Does the labor force participation of women increase BMI?

Evidence from Mexico

Mariana Urbina-Ramirez, Department of Applied Economics, University of Minnesota

Minnesota Population Center

University of Minnesota

Introduction

- More than 60% of Mexican adults were overweight or obese in 2012. The percentage is higher among women than men.
- Overweight and obesity are caused by several factors, and those can be grouped in the following categories: nutrition, food prices, physical activity, genetics.
- **Research objective:** analyze the relationship between labor force participation and BMI.

Theoretical Framework

I propose a two-period consumer model for establish relationships between the BMI and the labor force participation. The parameters of the model are:

- $i = 1, 2$
- c_{si}: street food consumption
- c_{hi}: home food consumption
- l_i: leisure time
- o_i: work time
- g_i: health status
  $\frac{\partial g_i}{\partial c_{si}} < 0$ and $\frac{\partial g_i}{\partial c_{hi}} > 0$
- d: total time
- p_h: price of home food. $p_h > p_s$; $p_s = 1$
- w: wage
- r: interest rate
- A_1: assets at period 1
- β: discount rate
- U: utility function. $\frac{\partial U}{\partial c_{si}} < \frac{\partial U}{\partial c_{hi}}$; $\frac{\partial U}{\partial c_{si}} > 0$

Consumer Problem

Max $U = u\,(c_{s1}, c_{h1}, l_1, g_1) + \beta u(c_{s2}, c_{h2}, l_2, g_2)$
$c_{s1}, c_{h1}, l_1, g_1, c_{s2}, c_{h1}, l_2, g_2$

Subject to:

$$c_{s1} + p_h c_{h1} + \frac{c_{s2}}{1+r} + \frac{p_h c_{h2}}{1+r} = A_1 + wo_1 + \frac{wo_2}{1+r}$$

$$l_1 + o_1 = l_2 + o_2 = \mathrm{d}$$

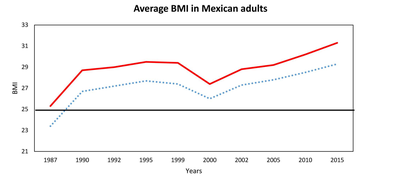
Inferences from this model:

- A woman who works outside the home has a diet of lower quality
- A woman who works outside the home has less time for physical activity

Mexican Life Family Survey

- Panel data set covering the 2005-2006 and 2009-2012 waves of the MxFLS, retaining individuals who were 15 years or older in the first wave.
- The data sets contain information about food expenditures, household demographics, diet and nutrition, anthropometric measures, time allocation, and employment.
- People were classified into two groups to determine their labor status: worker, and unemployed or inactive.
- To construct the BMI, I used weight (in kilograms) and height (in meters), which were measured in both waves.
- The sample size was 12,269 observations, consisting of 7,197 women and 5,072 men.

BMI and Employment



Econometric Framework

The model in first differences to estimate the correlation between changes in BMI and labor status is:

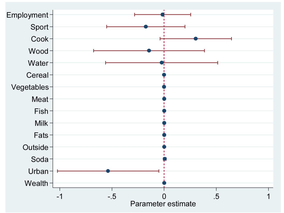
$$\Delta BMI_i = b_0 + b_1 \Delta emp_i + b_2 \Delta sport_i + b_3 \Delta cook_i + b_4 \Delta wood_i + b_5 \Delta water_i + b_6\, \Delta fexp_i + b_7 \Delta urban_i + b_8 \Delta wealth_i + u_i$$

The food expenditures and time use variables could be affected by the employment. Thus, I estimate the correlation between BMI and employment after excluding the controls of time allocation and food expenditures:

$$\Delta BMI_i = b_0 + b_1 \Delta emp_i + b_2\, \Delta educ_i + b_3 \Delta urban_i + b_4 \Delta wealth_i + u_i$$

Preliminary Results

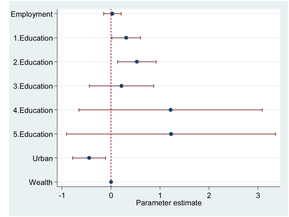
Is the employment of **women** correlated with BMI?



N = 2,758

BMI is not correlated with employment after controlling by food expenditures, activities, urban status, and wealth

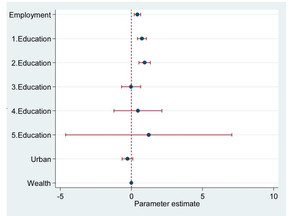
Is the employment of **women** correlated with BMI?



N = 5,243

BMI is not correlated with employment after controlling by education, urban status, and wealth

Is the employment of **men** correlated with BMI?



N = 3,387

BMI is correlated with employment in the case of men, but this coefficient is small.

Conclusion: there does not exist evidence to affirm a positive correlation between employment and BMI in the case of women