**Socio-Economic Status, Time Preference, and Body Fatness**

**Olga Biosca (GCU) and Heather Brown (Newcastle University)**

**Introduction**

In the UK, approximately 25% of the population is classified as obese. Obesity is prevalent across all social classes in the UK. However, women from lower socioeconomic groups are at a greater risk of being obese (Public Health England 2013).

Time preference is a concept that reflects the degree of impatience of an individual. Individuals with a higher time preference rate are more impatient. There is some evidence that body mass index (BMI) and high time preference rates (i.e. more impatient individuals) are correlated (Smith et al. 2005).

**Objective**

To explore if the relationship between time preference and body fatness is moderated by socio-economic status. This may explain inequalities in obesity rates across the socio-economic spectrum.

**Data**

Data Source: The health assessment sample of 20,000 household from wave 2 (2010) of the Understanding Society Survey. The dependent variables are objective measures of body fatness which include:

- Body mass index (BMI) calculated from height and weight
- Waist circumference
- Per cent body fat (bioelectrical impedance analysis).

The key explanatory variables:

- Time preference is measured using a proxy:
  - Saving for the future.
- Socio-economic status measured using:
  - Quartiles for equivalised household income
  - Dummy variables for educational attainment
  - Dummy variables for occupation
- The models also control for:
  - Region
  - Children in the household
  - Physical activity participation
  - Food expenditure
  - Diet

**Methods**

Multivariate regression analysis. To test for the moderating effect of socio-economic status we estimate models separately by occupation, equivalised household income quartiles, and educational attainment with the time preference proxy.

**Results**

- Findings from a base model regressing the time preference proxy on BMI are consistent with the literature (e.g. Smith et al. 2005).
- Women who are savers, i.e. with lower time preference rate, have a lower per cent body fat and smaller waist circumference.
- In Table 1, for women in the 25-50% income bracket being a saver is negatively associated with all 3 body fatness measures.
- In Table 2, for men with a degree, savings is negatively associated with BMI, percent body fat, and waist circumference.

**Conclusion**

- There is some evidence that socio-economic status mediates the relationship between body fatness and time preference, which can help to explain socio-economic patterns in body fatness.
- The results suggest that complex public health interventions such as microcredit may be improved by reducing individual’s time preference rates in addition to other behaviour change activities, particularly for lower socio-economic groups.

**References**


**Table 1: OLS Regressions on BMI, Percent Body Fat, and Waist Circumference by Household Income Quartile (Women)**

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<tbody>
<tr>
<td>Saves</td>
<td>0.41</td>
<td>-1.02**</td>
<td>-0.25</td>
<td>0.04</td>
<td>0.77</td>
<td>-1.60**</td>
<td>0.35</td>
<td>-0.48</td>
<td>1.28</td>
<td>-2.30**</td>
<td>-1.00</td>
<td>-0.09</td>
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<td></td>
<td>(0.58)</td>
<td>(0.51)</td>
<td>(0.38)</td>
<td>(0.35)</td>
<td>(0.84)</td>
<td>(0.68)</td>
<td>(0.59)</td>
<td>(0.50)</td>
<td>(1.25)</td>
<td>(1.11)</td>
<td>(0.92)</td>
<td>(0.81)</td>
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<td>R²</td>
<td>0.15</td>
<td>0.13</td>
<td>0.13</td>
<td>0.11</td>
<td>0.16</td>
<td>0.18</td>
<td>0.17</td>
<td>0.14</td>
<td>0.19</td>
<td>0.15</td>
<td>0.15</td>
<td>0.12</td>
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<tr>
<td>n</td>
<td>442</td>
<td>546</td>
<td>719</td>
<td>993</td>
<td>127</td>
<td>530</td>
<td>697</td>
<td>975</td>
<td>447</td>
<td>548</td>
<td>726</td>
<td>997</td>
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**Table 2: OLS Regressions on BMI, Percent Body Fat, and Waist Circumference for Men with a Degree**

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<tbody>
<tr>
<td>Saves</td>
<td>-0.59**</td>
<td>-1.02*</td>
<td>-1.64***</td>
<td>(0.24)</td>
<td>(0.53)</td>
<td>(0.63)</td>
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<td>Observations</td>
<td>1,212</td>
<td>1,158</td>
<td>1,219</td>
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<td>R-squared</td>
<td>0.14</td>
<td>0.12</td>
<td>0.23</td>
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Notes: Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.10. Other covariates included in the estimation models are age, age squared, educational attainment, ethnicity, employment status, 10 dummies for region, presence of children under 16 in the household, annual food expenditure, annual food expenditure on food outside the household, a dummy for drinking whole milk, a dummy for eating white bread, number of days a week eat fruit, portion of fruit and veg eat on an average day, a categorical variable controlling for how often participate in moderate physical activity, a categorical variable controlling for how often participate in light physical activity, a variable controlling for how active a person perceives themselves to be, and difficulty in accessing sports facilities.

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