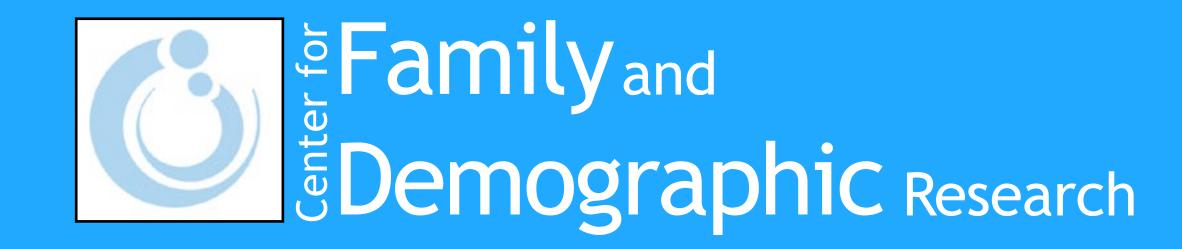
ECONOMIC DEVELOPMENT AND CHILD WEIGHT: A paradox in Sub Saharan Africa



Kelly Balistreria, Claire E. Altmanb, and Jennifer Van Hookb

Bowling Green State University^a Penn State University^b



Background

Child overweight and obesity is increasing in developing countries: 35 million of the world's 42 million (83%) overweight preschool children reside in less developed countries. In the last two decades child overweight has increased more rapidly in <u>developing countries</u> than in developed.

Rapidly developing countries face the paradoxical co-occurrence of increasing levels of child obesity alongside the persistence of child under-nutrition and the problems associated with managing infectious disease. Sub Saharan Africa (SSA) is acutely experiencing this "double-burden" phenomenon - - roughly 20% of preschoolers are underweight and the percentage that are overweight or obese more than doubled between 1990 and 2010.

The increase overweight is often explained through the nutrition transition theory, which relates increases in economic development, urbanization and expansions of global food markets to increases in weight and reductions in physical activity. Higher per capita income may mean higher household wealth and an increase in public investments in the areas of health, nutrition, water and sanitation which may improve child nutrition and health.

Underweight and overweight are typically thought to arise from distinct factors and not occur in close proximity. But prior research (Doak et al. 2000; Bourne et al. 1994) has shown that it is possible for underweight and overweight to coexist. Because the nutrition transition and development are not uniform processes within countries, the coexistence of under and overweight among young children is possible.

Research Expectations

Children may not respond to the nutrition transition in the same way as their mothers (Van Hook et al 2012). Among preschool children in developing countries, economic development on average is negatively related to child overweight. This challenges the idea that the factors underlying the worldwide nutrition transition operate similarly among adults and children.

However, prior studies on the role of development on children's obesity did not consider the potential impact across the full range of BMI distribution. Increases in economic development may be associated with child weight at both ends of the distribution.

We examine the impact of development on the full range of children's BMI in Sub Saharan Africa—a region which experienced an average growth in GDP above 5% and a doubling of foreign direct investment in recent decades, while at the same time experiencing a stalling or reversal of improvements in child nutrition.

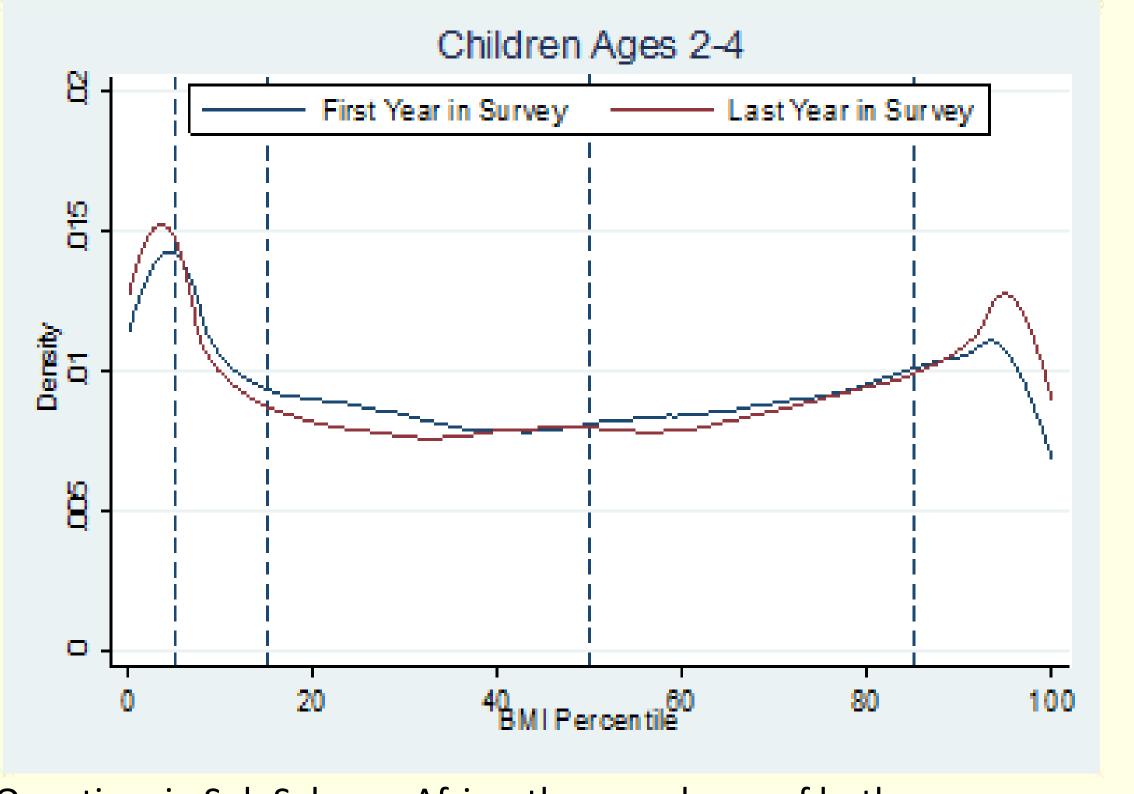
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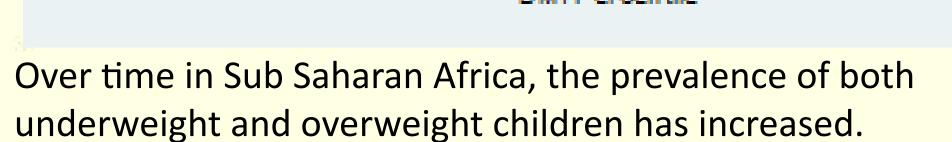
48 nationally representative Demographic and Health Surveys (DHS) conducted between 1990 and 2008 from 16 countries in Sub-Saharan Africa.

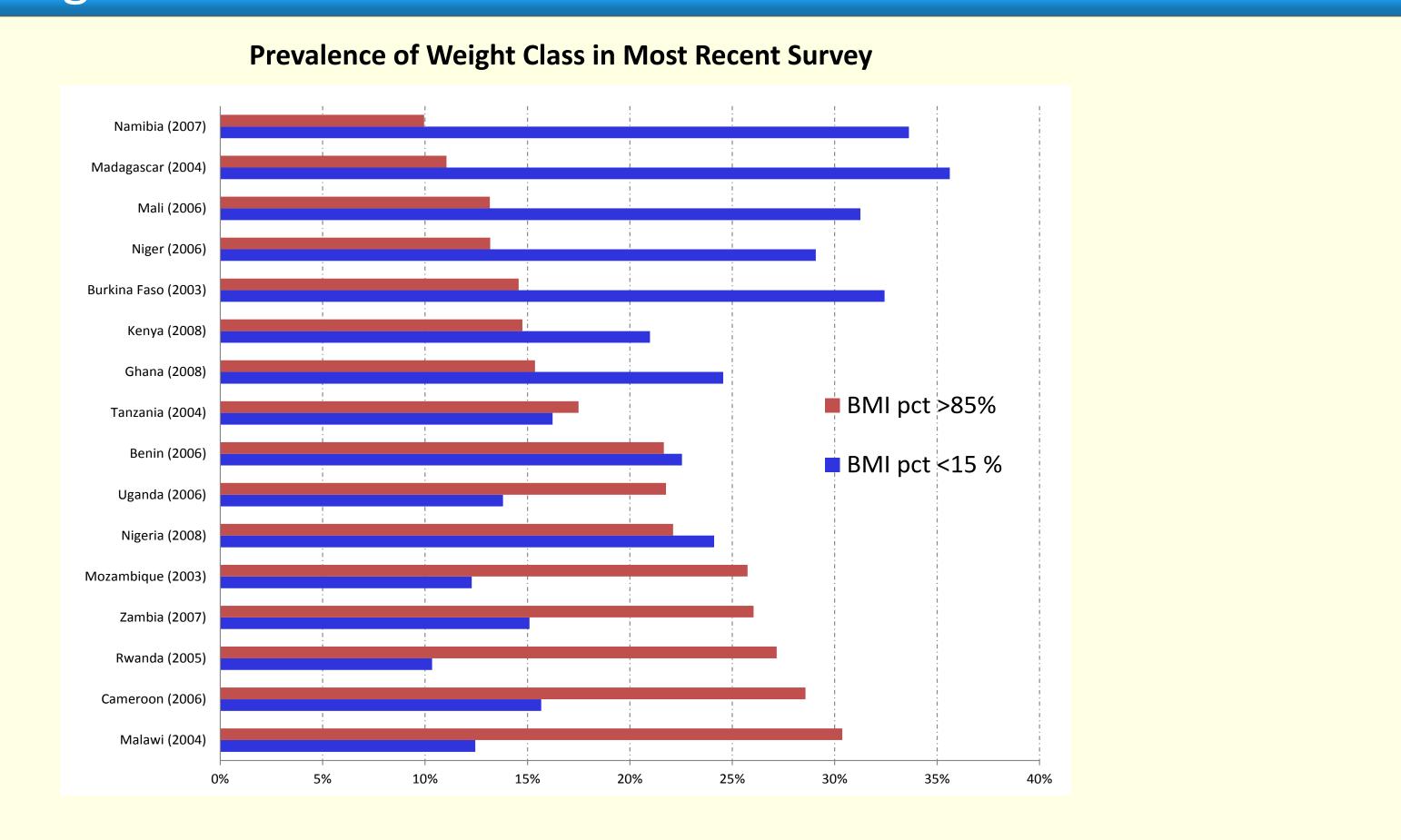
Analytic Sample

- Multiple surveys with the most recent survey occurring in the 2000s.
- Children ages 2 to 4 residing in countries with measures of child height and weight.
- 130,862 children are in the sample.

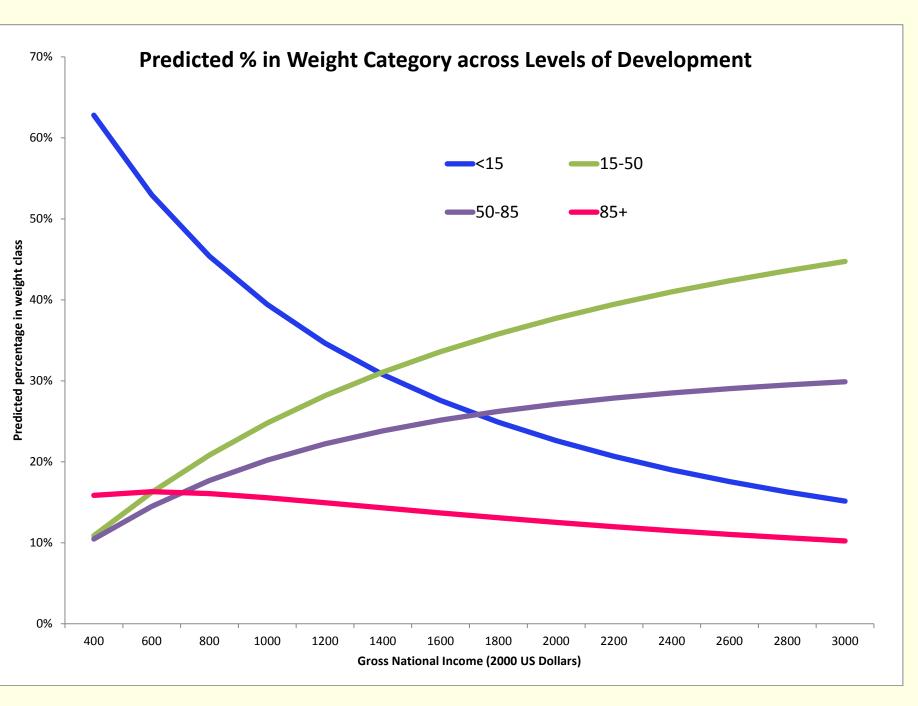
How has children's weight distribution changed in Sub Saharan Africa?



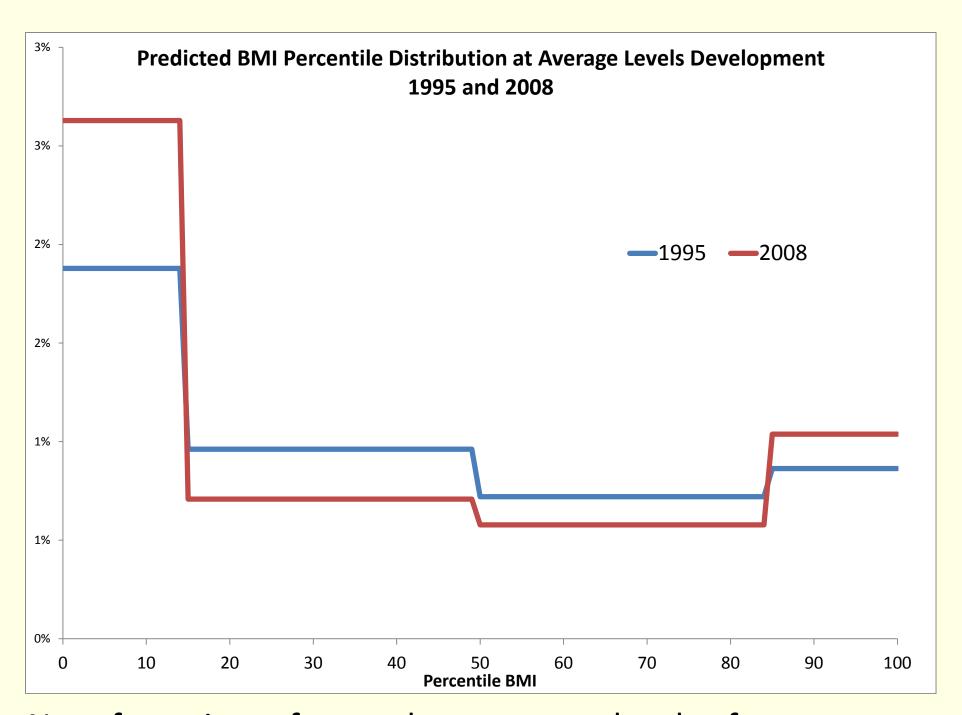




Economic development is associated with more normal weight children, but fewer overweight and underweight children.



As national income increases, the prevalence of being in a healthy weight category increases for children.



Net of a variety of controls, at average levels of development the prevalence of children in the upper and lower ends of the weight distribution increases over time.

Measures

Dependent Variable

Four category measure of children's %BMI: < 15th, 15 to <50th, 50 to <85, 85th and higher.

Independent Variable

Economic development – Logged real Gross National Income per capita (GNI) in 2000 constant US prices

Controls

Gender and age of the child, marital status, working status, and educational attainment of the mother, the age of the youngest child in the household, urban/rural indicator, household wealth, duration of breastfeeding, the year of the survey, and a dummy indicator for each country.

Methods

Weighted multivariate multinomial logistic regression models predicting the likelihood of four weight class statuses for children.

Models include fixed effects for country of residence. The country fixed effects measure the association of within country variation of logged GNI per capita over time (implicitly economic growth).

The country fixed effects also control for country specific omitted variables that are constant over time which may potentially bias the results.

Results

On average 22% of preschool children in SSA have BMIs that places them at or below the 15th percentile (12% are underweight), 58% are in the middle ranges, and the remaining 20% fall into the overweight class. Average GNI per capita is slightly above \$1000 USD.

We find that net of individual, maternal and household factors, in SSA within country economic growth appears to move children into the middle range of the weight distribution.

In contrast, a negative year coefficient suggests some unknown factor is also changing along with increasing development that leads to a concentration of child weight at the lower and upper ends of the distribution.

Conclusions

These conflicting results—the potential positive association between development and a healthier weight among children while at the same time observing a secular trend in weight being distributed at the higher and lower end of the distribution—present challenges.

Our results suggest that there are other factors such as disease, conflict or the uneven spread of globalization, which may be influencing child weight in ways not predicted by these models. The effect of these potential factors on child nutrition may be context dependent, operating in different ways over varying levels of economic development.

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