The Goods-Time Elasticity of Substitution in Home Food Production for Food Stamp/SNAP participants

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Background:
- Hamermesh (2008) and Baral, Davis & You (2011) estimated the goods–time elasticity of substitution in home food production.
- They found that the elasticity of substitution is lower when consumption time is included (0.28) compared to when consumption time is not included (0.48) (Baral, Davis & You, 2011).

OBJECTIVE:
Estimate the goods–time elasticity of substitution in household food production for SNAP participants vs. non-participants.

Data & Methodology:
- Household data obtained from CPS, matched with FSS, ATUS, and EH Module.
- Sample includes single–headed households, 18–64 years old; Sample size: 1,872 obs.
- Following the theoretical framework as in Baral, Davis & You (2011).
- Empirical Model:
  \[
  \ln\left(\frac{\text{foodexp}}{\text{foodtime}}\right) = \beta_0 + \beta_1 \text{inwage} + \beta_2 \text{SNAP} + \beta_3 \text{SNAP} \times \text{inwage} + \beta_4 \text{Children}
  \]
- Propensity Score Matching method was used to provide unbiased estimation of SNAP participation effect.

Results & Conclusions:
- The goods–time elasticity of substitution in household food production is lower for SNAP participants compared to SNAP non–participants.
- For both groups, the elasticity of substitution is lower when consumption time is included in the analysis compared to when consumption time is excluded, which is consistent with the findings in the literature.
- Since time and food expenses are less substitutable for SNAP participants compared to non–participants, increasing the SNAP benefits will not lead to a significant decrease in time spent in household food production. This issue could be addressed by:
  - Allowing SNAP participants to use the SNAP benefits to purchase pre–prepared food items.
  - Improving the technology used in food production to increase efficiency.
  - Accounting for the cost of time (a limited resource) as a factor in food preparation on the Thrifty Food Plan recipes which serves as the basis for the SNAP benefits scheme.

<table>
<thead>
<tr>
<th>Reference Week</th>
<th>SNAP Participants</th>
<th>SNAP Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elasticity of Substitution (w/ cons. time)</td>
<td>0.31</td>
<td>0.10</td>
</tr>
<tr>
<td>Elasticity of Substitution (w/o cons. time)</td>
<td>0.70</td>
<td>0.36</td>
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</tbody>
</table>

Supplemental Nutrition Assistance Program (SNAP):
- National Program
- Federal Budget for SNAP in 2011 was $78 billion
- 45 million people received SNAP benefits in 2011
- Eligibility based on: income, assets & household composition
- Households CAN use SNAP benefits to purchase: fruits, vegetables, meats, etc.
- Households CANNOT use SNAP benefits to purchase pre-prepared and hot meals.

<table>
<thead>
<tr>
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<th>MEAN (SNAP Participants)</th>
<th>MEAN (SNAP Non-Participants)</th>
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<tbody>
<tr>
<td>Food Expenditures (weekly)</td>
<td>$113</td>
<td>$113</td>
</tr>
<tr>
<td>Food Time w/o Cons. (Daily)</td>
<td>81 min.</td>
<td>62 min.</td>
</tr>
<tr>
<td>Food Time w/ Cons. (Daily)</td>
<td>131 min.</td>
<td>123 min.</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>226</td>
<td>1,646</td>
</tr>
</tbody>
</table>

Note: Food time includes: time preparing the meal, time cleaning-up, time grocery shopping and time traveling for grocery shopping. Consumption time includes: time eating and time drinking (when these are the primary activities).