The Impact of Diet Costs on Diet Quality

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Establishment of measures improving population’s diet quality
To check whether DQ is an endogenous variable
Based on Lancaster’s theory of consumer demand for product characteristics a diet quality index (DQ) is introduced in a food expenditure equation

\[ EXP = \rho_0 + \rho_1 DQ + \rho_2 X + \rho_3 Y + \mu \]

\( \begin{align*} 
\text{EXP} & \text{ Household food expenditure} \\
\text{DQ} & \text{ Diet Quality} \\
\text{X} & \text{ Household characteristics} \\
\text{Y} & \text{ Attitude variables} \\
\mu & \text{ Residual term} 
\end{align*} \)

To check whether DQ is an endogenous variable a Hausman Test is conducted.

The hypotheses that DQ is exogenous can’t be rejected, therefore DQ is included as an explanatory variable

Develop a new diet quality (DQ) index:

The German Nutrition Society (DGE) recommends:
1. The diet should be composed of six main food groups. The shares are given in terms of weight (Diet Circle)
2. Within the six main food groups healthier items should be consumed more, unhealthier less (Food Pyramid)

Methods

Estimation approach:

• Consumer’s implicit price of diet quality within the framework of a hedonic analysis is measured.
• Based on Lancaster’s theory of consumer demand for product characteristics a diet quality index (DQ) is introduced in a food expenditure equation

Develop a new diet quality (DQ) index:

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Objectives

• Establishing of measures improving population’s diet quality requires a profound knowledge of factors that are associated with observed food consumption behavior
• According to studies found an important impact of costs on food choices, this study analyses the association between diet quality and diet costs
• The addressed question is: Does a healthier diet cost more than an unhealthy one? If so, by how much?
• These questions could have important implications in the context of social payments for poor households. In Germany, households get a fixed sum of money which covers the minimum subsistence level. When a healthier diet has to be consumed due to illnesses (e.g. allergies, diabetes, AIDS) the amount of money is possibly too low
• Previous studies that have analyzed the costs of a healthy diet came to different results

Introduction

Data

• German Consumer Panel Survey 2010 considering 190,961 purchases of 300 households
• This scanner data set records quantities and prices for food items at a very detailed level (EAN Code)
• Further data information: (1) socio-demographic household characteristics and (2) several attitude variables of the person who is responsible for the food purchases
• The Consumer Panel Survey is merged with the German Table of Nutrient Content which has information on 130 nutrients

Results and Conclusion

Results of the hedonic regression on food expenditures

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Coef.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-103.94</td>
<td>-2.932</td>
</tr>
<tr>
<td>Diet Quality</td>
<td>129.26</td>
<td>3.247</td>
</tr>
<tr>
<td>Household income per month (€)</td>
<td>0.012</td>
<td>3.268</td>
</tr>
<tr>
<td>Number of people in the household</td>
<td>29.98</td>
<td>8.181</td>
</tr>
<tr>
<td>Age (head of the household)</td>
<td>1.44</td>
<td>4.880</td>
</tr>
<tr>
<td>Price awareness</td>
<td>-7.45</td>
<td>-0.860</td>
</tr>
<tr>
<td>Quality awareness</td>
<td>19.49</td>
<td>2.189</td>
</tr>
</tbody>
</table>

R² (adj.) 0.26

• The positive and significant coefficient for diet quality imply that consumers are willing to pay to consume a healthier diet according to German food guidelines

Predicted food expenditures with higher adherence to food guidelines

• Additional food expenditures (in %) compared to a reference household (variable values from sample means)

• The additional costs of moving from a medium diet to a diet at the 75% (95%)-percentile is 4.7% (13.6%)

• If this result can be confirmed in further studies, recipients of social payments who have to consume a healthier diet due to illnesses should get additional money of at least 4.7%

• Given that the current social payment food rate for poor individuals in Germany is 128 € per month this amount adds up to 6 € per month

References: