Children at Risk: The role of family structure in Latin America and West Africa

Desai, Sonalde

The Population Council

1992

Children at Risk: The Role of Family Structure in Latin America and West Africa

SONALDE DESAI

BECAUSE YOUNG CHILDREN ARE DEPENDENT on adults, the income or social class of their parents is frequently used to index children's access to resources. Thus, it is usually argued that children from higher-income households will receive better health care and nutrition than those from poorer households. Nevertheless, the evidence on the link between household income and nutrient intake is surprisingly ambiguous, with some studies finding a strong positive relationship (Alderman, 1990), others finding an extremely weak link (Wolfe and Behrman, 1983; Behrman and Deolalikar, 1987), and still others finding moderate correlation at very low levels of income but relatively small correlation at middle to high income levels (Ravallion, 1990).

Although this lack of a consistently strong relationship between income and nutrient intake may be attributed to a variety of issues related to study design, I argue that a more fundamental reason underlies some of these counter-intuitive results. I believe that these studies are misleading because they focus on total household income, while excluding considerations of intra-household resource allocation and sources of income.

This issue is particularly important to development planning and disaster relief programs in developing countries. Increasingly, governments in these countries are moving away from generalized food subsidy-such as subsidizing the market price of specific food grains or instituting universal rationing programs-frequently toward a more targeted form of assistance such as nutritional supplementation, rationing for low-income families, or food stamp programs. In some cases, this trend toward targeted subsidy has been a part of the International Monetary Fund's recommended structural adjustment programs. Nevertheless, appropriately identifying groups most at risk and directing assistance in a form that would reach children is extremely

difficult. As a variety of studies relating income to nutritional intake suggest, household income does not consistently provide a litmus test for identifying vulnerable children. Hence, an understanding of intra-household resource allocation and the differential ability of family members to gain access to productive resources may be essential in identifying the groups that are particularly vulnerable.

The focus on the household as a whole stems from a research tradition rooted in the theoretical model of the family and the household proposed by the "new household economics" (Becker, 1981; Schultz, 1974). The new household economics has strongly influenced recent research on the family in both developed and developing countries. Additionally, this view of the family has had a substantial influence on development planners and on international agencies such as the World Bank (McNicoll, 1989; Rogers and Schlossman, 1990; Blumberg, 1991). However, this model makes several simplifying assumptions that require a critical examination, particularly in view of the fact that researchers tend to apply it uniformly to diverse cultural settings. This article examines the validity of these assumptions with respect to the family forms found in two developing regions of the world.

The following sections examine some of the fundamental assumptions of this model of the family in the context of nutrition available to children in selected countries in Latin America and West Africa. Drawing on models of the family proposed by the new household economics, I derive hypotheses regarding food available to young children in various household and family arrangements and examine them in specific situations in the two regions. The data used for this analysis were collected in the Demographic and Health Surveys (DHS) for Ghana, Mali, and Senegal in West Africa and for northeast Brazil, Colombia, and the Dominican Republic in Latin America. These two regions are of special interest because of the distinctive nature of their family systems and because of the difference between the two regions in the role of male and female responsibility for children.

Viewing the household as a single entity

One of the most valuable contributions of the new household economics to the study of the family has been to create a model with which to study the daily tasks of living, including family decisions regarding allocation of time and resources between market work, production of food and other commodities for home consumption, childbearing and rearing, and leisure. In order to make this model tractable, however, the separate decisions of different family members are combined in a single utility function, which involves making certain simplifying assumptions.

In particular, such models of the household are distinguished by their focus on the household as a whole with little attention to what actually

happens behind the scenes. Ironically this notion of the household as a cohesive unit has taken hold in American social science literature just as the family in the United States is becoming increasingly complex. Today, with a sharp increase in nontraditional living arrangements, nonmarriage, divorce, and remarriage, the American family is more diverse than at any other time in its history (Bumpass, 1990). Extending this approach to the developing countries is even more problematic since it is doubtful whether resource-pooling, cohesive households have ever been considered ideal (for an interesting description of loosely constructed households in Ghana see Sanjek, 1982 and for those in Latin America see Jelin, 1991).

Two dimensions of neoclassical household models deserve critical attention: (1) the assumption of altruism within the family and (2) the importance of considerations of flexible household boundaries to intra-household decisions and resource availability.

Altruism and resource pooling within the family

According to the new household economics, all family members contribute their separate incomes and resources to the common family purse. While most family members do so because of their affection for one another, some may be tempted to cheat and keep greater portions of their income for themselves. To account for these wayward family members, Becker (1981: 183) proposes a "Rotten Kid Theorem," which argues that all households are governed by an altruistic head of the household who has the power to control all family members, thereby ensuring efficient pooling and distribution of household time and money resources. Interestingly, there is no provision for a rotten head of household.

Several scholars have pointed out the contradiction between expectations of naked self-interest in the market and altruism within the family (Folbre, 1988; Berk and Berk, 1983). A number of studies have empirically demonstrated the existence of nonpooling households in small samples, frequently using qualitative data (Fapohunda, 1988; Folbre, 1984; Mencher, 1988). On the other hand, there is relatively little research comparing the nature of resource pooling and intra-household resource allocation in cross-cultural perspective or even within different kinds of households in the same culture.

On a theoretical level also, there are few available substitutes for neoclassical household models. Some researchers have suggested that instead of thinking of family members as being bound by ties of affection, we should visualize them as engaged in bargaining for the best possible deal with other family members, particularly with their spouses. However, it is difficult to view the household as an arena where individuals constantly compete for

power. In the absence of ties of affection, individuals would have little reason to form a family unit and to live with one another. Indeed, Sen's (1990) use of the term "cooperative conflict" seems to characterize household relations very well.

Regardless of whether we subscribe to the new household economics perspective of a cooperative household or adopt the models of bargaining between household members (Manser and Brown, 1980), in order to develop a realistic model of the family we need to identify the *conditions* influencing the degree of altruism or conflict within the family (Fapohunda, 1988; Bernheim and Stark, 1988). With some exceptions (Thomas, 1990; Schultz, 1990; Folbre, 1984), relatively little attention has been directed to this issue.

I argue that two distinct sets of conditions are likely to influence the nature of resource pooling within households: the first is rooted in the individual's situation, the second in institutional structures. On an individual level, one's commitment to the family may be influenced by such factors as the expected stability of the marriage, number of wives, whether the children are biological children or stepchildren, and duration of the marriage. In contrast, social institutions may constrain resource pooling within the household by defining appropriate contributions of different family members according to such factors as gender, age, or lineage membership.

Consider the range of conjugal arrangements in the three Latin American settings of interest to us here, namely northeast Brazil, Colombia, and the Dominican Republic. A substantial proportion of the children whose nutritional status we evaluate below live with parents who are in consensual, or informal, marriages. Although some consensual unions are just like formal marriages except that spouses simply want to avoid paying the relatively high costs of marriage (De Vos, 1987), others are not so stable.

Consensual unions are significantly more likely to dissolve than formal marriages (Goldman, 1981; Rao and Green, 1991). Additionally, the nature of the union seems to be related to the partriers' degree of commitment to the marriage. Stycos (1955) quotes a male respondent in Puerto Rico as saying, "If the wife does not turn out well, one separates easily from her. If she turns out to be a fine worker and faithful, one may marry her later." This supports the finding by Goldman and Pebley (1981) that a substantial proportion of long-lasting informal unions are later legalized into formal marriages. Similarly Potter and Ojeda (1982) point out that the decision to legalize consensual unions in Mexico hinges on the couple's perception of the stability of the union. This suggests that while the choice of formal versus consensual union is affected by the socioeconomic status of the partners (Goldman, 1981; Yaukey and Thorsen, 1972), an element of trial arrangement is also involved in opting for a consensual union. Additionally, choice of the type of union seems to be related to the bargaining power of the partners involved. Based on fieldwork in Brazil, Rao and Green (1991)

suggest that women rarely choose consensual union but end up living in such unions because their partners will not agree to a formal marriage or cannot afford it.

Thus, if one expects consensual unions to be less enduring than formal marriages, it seems likely that one or both partners in consensual unions would choose to hold on to their personal income and invest less in the marriage and children than partners in unions based on a greater degree of commitment. Although studies based in the neoclassical economic literature have addressed the role of anticipated marital instability in depressing fertility (Becker, Landes, and Michael, 1977) and others have assessed the consequences of marital disruption for children (Weiss and Willis, 1985), there is remarkably little research on how anticipation of marital dissolution affects altruism within the family (for a review of some recent advances in this area by neoclassical economists, see Weiss, 1992). On balance, then, by ignoring the role of differential altruism based on the degree of marital commitment, neoclassical economic models seem unsuited to distinguishing between the welfare of children in consensual and legal unions. However, when these factors are taken into account, holding socioeconomic status constant we would expect to see greater investment in children's nutrition within legal marriages than in consensual unions. This seems consistent with studies that have observed higher levels of infant and child mortality for children of mothers in consensual unions than for those with mothers in legal marriages (United Nations, 1985; Carvajal and Burgess, 1978).

Family systems in West Africa illustrate the role of institutional constraints on resource pooling within the household. Becker (1981: 44) suggests that polygyny is a function of inequality between men, whereby those with high income or other desirable attributes may acquire more wives than men with low income. By inference, however, at any given level of husband's income, wives (and children) in polygamous households will be less well off than those in monogamous marriages because the husband's contribution to the family income will be shared by a greater number of family members.[1] In fact, a similar argument forms the basis for Goode's (1963) prediction regarding the inviability of polygynous families in the long run. In contrast, following Boserup (1970) and Goody (1976), much of the research on the family in West Africa (Oppong, 1982; Bledsoe, 1988; Joekes, 1987) suggests that polygyny is made possible by the fact that African men bear a relatively low burden of family support. Indeed, some authors have argued that the presence of multiple wives in polygynous households represents a form of wealth (Chojnacka, 1980). If women and children provide much of the food and other subsistence items for themselves, then there is little reason to assume that at any given level of paternal income, children in polygynous families will have access to fewer resources than children in monogamous families. This is particularly true with respect to nutrition, since provision of

food is traditionally considered the responsibility of women, while men may provide for other child-related expenditures, especially educational costs.

Household boundaries

Although the family is the basic unit of analysis in the new household economics, there is little consensus on, or even discussion of, its boundaries. Most studies typically consider all individuals living together in the same housing unit as comprising a family. In fact, the word *household* is frequently used interchangeably with *family.* In extending this approach to developing countries, however, the focus on either the household or the conjugal pair may be highly misleading in some instances.[2]

For example, one of the basic tenets of the theory of fertility decision-making within the new household economics is that the couple make their fertility choices based on the perceived costs and benefits of children. This approach assumes that much of the cost of childrearing is borne by the parents themselves. Although society at large may bear certain costs by making some of the childrearing inputs such as education more or less expensive, this simply raises or lowers the per-child cost to the parents.

Moreover, extending this model to West Africa is complicated by the institution of child fosterage (Isiugo-Abanihe, 1985; Caldwell and Caldwell, 1987). The DHS data show that, on average, children spend 18 percent of their childhood years living away from their mothers in Ghana, 16 percent in Senegal, and 12 percent in Mali (Lloyd and Desai, forthcoming). Parents frequently foster out one or more child, mostly to relatives though sometimes also to non-kin. In these cases, parents may continue to assume some of the childrearing costs, particularly educational expenses, but much of the cost is borne by the foster parents (Goody, 1982; Bledsoe and Isiugo-Abanihe, 1989). Table 1 shows that, in the three West African countries examined here, women who have more children tend to have a greater proportion of nonresident children than those with fewer children.[3] Additionally, studies suggest that parents tend to use fostering as a strategy for spreading the costs of childrearing over their life cycle. Using household data from Ghana, Blanc and Lloyd (1990) found that the women most likely to live with a foster child are those who have the least heavy responsibility for their own children, that is, very young and relatively older women. Thus, while the institution of child fosterage has a variety of functions, including enhanced socialization of children within an extended kinship structure, one of its consequences is to spread the costs (and possibly benefits) of children across a wider group of people than simply the couple making the fertility decisions.

Additionally, this mechanism works not simply by reducing the costs of all children, but by transferring the burden (or benefit as the case may be) of *some* children from natural to foster parents. Hence, although micro-

TABLE 1 Proportion of nonresident children by mother's number of living children in three West African countries

Mother's number of living children	Proportion nonresident (percent)		
	Ghana	Mali	Senegal
	13	12	13
2	17	15	16
3	18	18	15
4	21	18	19
5	28	17	22
6	31	22	24
7+	35	25	26
Sample size (all women with at least one living child)	3,382	2,581	3,196

SOURCE: DHS surveys, 1986-88.

economic theory (and other theories such as the resource dilution perspective of Blake, 1989) suggests a negative relationship between the number of children and the resources available per child, the institution of child fosterage may weaken this relationship. If by fostering out some children parents may reduce their childrearing costs, and if the parents facing resource constraints are the ones more likely to rely on fostering, cross-sectional relationships between family size (either the total number of children or the total number of coresident children) and resources available to each child may be quite weak.[4] Although a number of scholars, particularly Caldwell and Caldwell (1987), have argued that fosterage leads to high fertility in Africa by reducing the cost of children to parents, there is relatively little empirical evidence to support the hypothesized weak relationship between family size and resources available to children in Africa (for some exceptions see Gomes, 1984; Chernichovsky, 1985; Mueller, 1984). One of the goals of this article is to examine the impact of family size on child nutrition in Ghana, Mali, and Senegal.

Measuring children's nutritional status

In contrast with its predecessor, the World Fertility Survey Program, the Demographic and Health Survey Program collected child anthropometric data, which at present are the only source of such information pertaining to large representative samples of young children in a wide range of developing countries. Use of such data, reflecting children's nutritional status, provides a unique opportunity to study the level of resources actually available to children.

Results presented below are based on data from OHS surveys conducted around 1986-88. In particular, I use anthropometric data for three Latin American and three West African countries available in standard recode form in spring 1991. The OHS collected information on fertility histories of women aged 15-49, their and their partner's education, marital status, and some indicators of the family's current economic status. Additionally, anthropometric data were collected for children under age three who lived with their natural mother.[5] Using information on children's height, weight, and age, it is possible to calculate whether any given child is malnourished according to the standard set by the World Health Organization and the National Center for Health Statistics (WHO, 1983).

Anthropometric research suggests that while such factors as genetic potential, environmental circumstances, and individual variation affect growth, socioeconomic factors related to availability of food and health care seem to predict a large proportion of variation in body size (for a review of this literature see Martorell and Habicht, 1986; Pelletier, 1991). On average, children who receive adequate nutrition and do not suffer from chronic diseases are likely to be taller and heavier than their less fortunate peers. Although anthropometric measures are frequently used as an index of child nutrition, in addition to food availability children's growth patterns are also affected by their exposure to disease. The effect of temporary illnesses such as diarrhea is greatest for weight-for-height measures, while that of long-term untreated infection is greatest for height-for-age measures. Thus, increased access to resources may affect children's growth through improved nutrition as well as through access to health care, and age- and sex-specific body size measurements can be used as an indicator of food and health care available to children.

The OHS data contain two measures of child nutrition for children under age three that have been widely used in the literature: *stunting,* based on height-for-age as a measure of long-term chronic malnutrition, and *wasting,* based on weight-for-height as a measure of acute recent malnutrition. This article focuses on stunting because this measure is less affected by temporary illness such as diarrhea or by introduction of new weaning foods.

The dependent variable I use in the analysis below is child's height expressed as the standard deviation from the mean for children of the same sex and age in a North American reference population. In the reference population, the mean of this standardized score was O and the standard deviation was 100.

Before proceeding it is necessary to point out some limitations of the OHS data. Using the Demographic and Health Surveys to explore social science theories is usually difficult because although they contain a great deal of information on fertility histories and child health and immunization, they contain only limited information on the socioeconomic circumstances

of families. For the present study, lack of information on income of various family members is particularly problematic.

In evaluating the results presented in this article, it is important to remember that socioeconomic variables included as control variables in the multivariate analyses do not include a good measure of income, and hence, cannot provide definitive tests of the hypotheses considered here. I have exercised considerable caution, however, in interpreting the results, and have explored alternative explanations within the constraints of the available data. Thus, these data provide benchmark comparisons for children's nutritional status between various family types in the countries studied.

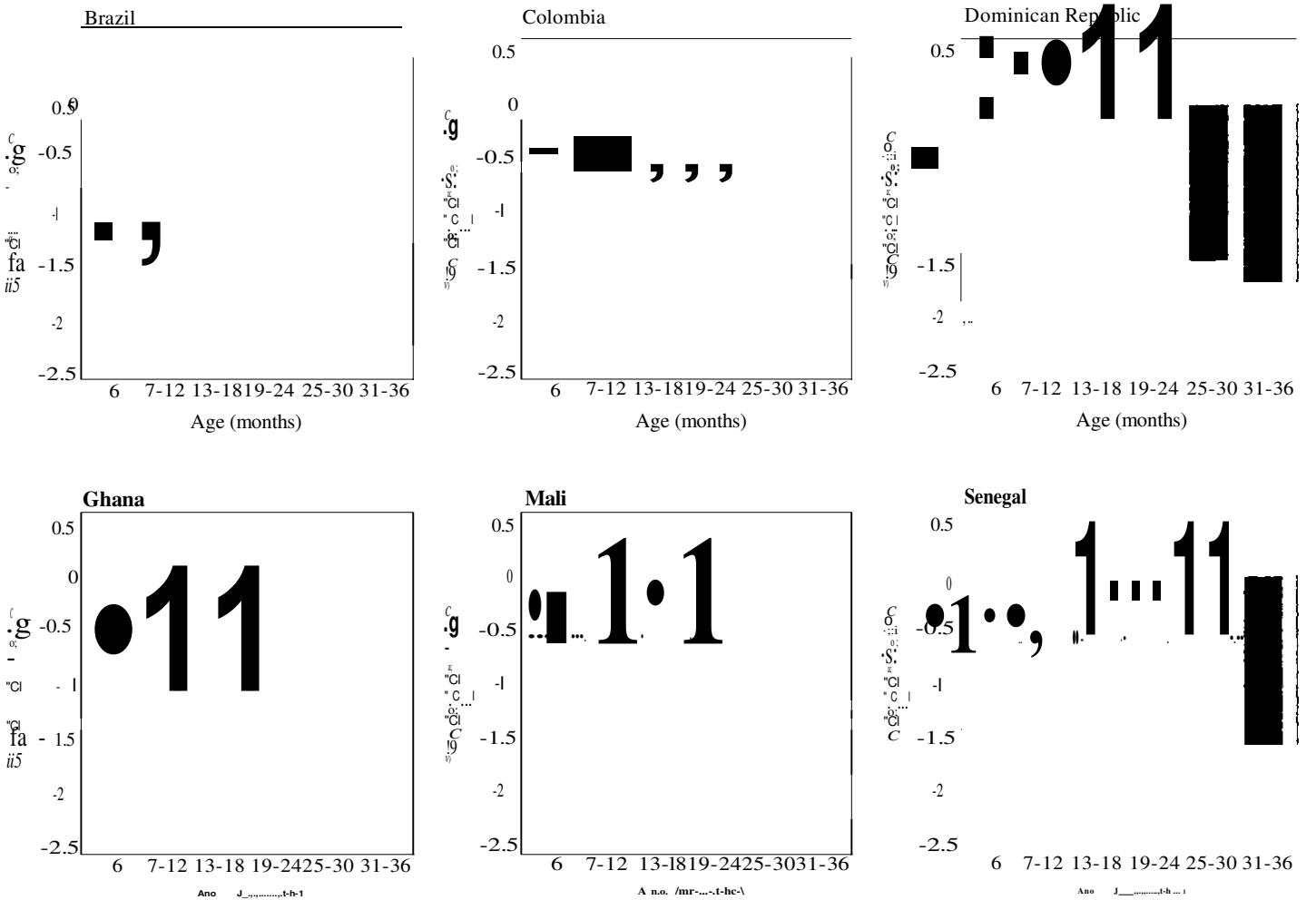
Some further limitations arise from the way children were selected for anthropometric measurement. Only children of mothers aged 15-49 are included in the sample. Given extremely low fertility rates for women outside this age range, this leaves the sample of children aged three and under reasonably representative (for a discussion of sample selectivity in data on children using the OHS, see Lloyd and Desai, forthcoming). Also omitted are children who do not live with their mothers. It is likely that fostered children are disadvantaged compared with those who live with their mothers (Bledsoe and Brandon, 1989).

Sometimes it is difficult to obtain anthropometric measures of young children accurately since they tend to be highly active. This bias is likely to be greatest for children under 12 months of age and may result in the child's reported length being different, and usually greater than its actual length. To examine the consequences of this possibly systematic bias for the results presented here, I conducted all analyses twice, first with the full sample, then excluding children under 12 months. With one exception, the restricted sample provided similar results for all the important explanatory variables discussed here.[6]

The sample for each country consists of children aged 6 to 36 months for whom height data were collected and whose birthdate was reported in month and year by the mother (thereby excluding children with imputed dates). In some countries, particularly Mali, a large number of children are excluded from the analysis due to a missing report on month and year of birth. In order to check the selectivity of this sample, I computed another measure of malnutrition, severe wasting based on height-for-weight. The sample with complete birthdate reporting and the sample with missing birthdate data were more or less comparable on this measure of malnutrition. This suggests that selectivity due to missing age reporting reduces the overall sample size but does not severely bias the nutritional status data.

Figure 1 shows the difference between the mean height for children in the six study countries and the North American reference population for different age groups. This figure suggests that while the difference between mean height-for-age in the study populations and the reference population

FIGURE 1 Nutritional status of children aged 6-36 months, as indicated by comparing their height-for-age to that of a North American reference population



is relatively small for children under one year of age, it increases with age, reaching its peak between ages two and three. Since nutritional deficiency accumulates with age, this finding is consistent with the argument that height is related to food and health care availability and that height-for-age provides a good indication of child malnutrition.[7]

Empirical results

I now examine children's nutritional status with respect to some of the issues regarding resource allocation discussed at the outset. The variables included in the multivariate analyses that follow are described in the Appendix and their means are summarized in Table A-1. In addition to a variety of family socioeconomic characteristics and maternal marital status groups, the variables include an index of household wealth based on the characteristics of the home and the possession of consumer durables.[8]

Results from a multivariate regression analysis estimated with ordinary least squares are presented in Table 2. In general, the variables explain between 8 and 20 percent of the variance in children's standardized scores on height-for-age. Since a large proportion of variance in height-for-age is associated with heredity and random chance, with the exception of Senegal the variables seem to explain the residual variation moderately well.

In addition to the variables of theoretical interest, these data provide an interesting description of the variables associated with children's nutritional status and are briefly discussed below. As was shown in Figure 1, children in all six countries tend to fall behind international height standards as they get older. Children's height appears to be associated with variables that can be viewed as indexing two sets of factors: indicators of family wealth and indicators of parental access to health care and nutritional information. In all six countries, children of teenage mothers are more likely to be malnourished than children whose mothers are older. This relationship is statistically significant in Colombia, the Dominican Republic, and Ghana. In addition to the physiological effects of early pregnancy, this negative relationship may also be caused by teenage mothers' lack of access to such resources as prenatal care and good nutrition for themselves and their children. Education of mothers and fathers has a generally positive relationship to children's height in the countries studied, although some of these coefficients are statistically significant while others are not. Of the two variables measuring education, literacy and attendance at secondary school, the relationship between literacy and children's height appears to be stronger for maternal education, while for paternal education the effect of secondary school enrollment is more important.

Father's occupation and urban residence rarely have statistically significant effects on children's height, but the index of possessions has a con-

TABLE 2 Regression coefficients showing the effect of selected covariates on children's height-for-age as compared to that of a North American reference population: Selected Latin American and West African countries

Variable	Brazil	Colombia	Dominican Republic	Ghana	Mali	Senegal
Child's age	- 9.8**	- 7.3**	-12.4**	-14.2**	- 9.3**	- 11.2**
Child's age squared	.2**	.1*	.2**	.2**	.2**	.2**
Mother is a teenager	-19.5	- 34.7**	-34.0**	-26.9*	-17.1	- 8.5
Mother is older	-33.2	-36.3*	-28.2	- 3.6	-32.7	11.5
Urban residence	- 2.5	-10.0	8.2	2.2	23.1	5.7
Mother is literate	37.8**	15.8*	19.2**	9.5	2.0	13.9
Father is literate	7.0	13.3	17.2*	- 4.7	- 5.1	3.4
Mother attended secondary school	-13.3	12.6	15.3	19.6	-19.0	39.8
Father attended secondary school	57.7**	9.9	21.4*	4.7	49.3**	- 3.1
Father is a professional	-19.1	13.1	3.0	19.3*	-10.1	7.4
Father is a farmer	-	6.3	-	-24.3**	7.3	-14.5
Index of possessions	14.4**	9.5**	13.2**	5.3*	7.7*	3.3
Number of siblings aged 0-5	-23.3**	-28.0**	-15.0**	-12.7**	8.9	5.3
Number of siblings aged 6-12	- 9.6*	- 4.1	2.5	- .4	3.7	6.8
Number of siblings aged 13 +	11.9*	6.2	2.6	7.4	8.8	- 3.8
Mother is in a consensual union	-22.5*	-15.3*	-15.4*			
Mother is not in a union	- 1.1	-18.2	4.3	-19.5	26.5	8.5
Mother is in a polygamous union	-	-	-	- .7	-12.0	- 3.5
Constant	-24.4	-29.4	6.4	43.0	-64.4	- 6.3
R squared	.193	.173	.135	.159	.078	.100

' For definition of variables see Appendix.
*p ,; 0.05 in one-tailed test.
**p :5 0.01 in one-tailed test.
SOURCE: Based on DHS surveys, 1986-88. Data for the North American reference population are from WHO (1983).

sistently positive effect that is statistically significant in five out of six countries studied. Note that this index is based on ownership of such items as a radio, some means of transportation, and a septic toilet. Hence, in addition to reflecting family income, it is also likely to be associated with better health.

The following section examines the impact of independent variables of interest-maternal marital status and number of siblings-on children's height. For each of the two groups of countries, descriptive statistics are presented first, followed by discussion of results from multivariate analyses and examination of alternative explanations for the observed relationship or lack of thereof.

Altruism within the family

Latin America Table 3 shows the proportion of children who suffer from moderate to severe stunting (being two or more standard deviations below the mean height-for-age in the North American reference population) by marital status of their mothers. These bivariate results for Latin America show that the children whose mothers are in consensual unions are most likely to be stunted and, with the exception of Brazil, children living with legally married mothers are the least likely to be malnourished. These differences between formal and consensual marriages are substantial in all three countries but are particularly striking in the Dominican Republic, where having a mother in consensual union doubles the probability of being stunted. Additionally, consistent with the literature on poverty in female-headed households (Buvinic, Lycette, and McGreevey, 1983), malnutrition in Colombia and the Dominican Republic appears to be greater among children in mother-only families than among children whose mothers are formally married. In Brazil, children whose mothers are not in a union do not appear to be particularly disadvantaged, a result inconsistent with other literature suggesting high incidence of poverty in female-headed households in Brazil (Barros, 1990). However, since the sample in this category is very small, only 53 children, the results should be treated with caution.

Some of these differences in nutritional status may be attributable to a family's socioeconomic circumstances and to differences in fertility among mothers in the three marital statuses. In particular, women who are currently not in a union tend to have fewer young children; hence despite low overall family income, each child may be relatively better fed. Table 2 controls for these other factors in examining the effect of marital status on children's nutritional status.

Results from the table suggest that while controlling for family size, parental education, household possessions, and child's age does mitigate the differences in child nutritional status by mother's marital status, these dif-

TABLE 3 Percent distribution of children by mother's marital status and measures of children's height-for-age characteristics within each marital status category: Selected Latin American and West African countries

Country and mother's marital status	Percent of children in this category	Percent of children stunted•	Mean standardized scoreh
Latin America			
Brazil			
Formal marriage	71	29	-134
Consensual marriage	20	49	-166
Not in a union	9	23	-113
Colombia			
Formal marriage	49	22	-112
Consensual marriage	39	31	-146
Not in a union	12	31	-141
Dominican Republic			
Formal marriage	24	14	- 60
Consensual marriage	61	28	- 118
Not in a union	15	17	- 93
West Africa			
Ghana			
Monogamous marriage	62	30	-142
Polygamous marriage	28	34	-147
Not in a union	10	41	-157
M li			
Monogamous marriage	61	26	-114
Polygamous marriage	36	27	-147
Not in a union	3	21	- 157
Senegal			
Monogamous marriage	51	23	-114
Polygamous marriage	43	24	-123
Not in a union	6	19	- 97

'"Stunted" is defined as being 2 or more standard deviations below the mean height-for-age measure (by sex) in the North American reference population.
"The standardized height-for-age scale has a mean of O and a standard deviation of 100 in the North American reference population.
SOURCE: DHS surveys, 1986-88.

ferences remain large and statistically significant. Consistent with the hypothesis oflower investment in children by one or both parents in consensual unions, in all three countries children of mothers in such unions are significantly more likely to be malnourished than children of mothers in legal unions. In contrast, the bivariate relationship between a mother not being

in a union and children's nutritional status does not remain statistically significant once we take into account factors explaining overall family income, as reflected in father's or stepfather's education and occupation and index of possessions.

Consensual marriages are more prevalent in lower than in higher socioeconomic groups. Hence some of the observed differences between child nutrition in families with consensual versus formal marriages may be due to low income in the former and may have little to do with parental altruism or intra-household resource allocation. Although, as noted above, I control for some of the socioeconomic factors related to family income, it is unlikely that these variables fully capture the socioeconomic differentials.

I examine the possible magnitude of this bias by comparing the nutritional status of children in consensual and formal marriages for families with a variety of socioeconomic characteristics (see Table 4). The results show that with the exception of very-low-income families (concentrated mostly in rural areas), *within* every category of parental characteristics, children of mothers in consensual unions are more likely to be malnourished than children of mothers in formal marriages, although some of the differences are not statistically significant.

Additionally, the difference in children's nutritional status between these two groups of mothers seems to be related to the area of residence (results not presented here). Consensual unions are more prevalent in rural areas, particularly in Colombia and the Dominican Republic. In closely knit rural communities, there may be greater social pressure forcing fathers to acknowledge their obligation to children regardless of the nature of their relationship to the mother. In contrast, relatively low levels of social pressure as well as higher rates of union dissolutions in the cities may lead to a lower proportion of men fulfilling their parental obligations.

It should be repeated that the nature of consensual unions may vary from couple to couple. Some may be stable and committed unions, others transitory and closer to visiting unions. In fact, it is likely that some of the women who classify themselves as living in consensual unions are in fact describing visiting relationships in which their partners provide little financial support for them and for their children.

West Africa Although traditional economic models of households do not lead us to expect differences in nutritional status between children based on type of union, they predict that, holding father's income constant, children in polygynous unions will have fewer resources available to them than children in monogamous unions. However, data on children's nutritional status in West Africa presented in Tables 2 and 3 show little relationship between the nature of the mother's marital status and children's height-for-age.[9] Although a large proportion of children are malnourished, having a

TABLE 4 Mean standardized score of children's height-for-agea by mother's marital status in three Latin American countries, by selected socioeconomic variables

Variableh	Brazil		Colombia		Dominican Republic	
	Formal	Consensual	Formal	Consensual	Formal	Consensual
Mother is not literate	-172	-191	-175	-165	-136	-140
Mother is literate	- 82	-108	- 93	-137	- 46	- 98
Father is not literate	-163	-181	-168	-162	-129	-149
Father is literate	- 88	-139	- 94	-139	- 48	-101
Mother did not attend secondary school	-146	-171	-137	-155	-106	-124
Mother attended secondary school	- 50	- 69	- 76	-117	- 26	- 75
Father did not attend secondary school	-146	-170	-137	-156	- 98	-127
Father attended secondary school	- 20	- 28	- 75	-119	- 24	- 74
Father's occupation						
Professional	-124	-174	- 65	-132	- 39	- 81
Farmer	-	-	-137	-155		
Other	-137	-164	-127	-147	- 75	-125
Urban residence						
No	-166	-176	-149	-152	-111	-133
Yes	- 96	-157	- 89	-141	- 34	- 99
Consumption category						
Low	-174	-179	-206	-160	-183	-158
Medium	-129	-175	-149	-160	- 88	-130
High	- 52	- 59	- 93	-136	- 46	- 91
All socioeconomic groups combined	-134	-166	-112	-146	- 60	-118

• The standardized height-for-age scale has a mean of 0 and a standard deviation of JOO in the North American reference population.
b For variable definitions see Appendix.
SOURCE: DHS surveys, 1986.

polygamously married mother has only a small effect on the likelihood of being malnourished, and this effect is not statistically significant in multivariate analysis. This finding is consistent with the literature on family systems in Africa, which suggests that women and children provide much of their own food with a relatively low contribution by the father (Boserup, 1970; Oppong, 1983; Stoudt, 1987; Joekes, 1987). Hence, a decrease in the father's contribution in polygamous marriages does not have a large negative influence on children's nutritional status in West Africa. Since educational expenses are frequently borne by the father, it is possible that if we focus on children's education we may observe a greater negative impact on children from polygamous marriages.

Again, as in Latin America, marital status may serve as a proxy for socioeconomic status, with higher-income males more likely to be in a polygamous union than their lower-income counterparts. Although empirical data on this issue in Africa are not readily available, a study of five communities in Nigeria (Chojnacka, 1980) suggests that while polygamous households are richer than monogamous households, per capita income in polygamous households is lower. An examination of the socioeconomic characteristics of husbands in polygamous marriages in our three African countries (see Table 5) indicates that husbands of the women in polygamous unions do not belong to substantially higher socioeconomic strata than the husbands of women in monogamous unions. On the contrary, polygamous husbands seem to be worse off by the evidence of some indicators, such as education.[10]

Comparing the influence of maternal marital status on children's nutritional status in Latin America and West Africa provides an interesting contrast. In Latin America, where parents, particularly fathers, contribute substantially toward children's sustenance, marginal commitment of parents to the union has a negative impact on children's nutritional status. In West Africa, by contrast, where providing for children's food is largely the mother's responsibility, marginal commitment by the father to the union has a relatively low impact.

Flexible household boundaries

The second aspect of neoclassical economic models I examine here pertains to the flexible boundaries of households in many developing countries, particularly in Africa. As hypothesized earlier, in societies with substantial child fosterage the relationship between family size and resources available to children is likely to be weak.[11] Comparison of the proportion of children severely malnourished by different sibsizes in Latin America and West Africa presents an interesting contrast. As Table 6 indicates, children living with a large number of siblings in Latin America are substantially more likely to be

TABLE 5 Percent of children whose mothers are in a polygamous union in three West African countries, by selected socioeconomic variables

Variable	Ghana	Mali	Senegal
Mother is not literate	38	41	49
Mother is literate	24	31	24
Father is not literate	43	43	50
Father is literate	26	35	37
Mother did not attend secondary school	33	40	47
Mother attended secondary school	15	21	29
Father did not attend secondary school	34	41	48
Father attended secondary school	23	15	19
Father's occupation			
Professional	27	34	38
Farmer	39	45	51
Other	29	34	45
Urban residence			
No	34	46	49
Yes	28	32	40
Consumption category			
Low	42	39	41
Medium	33	45	46
High	24	34	48
All	32	40	46

' For definition of variables see Appendix.
SOURCE: DHS surveys, 1986-88.

malnourished than children living with a small number of siblings. The relationship between sibsize and malnutrition is much weaker in West Africa, however, and is not consistent across the three countries.

Results from the multivariate analyses presented in Table 2, which control for other related factors such as maternal age and socioeconomic status and focus on siblings of particular ages, show a picture similar to the one just presented. Although being born into a big family has a large and statistically significant negative impact on children's nutritional status in Brazil and Colombia and to a smaller extent in the Dominican Republic, the relationship between family size and child nutrition in West Africa is not so consistent. Competition by coresident siblings under age five tends to have

TABLE 6 Percent distribution of children by number of coresident siblings and measures of children's height-for-age characteristics within each sibling-size category: Selected Latin American and West African countries

	Percent of children in this category	Percent of children stunted[a]	Mean standardized score[b]
Latin America			
Brazil			
0-2 siblings	61	21	-111
3-4 siblings	20	39	-175
5+ siblings	19	46	-186
Colombia			
0-2 siblings	74	22	-116
3-4 siblings	17	37	-151
5+ siblings	9	44	-181
Dominican Republic			
0-2 siblings	71	20	- 91
3-4 siblings	19	29	-144
5+ siblings	10	32	-138
West Africa			
Ghana			
0-2 siblings	69	31	-143
3-4 siblings	23	38	-153
5+ siblings	8	30	-134
Mali			
0-2 siblings	66	27	-123
3-4 siblings	23	24	-114
5+ siblings	11	25	-111
Senegal			
0-2 siblings	66	24	-122
3-4 siblings	23	22	-108
5+ siblings	11	21	-109

[a] "Stunted" is defined as being 2 or more standard deviations below the mean height-for-age measure (by sex) in the North American reference population.
[b] The standardized height-for-age scale has a mean of O and a standard deviation of 100 in the North American reference population.
SOURCE: DHS surveys, 1986-88.

a small negative impact on the nutritional status of children aged 6 to 36 months in Ghana, while presence of other siblings has a positive though statistically insignificant effect on child nutrition in Mali and Senegal.[12] This supports the inference that selective fostering of children tends to spread the cost of childrearing across families and over the parental life cycle, thereby

weakening the inverse relationship between family size and resources available to each child.[13]

Comparison of the impact of family size on children's nutritional status and height in Latin America and West Africa is complicated by differential birth spacing patterns. Births in West Africa are spaced farther apart than in Latin America. Short birth intervals may be associated with low birthweight and consequently with stunted growth. To control for this confounding effect, I added variables indicating the length of the previous birth interval to the multivariate regression. As the results presented in Table 7 indicate, short previous birth interval is likely to be associated with reduced height of children in all six countries. In addition, there is an independent impact of the presence of other siblings on children's height in Latin America but not in West Africa. Although previous birth interval is correlated with the number of siblings aged 0-5, the relationship is not perfect since the number of coresident siblings is affected by child survival and residence patterns. This analysis used previous birth interval as a continuous variable. It is possible that the negative impact of short previous birth interval may be limited to births spaced less than 18 months apart. Such very short spacing is much more prevalent in Latin America than in Africa. In Latin America approximately 18 percent of the children in our sample were born within 18 months following a previous birth, compared with only about 7 percent of the children in our West African sample. In an analysis not presented here, I apportioned previous birth interval into three categories: less than 18 months, 19-36 months, and 36 + months. Consistent with results presented in Table 7, controlling for different lengths of prior birth interval did not reduce the disparity in family-size effects observed when comparing the three Latin American countries with the three West African countries.

Results in Table 7 suggest that birth spacing and family size affect children's nutritional status and height in a variety of ways. Although short birth intervals have a negative effect on children's height in the six countries studied here, resource competition due to the presence of other young siblings seems to be relevant only for Latin America. This is consistent with scholarly opinion which suggests that access to extended social networks of the sort found in Africa reduces the cost of large families to parents.

Although the results presented in this article focus on the variables reflecting resources available to children within each country, the effects of these variables also differ across socioeconomic groups. For example, polygamy may have very different implications for women in matrilineal groups in Ghana than for women in patrilineal groups, and informal unions among the mestizo population in Brazil may have a different connotation than among the black population. A focus on subnational populations may be very useful in comparing the nature of household resource availability and resource allocation decisions in different cultural and economic contexts.

TABLE 7 Regression coefficients showing the effect of family size and birth spacing on children's height-for-age as compared to that of a North American reference population: Selected Latin American and West African countries

Variablea	Brazil	Colombia	Dominican Republic	Ghana	Mali	Senegal
No previous birth	37.13*	28.96*	15.12	17.21	22.93	45.92*
Previous birth interval	.46	.35*	.21	.39*	.64*	.36
Number of siblings aged 0-5	-15.87*	-19.42**	- 11.32*	- 8.22	14.91*	13.23
Number of siblings aged 6-12	- 8.42*	- 2.67	2.71	- 0.62	3.00	9.18
Number of siblings aged 13+	11.46	6.22	2.56	6.39	8.34	- 4.36

• For definition of variables see Appendix. This equation also controls for all of the background variables included in Table A-1.
• $p \leq 0.05$ in one-tailed test.
•• $p \leq 0.01$ in one-tailed test.
SOURCE: DHS surveys, 1986-88.

Ethnic and regional differences in intra-household resource allocation and access to productive resources, using ethnographic data in West Africa, are being examined in work in progress.

Conclusion

This article examined differences in child nutrition within different family structures in northeast Brazil, Colombia, the Dominican Republic, Ghana, Mali, and Senegal. I argued that although economic models of the household provide a useful framework for incorporating individual decisions within a single rubric, before applying these models to the family systems in different sociocultural contexts it is necessary to examine the applicability of the assumptions contained in these models. In particular, these models fall short of reality in predicting food and health care availability to children because they assume that income or opportunity given to one family member translates into improvement in the welfare of all members, including children. Although parents care about the welfare of their children, their level of altruism varies across different types of families and seems to depend on culturally acceptable practices. Additionally, household composition and relationships among household members affect child nutrition in a variety of ways. Extended kin and non-kin support systems pose different challenges in defining the boundaries of the household, since children may benefit from the support of individuals outside their household and parents may be obligated to support children from other households.

In addition to questioning the general validity of neoclassical economic models of the family, these results call for developing alternative models of the family. The most persistent challenge to neoclassical models of the family has been posed by the bargaining models in the tradition pioneere by Nash (1953). The bargaining approach visualizes family members as being involved in a tug of war for the best possible deal from each other under a threat of leaving the relationship. The main contribution of this approach is that it allows individual preferences of each family member to differ; however, it tells us very little about *why* these preferences differ. Answers to this question may reveal a great deal about individual motivation and social practices and may have important policy implications. For example, the differences in resources available to children in legal and consensual unions in Latin America suggest that individual preferences for investment in children are related to the nature of individuals' commitment to marriage. If this finding is substantiated in a variety of contexts and situations, it would add greater weight to the advocacy for legal mechanisms ensuring children's access to the resources of their parents regardless of the nature of the relationship between parents.

In some sense, too, bargaining models follow in the rational choice

tradition of the neoclassical models, simply shifting the focus of analysis downward from the family to the individual. With the exception of work by Sen (1990), one finds little consideration of institutional factors that may constrain rational choice by influencing the bargaining power of different family members. Observations from West Africa regarding the division of male and female responsibility for family food provision suggest that individuals' contributions to their families are a function not simply of within-household bargaining, but also of what it is socially appropriate to bargain about. It is important to specify the conditions that affect cooperation or conflict in the relationship between family members, particularly because these conditions vary across cultures and across socioeconomic contexts.

Appendix: Definition of the variables used

The variables included in the multivariate analyses performed in the text are described below; their means are given in Table A-1.

Nutritional status: Child's height-for-age is standardized with respect to children of the same age and sex in the North American reference population. This scale has a mean of 0 and a standard deviation of I00 in the reference population. Children with a standardized score below -200 are defined as suffering from moderate to severe stunting.

Child's age, and age squared: In months, based on the fertility history.

Mother is a teenager: I if mother's current age is less than 20 years, 0 otherwise.

Mother is older: **1** if mother's current age is greater than 39 years, 0 otherwise.

Urban residence: **1** if mother's current residence is urban, 0 otherwise.

Mother is literate: I if mother can read easily, 0 otherwise. Based on mother's self-report.

Father is literate: **1** if mother's current partner (child's father/stepfather) can read easily, 0 otherwise. Set to 0 for children whose mothers are not currently in a union. Based on mother's report.

Mother attended secondary school: 1 if mother ever enrolled in secondary school, 0 otherwise.

Father attended secondary school: I if mother's current partner ever attended secondary school, 0 otherwise. 0 for children whose mother is not in a union.

Father is a professional: 1 if mother's current husband/partner is engaged in a professional occupation (including sales and clerical), 0 otherwise. 0 if mother is not in a union.

Father is a farmer: I if mother's current partner is a self-employed farmer, 0 otherwise. 0 if mother is not in a union.

TABLE A-1 Means for variables used in the analyses

Variable•	Brazil	Colombia	Dominican Republic	Ghana	Mali	Senegal
Child's height-for-age	-138.6	-128.5	-100.5	-145.0	-119.0	-117.0
Child's age	20.5	20.5	20.5	19.9	18.4	19.0
Child's age squared	502.4	496.8	496.7	476.6	419.6	435.2
Mother is a teenager	.06	.07	.11	.06	.11	.10
Mother is older	.05	.04	.04	.08	.06	.06
Urban residence	.50	.61	.51	.29	.54	.37
Mother is literate	.41	.73	.61	.43	.17	.12
Father is literate	.35	.65	.59	.58	.44	.30
Mother attended secondary school	.12	.35	.25	.05	.02	.05
Father attended secondary school	.08	.31	.22	.15	.08	.08
Father is a professional	.21	.19	.19	.17	.32	.21
Father is a farmer	n.a.	.09	n.a.	.35	.45	.41
Index of possessions	2.02	4.01	3.39	2.70	2.83	3.11
Number of siblings aged 0-5	1.07	1.83	1.91	.70	.78	1.72
Number of siblings aged 6-12	1.04	.77	.73	.82	.95	.87
Number of siblings aged 13+	.34	.24	.24	.31	.28	.37
Mother is in a consensual union	.20	.39	.61			
Mother is not in a union	.08	.16	.15	.10	.02	.06
Mother is in a polygamous union	-	-	-	.29	.36	.43
No previous birth	.24	.30	.27	.21	.16	.19
Previous birth interval	30.6	38.9	34.0	38.4	36.3	36.0
Sample size	601	1,233	1,945	1,640	823	625

• See Appendix for definition.
SOURCE: Based on DHS data tapes, 1986-88.

Number of siblings aged {)-5: Siblings (born to the same mother) aged 5 years and under who currently reside with the index child.

Number of siblings aged 6-12: Coresident siblings aged 6-12 years.

Number of siblings aged 13+: Coresident siblings aged 13 and over.

Mother is in a consensual union: **1** if mother is currently living with a partner but is not formally married, 0 otherwise. Based on mother's self-report.

Mother is not in a union: **1** if mother is currently not married (never married, divorced, separated, widowed), 0 otherwise.

Mother is in a polygamous union: 1 if mother is currently married and her partner has more than one wife, 0 otherwise.

Index of possessions (sum of the following components):

(**1**) Owns a radio
(2) Lives in a house with a permanent roof (non-thatched)
(3) Some toilet facility in the house
(4) Septic toilet in the house
(5) Lives in a house with non-dirt floor
(6) Owns some form of vehicle (bike, motorcycle, car)

Consumption categories:

Low-Value for the index of possessions is O or 1.
Medium-Value for the index of possessions is 2 or 3.
High-Value for the index of possessions is 4 or greater.

No previous birth: **1** if mother did not have a previous live birth, 0 otherwise.

Previous birth interval: Number of months between the birth of the index child and the previous live birth to the mother. 0 if no previous birth. Based on mother's fertility history.

Notes

This is a substantially revised and expanded version of a paper presented at the DHS World Conference, Washington, D.C., 5-7 August 1991. The research was supported by Grant No. INT/89/P67 from UNFPA for a study of family structure, female headship, and poverty in developing countries. The author thanks Brian Rafferty for data file preparation and Judith Bruce, Susan Greenhalgh, and Cynthia Lloyd for comments on an earlier draft.

1 While there. is some evidence that women **in** polygamous unions have lower fertility than women in monogamous unions (Pebley and Mbugua, 1989), this difference is relatively small and, as a result, men **in** polygamous unions are likely to have more children than men in monogamous unions (Chojnacka, 1980).

2 In many instances it is unclear whether or not certain household members-e.g., dependent relatives, servants, and foster children-are part of the family. In other instances, particularly in matrilineal societies such as the Ashanti of Ghana, men may live apart from their wives and may carry a greater responsibility for their sisters' children than for their own (Abu, 1983).

3 Note that family size and child fosterage have a reciprocal relationship. Parents with large families are more likely to foster children, and the ability to foster children may reduce the cost of children and thus increase fertility.

4 Although child fosterage may weaken the cross-sectional relationship between family size and resources available to each child, on the societal level it has little effect on the

negative relationship between total fertility and indicators of child welfare.

5 Children not living with their natural mother are excluded from the sample. This subgroup forms 2 to 5 percent of the sample in the six countries studied.

6 In the case of consensual unions in Brazil, the sample was so small that though the size of the coefficient for children 12-36 months was large and in the same direction as in the full sample, the estimate was not statistically significant.

7 Inter-country differences in age at onset of malnutrition may be related to differential weaning patterns. In particular, breastfeeding duration in West Africa is substantially longer than in Latin America, which may explain why children in Latin America fall behind the reference population at an earlier age.

8 Following a variety of economic studies, it is assumed here that an index of household wealth reflects its long-term income and purchasing power. Note that the measure of household wealth excludes possession of any electric appliances since their ownership depends on the availability of electricity in the place of residence. This index is similar to the OHS-based index used by Knodel and Wongsith (1991) for Thailand.

9 While these analyses concentrate on the total national sample of children aged 6 to 36 months, it seems likely that many of the relationships discussed in this article vary across different ethnic groups. Additionally, these relationships may be influenced by the organization of production, kinship ties, and patrilineal or matrilineal inheritance systems within each ethnic group. This issue is being examined in work in progress.

10 One of the reasons for absence of a large difference between polygamous and monogamous males may be that polygamy is a stage in the life cycle rather than a permanent state. Many polygamous males were monogamous in the past and may be monogamous again if a divorce or death occurs. Hence, polygamous and monogamous men are not very different according to their wealth. Further, while men require additional financial resources to pay the brideprice for multiple wives, land pressure in West Africa is not intense enough to restrict polygyny solely to wealthy men with large plots of land.

11 Note that this analysis is based on data collected as part of women's fertility history. Hence, family size refers only to the number of children born to the same mother. There is no information on other children born to the father.

12 I experimented with various definitions of family size. None of these variables-presence of total number of young children in the household (related or unrelated), total number of siblings, total number of resident siblings-has a statistically significant and consistent effect in all three West African countries studied. Additionally, while a greater number of siblings under age five increases malnutrition among young children in Ghana, this effect is highly sensitive to the definition of family size, age cutoffs for sibling variables, and age of the index child. In many of these instances the impact of family size on child nutrition is small and not statistically significant even in Ghana.

13 Interestingly, while little attention has been paid to child fosterage outside Africa, nearly 12 percent of children under age 15 in the Dominican Republic live away from their mother. Not coincidentally perhaps, the effect of family size on child nutrition in the Dominican Republic is smaller than in Brazil and Colombia.

References

Abu, Katherine. 1983. "The separateness of spouses: Conjugal resources in an Ashanti town," in Oppong, 1983.

Alderman, Harold. 1990. "Nutritional status in Ghana and its determinants: Social dimensions of adjustment in Sub-Saharan Africa," Social Dimensions of Structural Adjustment in Sub-Saharan Africa, Working Paper No. 3. Washington, D.C.: The World Bank.

Barros, Ricardo. 1990. "Female headed households in Brazil," paper presented at the Population Council Seminar on Fertility, Family Size, and Structure, June.

Becker, Gary S. 1981. *A Treatise on the Family.* Cambridge, Mass.: Harvard University Press.

---, Elizabeth M. Landes, and Robert T. Michael. 1977. "An economic analysis of marital instability," *Journal of Political Economy* 85: 1141-1187.

Behrman, Jere R., and Anil Deolalikar. 1987. "Will developing country nutrition improve with income? A case study for rural south India," *Journal of Political Economy* 95: 492-507.

Berk, Richard and Sarah Fenstermaker Berk. 1983. "Supply-side sociology of the family: Challenges of the new home economics," *Annual Review of Sociology* 9: 375-396.

Bernheim, B. Douglas, and Oded Stark. 1988. "Altruism within the family reconsidered: Do nice guys finish last?" *American Economic Review* 78: 1034-1045.

Blake, Judith. 1989. *Family Size and Achievement.* Berkeley: University of California Press.

Blanc, Ann K., and Cynthia B. Lloyd. 1990. "Women's childrearing strategies in relation to fertility and employment in Ghana," Population Council Research Division Working Paper No. 16.

Bledsoe, Caroline. 1988. "The politics of polygyny in Mende education and child fosterage transactions," in Barbara D. Miller (ed.), *Gender Hierarchies.* Chicago: University of Chicago Press.

———, and Anastasia Brandon. 1989. "Le placement des enfants et son influence sur la mortalite," in G. Pison, E. van de Walle, and M.D. Sala-Diakanda (eds.), *Mortalite et societe en Afrique au sud du Sahara,* Cahier de l'INED no. 124.

---, and Uche Isiugo-Abanihe. 1989. "Strategies of child-fosterage among Mende grannies in Sierra Leone," in Ron J. Lesthaeghe (ed.), *Reproduction and Social Organization in Sub-Saharan Africa.* Berkeley: University of California Press.

Blumberg, Rae Lesser (ed.). 1991. *Gender, Family and Economy: The Triple Overlap.* Newbury Park, Calif.: Sage Publications.

Boserup, Ester. 1970. *Woman's Role in Economic Development.* London: George Allen and Unwin.

Bumpass, Larry L. 1990. "What's happening to the family? Interactions between demographic and institutional change," *Demography* 27: 483-498.

Buvinic, M., M.A. Lycette, and W.P. McGreevey. 1983. *Women and Poverty in the Third World.* Baltimore: The Johns Hopkins University Press.

Cain, Mead, Syeda Rokeya Khanam, and Shamsun Nahar. 1979. "Class, patriarchy, and women's work in Bangladesh," *Population and Development Review* 5: 405-438.

Caldwell, John C., and Pat Caldwell. 1987. "The cultural context of high fertility in sub-Saharan Africa," *Population and Development Review* 13: 409-437.

Carvajal, M. and P. Burgess. 1978. "Socio-economic determinants of fetal and child deaths in Latin America: A comparative study of Bogota, Caracas and Rio de Janerio," *Social Science and Medicine* 12: 89-98.

Chernichovsky, Dov. 1985. "Socioeconomic and demographic aspects of school enrollment and attendance in rural Botswana," *Economic Development and Cultural Change* 33: 319-332.

Chojnacka, Helena. 1980. "Polygyny and the rate of population growth," *Population Studies* 34: 91-107.

De Vos, Susan. 1987. "Latin American households in comparative perspective," *Population Studies* 41: 501-517.

Dey, Jennie. 1980. "Women and rice in the Gambia," unpublished Ph.D. dissertation, University of Reading.

Fapohunda, Eleanor R. 1988. "The nonpooling household: A challenge to theory," in Judith Bruce and Daisy Dwyer (eds.), *A Home Divided: Women and Income in the Third World.* Stanford: Stanford University Press.

Folbre, Nancy. 1984. "Household production in the Philippines: A non-neoclassical approach," *Economic Development and Cultural Change* 32: 301-330.

---. 1988. "The black four of hearts: Toward a new paradigm of household economics,"

in Judith Bruce and Daisy Dwyer (eds.), *A Home Divided: Women and Income in the Third World.* Stanford: Stanford University Press.

Goldman, Noreen. 1981. "Dissolution of first unions in Colombia, Panama and Peru," *Demography* 18: 659-680.

---, and Anne R. Pebley. 1981. "Legalization of consensual unions in Latin America," *Social Biology* 28: 49-61.

Gomes, Melba. 1984. "Family size and educational attainment in Kenya," *Population and Development Review* 10: 647-660.

Goode, William. 1963. *World Revolution and Family Patterns.* Glencoe, Ill.: The Free Press.

Goody, Esther. 1982. *Parenthood and Social Reproduction: Fostering and Occupational Roles in West Africa.* Cambridge: Cambridge University Press.

Goody, Jack. 1976. *Production and Reproduction.* Cambridge: Cambridge University Press.

---. 1990. "Futures of the family in rural Africa," *Population and Development Review* 15 (Supplement): 119-144.

Isiugo-Abanihe, Uche C. 1985. "Child fosterage in West Africa," *Population and Development Review* 11: 53-73.

Jelin, Elizabeth (ed.) 1991. *Family, Households and Gender Relations in Latin America.* Paris: Kegan Paul International for UNESCO.

Joekes, Susan P. 1987. *Women in the World Economy: An INSTRAW Study.* New York: Oxford University Press.

Knodel, John and Malinee Wongsith. 1991. "Family size and children's education in Thailand: Evidence from a national sample," *Demography* 28: 119-132.

Lloyd, Cynthia B. and Sonalde Desai. Forthcoming. "Children's living arrangements in comparative perspective," *Population Research and Policy Review.*

Manser, Marilyn and Murray Brown. 1980. "Marriage and household decision-making: A bargaining analysis," *International Economic Review* 21: 31-44.

Martorell, R. and J.P. Habicht. 1986. "Growth in early childhood in developing countries," in F. Falkner and J. Tanner (eds.), *Human Growth: A Comprehensive Treatise,* Vol 3. New York: Plenum Press.

McNicoll, Geoffrey. 1989. "Family and welfare policies in sub-Saharan Africa: Drawing on international experience," paper presented at an IUSSP seminar, Kinshasa, Zaire.

Mencher, Joan. 1988. "Women's work and poverty: Women's contribution to household maintenance in South India," in Judith Bruce and Daisy Dwyer (eds.), *A Home Divided: Women and Income in the Third World.* Stanford: Stanford University Press.

Mueller, Eva. 1984. "The value and allocation of time in rural Botswana," *Journal of Development Economics* 15: 329-360.

Nash, J.F. 1953. "Two person cooperative games," *Econometrica* 21: 155-162.

Oppong, Christine. 1982. "Family structure and women's reproductive and productive roles: Some conceptual and methodological issues," in Richard Anker et al. (eds.), *Women's Roles and Population Trends in the Third World.* London: Croom Helm.

--- (ed.). 1983. *Female and Male in West Africa.* London: George Allen and Unwin.

Pebley, Anne and Wariara Mbugua. 1989. "Polygyny and fertility in Sub-Saharan Africa," in Ron J. Lesthaeghe (ed.), *Reproduction and Social Organization in Sub-Saharan Africa.* Berkeley: University of California Press.

Pelletier, David L. 1991. "Issues in the collection, analysis and interpretation of anthropometric sample survey data," paper presented at the DHS World Conference, Washington, D.C., 5-7 August.

Potter, J. E. and N. Ojeda de la Pena. 1982. "Dissolution of first unions in Mexico," paper presented at the Annual Meeting of the Population Association of America, San Diego.

Rao, Vijayendra and Margaret E. Green. 1991. "Marital instability, inter-spouse bargaining and their implication for fertility in Brazil," paper presented at the Annual Meeting of the Population Association of America, Washington, D.C.

Ravallion, Martin. 1990. "Income effects on undernutrition," *Economic Development and Cultural Change* 38: 489-515.

Roberts, Penelope A. 1988. "Rural women's access to labor in West Africa," in Sharon B. Stichter and Jane A. Parpart (eds.), *Patriarchy and Class: African Women in the Home and the Workforce.* Boulder: Westview Press.

Rogers, Beatrice Lorge and Nina P. Schlossman. 1990. *Intra-household Resource Allocation: Issues and Methods for Development Policy and Planning.* Tokyo: United Nations University Press.

Sanjek, R. 1982. "The organization of households in Adabraka: Toward a wider comparative perspective," *Comparative Studies in Society and History: An International Quarterly* 24: 57-103.

Schultz, T. W. (ed.). 1974. *Economics of the Family.* Chicago: University of Chicago Press.

Schultz, T. Paul. 1990. "Testing the neoclassical model of family labor supply and fertility," *The Journal of Human Resources* 25: 599-634.

Sen, Amartya. 1990. "Cooperation, inequality and the family," *Population and Development Review* 15 (Supplement): 61-76.

Stoudt, Kathleen. 1987. "Uncaptured or unmotivated? Women and food crisis in Africa," *Rural Sociology* 52: 37-55.

Stycos, J. M. 1955. *Family and Fertility in Puerto Rico.* New York: Columbia University Press.

Thomas, Duncan. 1990. "Like father, like son: Gender bias in household resource allocation," mimeographed, Yale University.

United Nations. 1985. *Socio-economic Differentials in Child Mortality in Developing Countries.* New York.

United Nations Development Programme. 1990. *Human Development Report 1990.* New York: Oxford University Press.

Wolfe, Barbara L. and Jere R. Behrman. 1983. "Is income overrated in determining adequate nutrition?" *Economic Development and Cultural Change* 31: 492-507.

Weiss, Yoram. 1992. "The formation and dissolution of families: Why marry? Who marries whom? And what happens upon marriage and divorce?" Economic Research Center/ NORC Discussion paper no. 92-7.

———, and Robert Willis. 1985. "Children as collective goods," *Journal of Labor Economics* 3: 268-292.

World Health Organization. 1983. *Measuring Change in Nutritional Status: Guidelines for Assessing the Nutritional Impact of Supplementary Feeding Programmes for Vulnerable Groups.* Geneva.

Yaukey, D. and T. Thorsen. 1972. "Differential female age at marriage in six Latin American cities," *Journal of Marriage and the Family* 34: 375-379.