Is Women's Ownership of Assets instrumental in reducing Child Stunting in India?

Introduction

Despite India's remarkable economic growth over the last decade, many children still struggle to meet their most basic needs, including access to sufficient food and health care. The consequences of this nutrition crisis are enormous; malnutrition causes stunted physical growth and cognitive development that last a lifetime; the economic losses associated with malnutrition are estimated at 3 per cent of India's GDP annually (Horton, 1999). There is growing consensus that the reason for India's malnourished children is not just empty pockets – it is, specifically, women's empty pockets. Improving women's control over assets can augment women's economic security and bargaining power, which in turn may have powerful consequences for the health and well-being of their children.

Data and Method

This study utilises the 2015-16 National Family Health Survey. NFHS-4 is the Indian version of Demographic Health Survey (DHS) providing state as well as district level estimates of population, health and nutrition indicators. The sample includes only those females who have had at least one children. Sample size for males and females were 112,122 and 45,231 respectively. For stunting, only children in the age group of six months to two years have been considered to eliminate the effect of breastfeeding on child stunting. The sample size for children is 247,743 for the final sample.

Outcome Variable

A composite variable for asset holding was created by using four separate variables, namely, ownership of land, house, mobile phone and bank account. The variable ranked from 0 to 1, with 0 indicating that a woman has none of the assets and 1 indicating that she owns all the four assets. The HAZ scores are also used to create a Stunting Variable wherein 0 means the child is not stunted and 1 means the child is stunted.

Predictor Variables

The following predictors of poverty at individual level were included: Individual place of residence (Urban/Rural), sex (Female/Male), age, religion, caste, education, marital status, wealth quintile, age and sex (Female/Male) of the head of the household and occupation. For

currently married women, husband's education and occupation were also taken which were categorised in the same manner as that of the women.

A variable for wife beating was created as an indicator of attitudes within the household toward women and children, wherein 0 means the woman does not justify wife beating and 1 means she justifies wife beating. A variable for mother's smoking behaviour was also created wherein 0 means she does not smoke and 1 means she smokes.

Methodology

We measure the nutritional status as z scores of height-for-age (stunting). Following WHO (1997), we define z score as:

z score= $(x_i - x_{median})/\sigma^x$

where xi is, for example, height of child i, x_{median} is the median height from the reference population of the same age and gender, and σ_x is the standard deviation from the mean of the reference population. Binary logistic regression was used to establish the relationship between child stunting and background characteristics of both the parents. The binary category (1= Child is Stunted, 0= Child is not Stunted) for each respondent is related to a set of categorical predictors, X, by a logit function

$$\textbf{logit } [P(Y=1)] = \beta_0 + \beta_1 X + \varepsilon$$

The parameter β_0 estimates the log odds of the child being stunted for the reference group, while β_1 estimates the maximum likelihood, the differential log odds of the child being stunted associated with a set of predictors X as compared to the reference group and ε represents the residuals in the model.

Quantile regression permits an analysis of the impact of independent variables on different sections of the dependent variable distribution, compared to OLS comparison at the mean, which can offer a more complete picture of the effects of female asset ownership. The quantile regression equation is specified as follows:

$$(Yi) = \alpha(\tau)0 + \alpha(\tau)1Ai + \alpha(\tau)2Xi + \varepsilon(\tau)i$$

where τ indicates the specified quantile. We estimate the model at τ = 0.10, 0.25, 0.50, 0.75, and 0.90.

STATA 14.2 was used for the purpose of analysis.

Results

The children whose mother owns all the four assets are 0.9 times less likely to be stunted as compared to children of those mothers who do not own any asset at all. Children of mothers who smoke are 1.8 times more likely to be stunted than those of mothers who do not smoke. The odds of children being stunted decreases with the increase in height of mothers. Those females who justify wife beating are 1.04 times more likely to have stunted children than those who do not. Given the structure of the anthropometrics, children at the left tail (poor health) of the distribution may have a disparate marginal response to a given independent variable than healthier children at the median or right tail of the distribution. These differences are not apparent with the OLS estimated coefficients. Specific portions of the child nutrition Z-score distributions are analysed using quantile regression analysis. . It is clearly evident that that HAZ scores are greater for children of mothers with asset ownership. The table indicates that the basic additive index has a positive impact on the HAZ scores, which are an indicator of long term nutritional status. Focusing on the asset ownership, at the median, a one unit increase in this asset index increases the HAZ score by 4.9 points compared to 5.9 and 9.0 points at the 75th and 90th quantiles, respectively. It appears that women's asset ownership impacts the long-term health of those children who are already relatively healthy.

Conclusion

To sum up this study, the positive impact of mothers' asset ownership on the health status of the children (and especially the long term health status) is extremely evident and statistically significant. The study establishes the fact that children of well-educated and empowered mothers belonging to the higher wealth quintiles are much less likely to be stunted. Additional results from detailed quantile regressions confirm that the positive effects of mother's asset ownership and children's nutritional status occur at different parts of the distribution