Spillover Effects of SBP and NSLP on Academic Performance

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INTRODUCTION

- Childhood misnourishment:
  - Caused by insufficient nutritional quality
  - Includes overweight, obese and underweight
- United States estimates:
  - 13+ million overweight children
  - 2.4 million underweight children
- Childhood misnourishment has been linked to academic achievement
- School Breakfast Program (SBP) & National School Lunch Program (NSLP)
  - Mixed results are found on relationship between meal program participation and child weight
  - SBP and breakfast consumption has been linked to academic achievement
- Millimet, Tchernis and Husain (2010) call for more research of SBP and NSLP impacts on outcomes other than weight

RESEARCH QUESTIONS

- What are key determinants of program participation?
- What are the direct impacts of program participation on body mass index (BMI)?
- What are the direct and indirect impacts of program participation on academic performance?
- Do impacts differ depending on:
  - whether students receive free- and reduced-price (FRP) meals versus pay full-price?
  - whether students are FRP eligible?

DATA

- Early Childhood Longitudinal Study-Kindergarten Class
- Nationally representative sample of 21,260 children followed from kindergarten (1998-1999) to 8th grade
- Information on children, parents, teachers and schools
- Staff measured weight and height of the students
- SBP and NSLP participation information
- Standardized math and reading scores comparable across children and over time

EMPIRICAL APPROACH

Structural Equation Model

- Uses an equation system to test underlying mechanisms
- Models endogeneity and gains efficiency
- Examines direct and indirect effects of all variables
- Allows us to answer different policy questions
- Full-information maximum likelihood
- Important to account for self-selection into SBP and NSLP
- Simultaneously estimate 7 equations:
  - 2 selection equations
  - 3 child choice equations
  - Child weight production function
  - Child achievement production function

MODEL STRUCTURE: PATH ANALYSIS

SUMMARY OF FINDINGS

Significant Determinants of Program Participation

- All Participants:
  - Race/ethnicity (particularly Hispanic)
  - Household income
  - Father’s education
  - Urbanity (rural/urban/suburb)
  - Whether the child participated in the program the year before
  - Indicator for whether the mother works full-time
  - Food Stamp recipients (FRP participants only)

- By Eligibility:
  - Race/ethnicity
  - Whether the child participated in the program the year before
  - Whether the child is FRP eligible

Program Impacts on Academic Achievement

- All Participants:
  - Large positive direct impact of NSLP participation on math scores
  - Small positive indirect impact of SBP participation on math and English scores (particularly FRP recipients)
  - Small negative indirect impact of NSLP participation on math and English scores

- By Eligibility:
  - Large positive direct impact of NSLP participation on math and English scores
  - Small negative indirect impact of NSLP participation on math and English scores

Program Impacts on Child Weight

- All Participants:
  - SBP increases BMI z-scores of 8th grade students with a larger effect on FRP recipients

- By Eligibility:
  - NSLP decreases BMI z-scores of 8th grade FRP eligible participating students

POLICY IMPLICATIONS

- Integral impact on the weight of school meal program participants especially those in 8th grade
  - Provides motivation for initiatives calling for healthier meals particularly for SBP
- Healthier meals may entice more parents to have their children participate in SBP and NSLP
- Need to consider how children will respond to healthier meals and whether they will consume the food
- Minimal impacts on elementary achievement
  - Highest participation rates in elementary school → need to increase impacts on performance through more nutritious meals

- Important to recruit FRP eligible students to participate in the programs
  - They are the ones particularly impacted by programs (nutritional and academically)
  - They are the ones most in need (nutritional and academically)
- Because FRP eligible children are most impacted, creative advertising making participation trendy and enticing should increase participation and decrease negative associations with the programs