.1938
Thiamin-B1	0.1545***	0.1183	0.1536
Riboflavin-B2	0.1256***	0.3250**	0.0667
Niacin-B3	0.1542***	0.2248*	0.1487
Vitamin C	0.1345**	0.0864	0.1665
Vitamin E	0.1471**	0.2149	0.0256
Calcium	0.0606	0.2395	-0.0573
Phosphorus	0.1318***	0.2246**	0.1164
Potassium	0.1029***	0.1110	0.0818
Magnesium	0.1048***	0.3109**	0.0662
Sodium	0.0122	-0.0602	-0.1069
Iron	0.1352***	0.2410**	0.1658*
Zinc	0.1303***	0.2188**	0.1129
Selenium	0.1664***	0.3062**	0.1550
Copper	0.1189***	0.2454**	0.0079
Manganese	0.0879	0.2130*	0.0304

5 Conclusions

- Income elasticities of most nutrients are quite small.
- Poor people have higher nutrient elasticity than rich ones.
- Most nutrient elasticities are not significant for rich people.

6 Implication

- Income will not result in substantial improvements in nutrient intakes.
- More direct government intervention aiming at improve the nutritive status should be developed.

7 Reference

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