

Women's Employment and Its Relation to Children's Health and Schooling in Developing Countries: Conceptual Links, Empirical Evidence, and Policies

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ABSTRACT

This paper reviews several decades of empirical research on the effects of women's work on investments in children's human capital—their nutrition and schooling—in developing countries. No clear relationship between women's work and nutrition emerges from a large body of studies examining this issue, but this is to be expected given the complexity of the relationship and the wide variation in methodological approaches. However, specific factors, such as quality of substitute care and age of the child, condition the relationship and point to areas where policy can intervene to prevent negative nutritional outcomes or enhance positive outcomes of maternal work. Less research has been done on the subject of women's work and children's schooling, but there is evidence that there can be negative effects on girl's education because daughters are often obliged to substitute in the home for mothers who work. The paper considers a range of policies (including, in particular, childcare) that can reduce the potential conflicts, or increase the complementarities, between women's need or desire to work and their children's well-being. Also discussed are trends in developing economies and in the global economy that are affecting women's work and its relation to children's welfare, as well as affecting the ability of governments to intervene to ease the domestic constraints on women.

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1. INTRODUCTION

Women play multiple roles in the family that affect the health and well being of all family members. In almost all societies around the world, they are assigned by custom to be the primary caregivers to infants and children (UNDP 1995). Activities carried out by women such as breastfeeding, preparing food, collecting water and fuel, and seeking preventative and curative medical care are crucial for children's healthy development. Women also play important roles as generators of family income, whether in household farms or businesses or as wage employees. In developing countries especially, such work is likely to be essential to family survival.

Because of the time constraints women face, however, their roles as care-givers and as providers of family income may conflict with one another, with potentially important implications for the welfare of children. For developing countries, the implications for child nutrition, in particular, have been the subject of much empirical investigation and debate during the past two decades (Leslie 1989; Glick and Sahn 1998; Lamontagne et. al. 1998). It has been noted that mothers who work may lack the time to adequately breastfeed or prepare nutritious meals for their young children, or to make use of public services designed to improve child nutrition. Although there will be market substitutes for at least some time-intensive inputs (e.g., prepared foods, hired domestic help), these may be too costly for many women. Working women may rely on other members of the household to provide childcare, but the quality of care provided by these substitutes, especially if they are older children, may be poor. On the other hand, the additions to family income from mother's employment should benefit children's nutrition and may more than compensate for any reductions in the quantity or quality of care, implying a net improvement in nutrition as a result of maternal work. This will be more likely if women have strong preferences for spending their income in ways that benefit their children.

Although most of the empirical literature has focused on the effects on children's nutrition, women's work may have significant impacts on other types of investment in children's human capital—in particular, their schooling. Again, the effects may be positive or negative. Women's earnings should benefit children's education, especially if women have stronger preferences for educating their children than do their spouses. On the other hand, the need for substitute caregivers may oblige working mothers to keep older children out of school to care for younger siblings. Given traditional gender roles in the household economy, this burden is more likely to fall on daughters than sons, with negative implications for girls' future economic status. In view of the need for greater gender equity in schooling as well as a range of well documented social benefits to female education—including improvements in child nutrition, greater demand for schooling, and reduced fertility (Strauss and Thomas 1995; Schultz 2001)—any such constraint on girls' access to education should be of concern to policymakers.

These issues have, if anything, gained in importance in the last two decades, because women's participation in the labor force has been increasing. Although some of the recorded increase in female participation in developing countries reflects better accounting for unpaid labor, most observers would agree that in many regions of the developing world—e.g., Latin American and South Asia—women's economic activity has increased significantly since 1970 (Mehra and Gammage 1999). In regions where it has stayed the same or fallen slightly, such as

East Asia and Africa¹, female participation rates were already high. Equally significant have been changes in the nature of women's work, reflecting structural changes in economies in the process of development as well as, increasingly, integration into the global economy. Women (like men) shift out of agriculture and into expanding manufacturing, service, and commerce sectors. These and concomitant changes in the living situations of women and families throughout the globe—including urbanization and changes in family structure—are changing women's incomes, flexibility of employment, and childcare needs and options. Hence the relation of women's work to child welfare is itself evolving.

Because of the time and resource constraints facing poor families, women's or households' labor market decisions will be tightly linked with choices regarding both nutrition and (especially girls') schooling. Hence it is appropriate to consider both health and schooling outcomes when discussing women's employment, though this has not usually been done in the existing literature. In this paper I summarize what is known about the complex relationships of women's work to children's health and schooling.² Before reviewing existing empirical work I outline, in the next section, the conceptual frameworks delineating the pathways linking women's work to child outcomes. This informs the review of the empirical work in Section 3, in part by highlighting methodological issues that many studies in this area inadequately address. Despite methodological differences (and at times, weaknesses), the literature overall does yield a number of consistent findings that are relevant for policy. In the fourth and final section I map out how global trends toward urbanization and international economic integration are affecting women's work in developing countries and its relation to children's health and schooling. The section also discusses how policies, particularly in the area of childcare, can reduce the potential conflicts—or increase the complementarities—between women's employment and child welfare.

The fact that women have dual responsibilities placed on them—to provide care and to provide income—justifies a particular focus on the relation of *women's* work to child outcomes. Of course, men's employment also affects children's welfare profoundly. This influence occurs primarily through incomes, because men in most developing countries tend to have much less involvement than women in caring for children, at least young children (Evans 1995a; Anandalakshmy 1994; Olmsted and Weikart 1995). In this sense the links are less complex. However, men's livelihoods, like women's, are undergoing significant shifts with economic development and globalization that affect their ability to provide economically for children. These changes are also addressed, briefly, in this paper. In addition, the concluding section

¹ In sub-Saharan Africa, where the last several decades have seen economic decline and contraction of the formal sector, recorded declines in women's participation may simply reflect an increasing tendency of women to enter the informal sector, which is less well documented in labor force surveys.

² In this paper I use the terms “mother's work” as well as “women's work”. Large households are common in developing countries, so there easily may be more than one working age woman, and the two terms need not be synonymous. Most but not all of the empirical literature reviewed here investigates the relation specifically of mother's work to children's health or schooling. The text will make clear whether the study being discussed does this or instead considers work or income of women in the family more generally.

considers policy interventions that seek to change traditional gender norms regarding the care of children.³

2. CONCEPTUAL FRAMEWORKS

The links between women's work and child nutrition involve both biological processes and individual or household behavior. Theoretical models based on the 'New Household Economics' draw on the notion of household production introduced into economics by Becker (1965). These have proven very useful in illuminating the household determinants of nutrition, in particular by formalizing the idea of the productive nature of women's activities in the home. A 'nutrition production function' relates the child's nutritional status (measured for example by height for age or weight for age) to a set of health 'inputs'. These include the child's nutrient intake, whether the child is breastfed and the duration of breastfeeding, preventative and curative medical care, and the quantity and quality of time of the mother or others in care-related activities. The quality of child care time—for example, in child feeding—in turn is likely to be a function of the caregiver's age, experience, education, and own health status. Environmental factors, such as the prevalence of infectious diseases in the community, also enter the production function. The potentially conflicting effects of maternal labor supply on child nutrition are readily seen within the production function framework. Greater income from mother's employment translates into higher consumption of market-purchased inputs such as food and medical care that raise nutritional status, but reductions in the level or the quality of time in health-related activities (if they occur) reduce nutritional status.

The production function describes a set of biological or (given the analogy with production theory) 'technological' relationships. However, household preferences and behavior come into play because many of the inputs into child health, including time, are determined by the mother or her family.⁴ Both health 'outputs' and levels of inputs ultimately reflect the household's preferences for child health relative to other goods (e.g., food consumption by other household members, including older children), the budget and time constraints facing the household, and knowledge of good health practices.⁵

In practice, most studies of the effects of maternal work on child health do not directly measure the relations represented in the production function. Instead, the relation of mother's work status or hours of work, on the one hand, and child nutrition, on the other, is estimated.

³ To keep this paper at reasonable length, I do not cover the topic of child labor. Needless to say, child labor has important implications for various aspects of child welfare, especially their access to education. Child labor is also typically intimately involved with parental labor supply decisions (e.g., though decisions about time use in family farming).

⁴ Preferences for child health and health inputs may differ significantly between women and their spouses or other adult family members. This issue is examined below.

⁵ More formally, the household maximizes utility subject to prices, budget and time constraints, and the health production function. The maximization process jointly determines health outputs, health inputs, and demands for other goods, including leisure (hence the labor supply of the mother and others is determined as well). See Glick and Sahn (1998).

Sometimes this amounts to simply calculating bivariate correlations of these two variables, but more sophisticated analyses control for confounding factors such as maternal education and household characteristics using multivariate regression. If interpreted causally, the coefficient on mother's work measures the overall effect of work, incorporating the opposing time and consumption effects. In some studies the set of regressors include not only the maternal work variable and standard confounders but also specific health inputs such as dietary intake and hours in childcare, which mother's work presumably affects. In this case the maternal work coefficient does not measure the overall effect of work but rather the effect net of these intervening factors.

Empirical analysis of mother's work and child nutrition must confront several important statistical issues. The most obvious one, already noted, is the need to control for confounding influences. For example, women who work may do so because household income is low, or because their level of schooling is high. Both of these factors will also directly affect child health, so multivariate analysis with controls for such factors is a minimum requirement for assessing the nutritional effects of mother's labor supply. However, even with such controls a causal interpretation may be inappropriate because of simultaneity. For example, an ill child requires more care than a healthy child, so mothers with unhealthy children will probably be less likely to participate in the labor force. We would then observe a positive association of work and nutrition, but with causality running from child health to maternal work rather than the reverse—the true effect of work on health could be zero or even negative. Simultaneity can also arise from unobserved (to the researcher) differences between women or households in terms of preferences or abilities that influence both levels of inputs, including the time allocation of the mother, and health outcomes. This heterogeneity in tastes or abilities also will confound the relationship of mother's work and child nutrition. The household production framework brings out this issue well, since it considers health inputs as well as health outcomes to be jointly chosen by the household, that is, endogenous. It is possible to deal with simultaneity in cross section non-experimental data using instrumental variable methods, but this requires fairly rich data: there must be variables affecting the work decision that do not directly affect nutrition outcomes. Most of the studies discussed below do not apply controls for simultaneity, so their estimates of the effects of maternal work are potentially biased.

In contrast to the maternal work-child nutrition relationship, the relationship of female employment to child schooling is not mediated by a biological production function. Still, there are once again potentially opposing effects of income and time. A positive income effect arises because the additional resources from the woman's employment make it easier to pay for schooling. However, if mothers who work reduce their time in childcare or other domestic work, substitute caregivers must be found. The burden often falls on older children, and when it does, it is typically girls rather than boys who are called upon. This in turn can make it difficult or impossible for them to continue their schooling. In principle, if parents value girls' education highly, they can hire domestic help or turn to institutional sources of childcare to allow daughters to devote their time to school. However, poor families are unlikely to be able to afford these alternatives—the reduction in their consumption of other goods and services would be too large—and they generally lack access to credit markets that would allow them to make investments in schooling without sacrificing current consumption. Therefore, as emphasized in

the introduction, for most households, decisions regarding maternal work, childcare and child health, and schooling are closely linked, and these outcomes are potentially in conflict.⁶

3. EMPIRICAL EVIDENCE

3.1 *Effects of women's employment on children's nutrition*

There is now a substantial body of empirical research examining the relationship of women's work to child nutrition. Nutritional outcomes are measured in most of these studies using anthropometric indicators such as weight for age or height for age measured against international standards, though occasionally dietary indicators such as caloric intake or intake of specific nutrients are also used. Beyond this, however, there is enormous variation in terms of methodology and focus. As mentioned, a number of researchers simply report bivariate correlations (or just cross-tabulations) of child nutrition and a variable representing mother's work status, sometimes without indicating if the correlation is statistically significant. In some cases these analyses are refined by stratifying the sample on factors such as child age or maternal workload. Earlier studies of this type are reviewed in Leslie (1989); more recent studies that essentially use the bivariate approach include Bamji and Thimayamma (2000), Abbi et. al. (1991), Rabiee and Geissler. (1992), and Wandel and Holmboe-Ottesen (1992). Many of these researchers find a negative association of mother's work and child nutrition, but for others the correlation is positive or else no significant relationship is found. However, since they lack controls for confounding factors, simple associations cannot be interpreted as showing a causal relation from work to nutrition. For example, as noted above, women who work are more likely to be from poor households, hence to have less well nourished children, all things equal.

More useful are multivariate analyses that include controls for household or individual factors that may also affect nutrition. By way of preview of the overall findings, no broad conclusion emerges from these studies about the effect of women's work on child nutrition. However, this should not be surprising given the wide range of methodologies employed, the very different social contexts considered, and the variation in the types of women's employment considered. Still, the literature does offer insights as to why women's employment may have positive effects in some cases but negative ones in others. To highlight the relevant factors, the following review categories the studies by the specific aspects of the work-nutrition relation analyzed.⁷

A number of studies consider differences either in the type of work or in the level of work effort, i.e. labor supply. The type of work is presumed to matter because of differences in the compatibility of work and caring for children. Informal sector activity (variously defined) is

⁶ A different aspect of the mother's work-schooling relation, which has been studied in some industrialized country research, is the relation of maternal work to children's academic performance. I am not aware of similar research for developing countries, but for most such countries non-enrollment or low grade attainment in any event loom as a more important concerns.

⁷ I consider here both multivariate regression studies and studies using simple bivariate correlations, if the latter happen to divide the sample according to the variable of interest (e.g., child age).

usually considered to be more compatible with childcare than formal employment, given greater hours flexibility or the possibility of combining work and child supervision in informal work; work in or near the home should be more childcare compatible than work outside or far from the home. Using instrumental variable methods to predict mother's hours of work in informal and formal employment in Thailand, Chutikal (1986) finds a positive effect of the former on child weight for height and height for age but a negative effect of the latter, consistent with a greater compatibility of informal work and childcare. Similarly, Wolfe and Behrman (1982) found for Nicaragua that children of informal workers, but not formal sector workers, were taller than children of women who were not employed. In a rural Indian sample Kumar (1978) found children of women who work in the fields to be malnourished relative to those whose mothers engaged in income earning activity in the home.

However, differences by type of maternal work are not universally found. Glick and Sahn (1998) found that predicted maternal informal (self-employment) and formal (wage) employment hours in urban Guinea had statistically equal negative effects on child height, controlling for the mother's income. Popkin (1980) found no significant difference in the nutritional status of children whose mothers who worked at home and those whose mothers worked away from home in his Philippines sample. Likewise, Smith et. al (1980) for Haiti and Vial and Muchnick (1989) for Chile found no effects of distance to work or occupation variables.⁸

Since these studies differ in the extent to which they control for factors such as household income and the use of substitute care providers (discussed below), which may be correlated with both health outcomes and occupation or type of work, the lack of consistent findings is perhaps not surprising. Also, many activities which might be assumed to permit simultaneous work and child supervision or care in fact may not do so. This applies to urban self-employment (discussed below) as well as traditional family agriculture. For example, women often find it inconvenient or unsafe to bring their children to the fields while they work (Doan and Popkin 1993, Gryboski. 1996).

A number of researchers, in addition to Glick and Sahn and Chutikal, consider the effects of the level of a woman's labor force activity. Adelman (1983) found for Peru that controlling for household income, children of women who worked part time were taller than children of women who worked full time. Rabiee and Geissler (1992) report that children of women in their rural Iran sample who had 'heavy' agricultural workloads had lower weight for age and energy intake, and a higher incidence of diarrhea, than children of women with 'light' workloads. Their sample is very small and they do not attempt multivariate analysis, but it is noteworthy that children of high workload women were at a disadvantage despite being in families with higher mean income than the other group. In contrast to these studies, Franklin (1979), in an analysis that does not control for income, reports for Columbia that children of full-time workers were taller than children of part-time workers.

⁸ In some cases (e.g., Engle and Pederson 1989) effects of occupation are found in regressions that lack controls for the level of household resources. In such cases the coefficients on the occupation variables are likely in part to be capturing differences in household income, not just variation in work-childcare compatibility.

All things equal, of course, women who work longer hours earn more income. Therefore nutrition regressions that include separate variables for the mother's labor supply and her labor income are of particular interest, as they permit direct estimation of the hypothesized tradeoff between income effects and time effects. Soekirman (1985) does distinguish hours of work and income impacts on nutrition for his Indonesian sample. He reports a significant negative effect of maternal work only for children of women who worked more than 40 hours a week and earned less than the minimum wage. Glick and Sahn (1998) also find evidence of a tradeoff in Guinea, but the overall effect of work appears negative for a larger portion of their sample. In urban Guatemala, a negative effect on children's nutritional status of mother's work was found only for children of domestic workers, who worked long hours and were very low paid (Engle and Pederson 1989). Each of these studies demonstrates the obvious but important point that the effects of maternal work on children are more likely to be positive the higher is the mother's wage rate or hourly earnings.

Very young children, especially infants, have particularly strong needs for care. Therefore if there were any negative effects of mother's work we would expect them to be felt more strongly by younger children than older children. This is borne out by the relatively few studies that examined samples containing both infants and older children and differentiated by age in the analysis. Haggerty (1981) for Haiti as well as Engle and Pedersen (1989) for Guatemala found that maternal work was associated with lower nutritional status (relative to children of non-employed mothers) for children under 1 year but superior nutritional status for children age 1 to 2 years. Popkin (1983), distinguishing children under and over 2 years in his pre-schooler Philippines sample, finds a negative effect of maternal employment on height and weight for age only for the younger group. Similarly, Abbi et. al (1992), who find generally negative associations of several dimensions of child health and maternal work in rural Marasahrtra, India, report that these correlations were usually stronger for children under 3 than 3 to 6. Consistent with these findings, the estimates of Glick and Sahn (1998) show that maternal *income* has stronger positive effects on the nutrition of children age 2 to 5 than children under 2; compared with the younger group, for children 2 to 5 purchased foods should be relatively more important than maternal time in breastfeeding and other activities.

Given the important benefits of breastfeeding for infants both in terms of nutrition and reduced exposure to infection, can these negative associations of maternal work and infant nutrition be explained by differences in infant feeding practices? The evidence is not clear-cut. The large literature on the relationship of maternal work and infant feeding in the Third World does not show a negative association of work and the decision to breastfeed (Leslie 1989; Ruel et. al 1989). However, while rates of initiation of breastfeeding do not seem to differ, some studies show shorter exclusive breastfeeding duration among employed women, which may raise the nutritional risks for infants of working mothers.⁹

Working mothers in poor countries typically turn to substitute sources of care for their children. Ethnographic studies indicate the wide range of alternative providers used, including other members of the household, kin or non-kin support networks outside the household, hired

⁹ Yimyam (forthcoming) demonstrates the difficulties Thai mothers face in reconciling their work schedules with their desire to breastfeed.

domestic help, and formal day care (Joeques 1989). The last two options remain relatively rare in the developing world, however, as they are unaffordable to most women.

Some of the statistical studies on women's work and child nutrition attempt to account for the effects of work on the mother's own time in childcare or household work and on the time of other household members in these activities. Other research has considered the quality of care provided by substitutes. An example of the former is the study of Tucker and Sanjur (1988) for Panama. They report that mother's time in cooking and childcare falls with her labor market participation, but not the total time of all household members in these activities, indicating that others in the household fully make up for the loss of the mother's time. They conclude that this prevents any negative time-related impacts of mother's work, which in their regressions has no significant impacts on their anthropometric indicators (while it has positive impacts on children's dietary intake and hemoglobin level). Popkin (1983) finds that mother's predicted labor force participation has no significant effect on her own time in childcare (instead it reduces her leisure time) but does increase the childcare time of older siblings, while Engle and Pederson (1989) report that working mothers in urban Guatemala were more likely than non-workers to report adult help in childcare. It should be noted that reductions in maternal home work time resulting from participation in paid work, if they occur, invariably fail to offset the increased hours in market activities: that is to say, women's total hours of work rise, at the expense of their leisure time. Evidence for this comes from a wide range of time-use studies (Bunster, 1983; Overseas Education Fund 1979; Nieves, 1981; Popkin, 1983).¹⁰

Even if, as in the cases just discussed, intrahousehold substitution in time use insures that overall childcare time is maintained, the quality of that care may not be adequate. This is especially an issue if young children are entrusted to the care of older siblings who are children themselves—a common practice in developing countries (Joeques 1989). A recent review of the literature on care and nutrition concludes that while there is no consistent association of total time in care and nutrition outcomes, specific care behaviors (or more generally the 'quality' of care) do matter: for example, boiling water, being responsive to signals from the child during feeding and monitoring the amounts eaten, insuring the cleanliness of the feeding location, etc. (Engle et. al. 1999). Compared with adults, children lack the maturity and knowledge to carry out these practices effectively, so we would expect nutrition outcomes to be poorer when children are left in charge. This hypothesis is consistently supported by research that considers the nature of care support in households where mothers work. When children are used as substitute caregivers, the association of maternal work and child nutrition is either negative or less favorable than when the care is provided by another adult (Engle et. al. 1986, Engle 1991; Shah, Walimbe, Dhole 1979; Bittencourt and DiCicco 1979).

Lamontagne et. al.'s (1998) study of 12 to 18 month olds in Nicaragua is a particularly detailed examination of the interactions of mother's work, the quality of care, and child nutrition. They find that 'inadequate' care (care by a pre-teen child or by mothers who took children with them to street vending jobs) was negatively correlated with both weight-for-age and height-for-age, though in regression analysis only the latter negative association remained. In a regression

¹⁰ The term 'the double day' aptly describes the situation of most working women in poor countries, whose normal work day is followed by substantial work in the home.

with controls for the adequacy of care and other factors, mother's work had positive effects on weight for height (no significant impacts of work were found for weight for age or height for age). Lamontagne et. al.'s approach is in some respects similar to that of Blau et. al. (1996). These authors take advantage of very detailed longitudinal Philippine data on infants to examine the effects of mother's labor supply on child nutrition, using statistical controls (instrumental variable fixed effects) for possible heterogeneity. They find that controlling for the time in childcare of different members of the household as well as infant feeding practices and many other household nutrition determinants, mother's hours of work has no effect on infant weight or height.

Both Lamontagne et. al. and Blau et. al. conclude that their results show that fears about negative impacts on children of women working are unfounded. However, both studies include in their regressions not just women's employment variables but also controls for many direct inputs into nutrition that women's work is likely to affect, in particular childcare time and (in Blau et. al) breastfeeding. Hence their results actually support a more limited conclusion: *if* maternal work does not have negative impacts on intervening factors such as total child care, it will have no negative effects on nutrition.¹¹

These two studies can be contrasted to the more structural approach of Popkin (1983). Rather than holding other inputs such as total childcare time constant when assessing the effect of maternal work, Popkin first estimates the effect of maternal work on childcare time (as well as on calorie and protein intake) and then estimates the effect of these inputs on child health in his Philippines sample. Predicted labor force participation has no effect on mother's time in childcare but increases the time of siblings in childcare (as reported above) and also increases caloric intake. Working through the effects on time and nutrient availability, Popkin ultimately concludes that there is no impact of mother's work on child nutrition; note that unlike Lamontagne et. al. and Blau et. al., in this case the estimate incorporates the effects of maternal work on key health inputs. While Popkin's approach is appealing in its attempt to limn the pathways that link maternal work and child health, in practice the econometrics encounters identification problems that are particularly difficult to address (see Glick and Sahn 1998 for discussion).

A potentially important but little studied aspect of the maternal work-childcare-nutrition nexus involves the effect of work on the mother's own health and through that, on the quality of caregiving. Poor women in developing countries are often in precarious health. As noted above, for women in the labor force, hours of work for pay are usually not offset, or only are partially offset, by reductions in domestic work, so that the total burden of work rises. A number of studies indicate that longer working hours or increased work intensity (meaning in this context the combining of market work and household tasks) are associated with poorer physical and mental health in women (Verbrugge 1983, Floro 1995, Wolfe and Haveman 1983). Obviously the type of work that is performed is a key factor, since some activities are more physically demanding than others. Bamji and Thimayamma (2000) report that in rural Andhra Pradesh,

¹¹ The fact that simple bivariate correlations of work and nutrition are positive and significant in Lamontagne et. al. suggests that the intervening factors do not change in such a way as to harm nutrition. However, these correlations do not include controls for other nutrition determinants.

India, women who worked in agriculture had greater energy intake than other women but nonetheless had lower body mass. In an econometric analysis of rural women in Ghana, Higgins and Alderman (1997) showed that greater predicted time in agricultural work had negative and significant impacts on women's nutritional status as measured by body mass. In other settings, the negative effects of energy and other stresses from work may be offset by increased consumption of food or health care made possible by the women's labor incomes. Research conducted primarily in industrialized countries finds a positive association of employment and health, for both women and men (Ross and Mirowski 1995 and references therein).¹² The health benefits of work may come in part through improved self-esteem leading to better preventative practices.

Where negative effects of work on women's health do occur, they are of course of concern in their own right. The further issue of how work-related health stresses on mothers (including simply fatigue) in turn impact child health and development has yet to be studied. Even the more general question of the effects of caregiver health (whether influenced by work or not) on the quality of care or on child health and development outcomes has received little attention (Engle et. al. 1999); one exception is a study in Egypt showing that anemic women were less active caregivers, and provided poorer diets to children, than non-anemic women (Rahmanidfar et. al. 1992).

More direct pathways from maternal to child health involve work-related health stresses of mothers during pregnancy, which may lead to lower birthweight, or during lactation, which may have negative effects on infant nutrition through reduced breastmilk quantity or quality. Hernandez-Pena et al. (1999) found that birthweight of children of street vendors in Mexico was negatively associated with maternal work fatigue during pregnancy. Also in Mexico City, Cerón-Mireles et al.(1997) report that birthweight was lower for children whose mothers reported long working hours or problems on the job.

In rural areas in particular, health stresses on women have a strong seasonal dimension. A number of studies show that weight loss among women, or reduced weight gain among pregnant women, is common during peak seasons of labor use in agriculture, as calorie intake fails to match heightened requirements (especially if the higher workload corresponds to periods when food availability is low); see Holmboe-Ottesen et. al (1988). For pregnant or lactating women, this implies lower birthweights and reduced quality or quantity of breastmilk (Cornia 1984).

The conceptual framework of Section 2 assumed that the income contributed by mother's work would, controlling for changes in the quantity or quality of child care, benefit child nutrition. The extent or even existence of this benefit, however, depends on how the additional income is spent. If women have strong (relative to their spouses) preferences for child welfare and they have control over their own earnings, the income effects on nutrition will be larger than from equivalent increments to spouse's or other household income. Preferences of men and women within households do appear to differ: as Alderman et. al. (1995) conclude after

¹²These correlations are difficult to interpret causally, as is well known: work may improve health, but good health also raises the likelihood of having and keeping a job.

surveying recent evidence, this and not common preferences should be the presumption.¹³ Several recent careful econometric analyses indicate that income in the hands of women is more likely than men's income to be spent on items (e.g., food) that benefit children—indicating, in the contexts studied, that women have stronger preferences for child welfare.¹⁴ Although most of this literature does not consider the effects specifically of women's earnings from work, one can infer that if mothers work *and* they control their income, the benefits for child welfare (again, controlling for time effects) may be large. Glick and Sahn (1998) do examine this issue directly in their Guinea sample. They report that increments to maternal income (predicted in a two-stage procedure) have effects on preschooler height for age that are more than 10 times greater than the effects of other household income. Similarly, in Haddad and Hoddinott's (1994) study of rural Côte d'Ivoire, a larger predicted share of household income earned by women led to better child anthropometric outcomes. The same result was found for peri-urban Guatemala by Engle (1991), using the share of (uninstrumented) maternal income in total family income.

Whether women control their own earnings will depend on the specific cultural context. In many African societies, women's and men's incomes are not pooled or are only partially pooled within the household, so each member retains control over their own earnings (Fapohunda 1988; Munachonga 1988); essentially there are separate, or partially separate, economic spheres within the household. In these cases meeting the needs of children typically falls within the women's economic sphere. Where income instead is pooled, the key factor is decision-making power over the use of this income, and this is likely to be a function of each member's contribution, or more generally, their economic status. A number of studies indicate that when women work, they gain greater power in decision-making regarding the use of household resources (Blumberg 1988; Engle 1993; Acharya and Bennett 1982). This may be because working outside the home fosters greater assertiveness or confidence or because working women have a stronger 'fallback position'—they can more credibly threaten to move out on their own if they are not granted greater control. In these situations the income benefits to children of women's employment may be large. However, greater control over earnings or increased decision-making power as a result of entering paid work cannot be assumed. For example, a number of studies in South Asia found that many or most wage-earning women were obligated to turn over their pay to their husbands or other male family members (Argawal 1986; Zohir and Paul-Majumder 1996; Standing 1991).

Therefore the negative association, or lack of a positive association, of mother's work and child health outcomes found in some case studies may reflect women's inability to direct their incomes to the benefit of their children. For example, the studies by Abbi et. al. (1991) for rural India and Rabiee and Geissler (1992) for rural Iran involve cultural contexts in which we

¹³ In addition to Alderman et. al., see Doss (1996a) and Strauss and Thomas (1995) for surveys of empirical studies by economists. For anthropological or sociological evidence, see Dwyer and Bruce (1988), Blumberg (1988), and Guyer and Peters (1987) and references therein.

¹⁴ See Thomas (1993); Hoddinot and Haddad (1994, 1995); Doss (1996b); Glick and Sahn (1998). These studies are distinguished by their handling of the potential endogeneity of women's income, which follows directly from the endogeneity of women's labor supply discussed in section 2. The studies cited either use instrumental variables to control for the endogeneity of female earned income or rely on non-labor income or assets in the hands of women; such income or assets are assumed to be exogenous, that is, unrelated to preferences for child welfare.

might expect women to have relatively little control over their own agricultural output or incomes. This may be a factor contributing to the negative associations of maternal work and child nutrition found in both cases. In contrast, Brown et. al's (1994) study of a rural public works program in Niger found that the (predicted) share of household female public works employment raised preschooler weight for age. Male participation, while having no direct effect on child health controlling for caloric availability, actually reduced caloric availability, hence presumably had a negative indirect effect on nutrition. In this case women apparently had stronger preferences for child welfare than men as well as the ability to control their earnings from the project. These findings echo those of Haddad and Hoddinott (1994) for rural Côte d'Ivoire mentioned above.

More generally, changes in labor allocations of men and women, such as those associated with economic restructuring or agricultural commercialization, may change the relative shares of income earned by men and women (or the control over that income) in ways that positively or negatively affect child welfare. For example, Braun and Kennedy (1994) found that even though increased cash cropping raised household incomes in a range of country settings, the benefits to child nutrition were quite modest. Among other factors, this may have been because household labor was shifting from subsistence crop farming, which was traditionally under women's control, to cash cropping, the income from which was under their husband's control.¹⁵ The outcomes in this case were quite different from Brown et. al.'s findings for their rural public works program. These contrasting examples point to the need to carefully consider the effects of these or other policies on both male and female time use and control over income, since these effects will mediate the impacts on children of changes in total household income.

If nothing else, this review of a quite extensive literature has demonstrated the complexities of the relationship of mother's work and child nutrition; clearly, to expect a blanket conclusion regarding the effects of maternal work on nutrition, applicable to all contexts and all types of employment, would be unrealistic. However, the research reviewed here indicates that specific aspects of the links will condition child outcomes: most importantly, the quality of alternative care and the age of the child, but also (if less unambiguously) the nature of mother's work, and the level of her earnings and whether she has control over them. With regard to methodology, it bears repeating that while many researchers have been careful to include controls for confounding factors, few have tackled the issue of the endogeneity of maternal labor supply decisions. Given the potential for simultaneity bias in the OLS regressions used in these studies, in many of them the reported estimates of the effects of mother's work may be misleading.

3.2 Effects of women's employment on children's schooling

The determinants of schooling in developing countries is a very well researched topic (see Strauss and Thomas 1995). However, few studies in this large literature have explicitly considered the relation of maternal work to investments in schooling—far fewer than have

¹⁵ Another explanation for the weak nutrition impacts is that cash-cropping households no longer grew their own food but instead had to purchase it in the market. However, control over income may play a role here as well, since women may have lacked the power to insure that an adequate share of cash income was spent on basic food items.

looked at the work-nutrition relation. As discussed above, as with the work-child health relation we would expect an income effect and potentially also a time effect, the latter coming through reallocations of household labor made necessary by the woman's participation in the labor force. Research on the determinants of schooling almost always shows a positive association with the level of household resources (Behrman and Knowles 1999). There is some evidence as well that the schooling impacts of additional household resources are larger for girls.¹⁶ Controlling for time allocation effects, therefore, maternal work, which adds to household income, should raise children's school enrollment probabilities. Further, if preferences of mothers and fathers differ such that mothers are more inclined to spend on their children, the effects from mother's earned income will be larger than from other household income, similar to the larger nutrition benefits found in several studies cited above. Along these lines, Duraisamy (1992) and Duraisamy and Malathy (1991) find that the chances a child is enrolled in school (as well as receiving medical care) are positively related to asset ownership by the mother. Similarly, Thomas (1993) finds that household budget shares for education, health, and housing rise with the share of household income under the control of the mother.

A further dimension of differing preferences of mothers and fathers is that rather than simply preferring to spend more than their spouses on children's schooling *per se*, mothers may also have relatively strong preferences for schooling daughters. Glick and Sahn (2000) find that while father's education has statistically significant positive impacts on both girls' and boys' schooling in Guinea, mother's education benefits only girls. One interpretation of this result is that educated mothers enjoy greater bargaining power vis a vis their husbands, hence are able to insure that more resources are allocated toward girls' human capital investments.¹⁷ This is not a universal finding, however, as many studies do not show different boy-girl effects of maternal and paternal schooling.

Stronger effects of changes in household income on girls' education, and (possibly) stronger relative preferences of mothers for educating daughters, imply that the *income* effects of mother's employment should benefit girls' schooling more than boys'. However, the time-allocation impacts are biased against girls, who are more likely to be asked to bear the burden of substituting in the home for their working mothers. Numerous studies in the developing world (not necessarily focusing on maternal work impacts) indicate that girls are kept out of school to care for younger siblings or to do other household work; this reason for not enrolling girls is regularly cited by respondents in ethnographic studies (Nieves 1981; Safilios-Rothchild 1980; Engle et. al. 1985). Econometric analyses yield a similar picture. In urban Guinea, the number of siblings under 5 in the household significantly reduces girls' enrollment and grade attainment but has no effect on boys (Glick and Sahn 2000). Similarly, Deolalikar (1998) finds for households in Kenya that the presence of siblings under 3 has a significant negative effect on girls' primary and secondary enrollments but not boys'. In Peru, girls with more preschool

¹⁶ See Glick and Sahn (2000), Behrman and Knowles (1999), Detray (1988), Gertler and Glewwe (1992); Schultz (1985).

¹⁷ Similarly, in the context of child health, Thomas (1993) finds that mother's education has a larger impact on girls' health status than on boys' while the opposite is found for father's education. It should be noted, however, that both this and Glick and Sahn's results may be explained in ways that do not involve intrahousehold bargaining and differential preferences of wives and husbands. See Glick and Sahn (2000) for discussion.

siblings or more adolescent and adult males in the household spend more time doing chores and less time in school (Levison and Moe 1998). In Indonesia, Pitt and Rosenzweig (1990) find that an infant's illness causes older girls in the household to shift from schooling to household work as their primary activity while having no significant effect on boys' time use. Of course, boys in poor households are also kept out of school to work, but this is typically on the farm or in family enterprises rather than housework. Given this sexual division of labor among children, when mothers enter the labor force, it is the opportunity cost of girls' schooling that rises the most, hence we would expect their education to be more at risk.

Some support for this hypothesis comes from research concerned with the broader topic of household coping strategies during economic recession or structural adjustment. A number of such studies were conducted in urban areas of Latin America during the 1980s. A common strategy among the households studied was for women to enter the labor force or intensify their involvement in income-earning activities to compensate for declining family income. This in turn often involved calling on girls to take over the mother's childcare and other domestic duties, potentially at the cost of their school attendance. For example, Moser (1992) reports that during a period of economic deterioration, women in Guayaquil, Ecuador were more likely to respond by entering the workforce the more daughters they had, with the implication that daughters' school attendance, or at least their ability to do schoolwork, would suffer relative to sons. Also in Ecuador (in Quito), interviews conducted by Rodriguez (1994) indicate that girls' schooling was a casualty of economic hardship as their mothers intensified their labor force activities, leaving more work to be done in the home. Other studies from Latin America and elsewhere similarly indicate that in times of severe economic downturn the time burden of market and domestic work of women and girls rises relative to that of men and boys, presumably reducing girls' access to school relative to boys'.¹⁸

Although these case studies suggest there is a conflict between the need for women to generate household income and girls' access to education, it is important to keep in mind their context. The increases in female employment were induced by falling household incomes brought on by economic crisis. Declining incomes would have had a direct negative effect on girls' schooling independent of any effects operating through changes in the mother's time allocation. Moreover, this direct effect may have been larger for girls than boys given the evidence that girls' schooling is more sensitive to changes in income.¹⁹ In these circumstances, therefore, the extent to which reductions in girls' schooling can be directly attributed to intrahousehold substitution in time use when their mothers went to work is not clear.

The contrast of these studies with Papart's (1990) analysis of middle class Nigerian women during the economic expansion of the 'oil boom' era of the 1970s is noteworthy. Responding to improved wage incentives (rather than falling household incomes), women entered the wage labor force in large numbers. Unlike the poorer women hit by recession in the

¹⁸Elson (1995) summarizes a number of these studies. See also the volume edited by Benería and Feldman (1992).

¹⁹In addition, during periods of structural adjustment and recession government subsidies for education were often reduced, as the authors of several of these studies note. This raised the cost of schooling to households. Since there is some evidence that human capital investments of girls are more price responsive than those of boys (Strauss and Thomas 1995), these increases in cost may have impinged more strongly on girls' education than boys'.

Latin American examples, the Nigerian wage earners Papart interviewed generally seem to have managed to avoid pulling their children out of school to help with housework. They did so either by turning to formal day care or hired domestic help or more commonly (and at considerable cost to their own leisure) by enduring a greater total burden of market and home work. One might speculate that the Nigerian women who were unable to afford day-care or domestic help were nonetheless able to buy relatively expensive prepared foods or time-saving appliances that at least partially reduced the burden of domestic work. This would have made it possible for daughters to stay in school. Such a scenario would be consistent with the work of Alderman, Sahn and Senauer (1986) for Sri Lanka showing that increases in the female wage lead to greater use of prepared “convenience” foods.

However, these more expensive alternatives, not to mention paid childcare, are much less likely to be an option for poorer working women or for households coping with economic downturn.²⁰ Hence the income of the household (and the level of the wage offered to the woman, which affects household income) should be a key mediating factor in the relationship of women’s work to girls’ education. In poor families, negative impacts on girls’ schooling may occur even when the increase in adult female participation or labor supply comes in response to rising wages rather than from negative shocks to family income. This is suggested by the analysis of Lokshin et. al. (2000) for Kenya, which is one of a small number of studies by economists of the interaction of maternal work and child schooling. These authors jointly estimate the determinants of maternal employment, child schooling, and the demand for paid childcare services. They find that a higher potential wage raises women’s employment as well as the school enrollments of boys, while it lowers enrollments of girls. The latter is interpreted as reflecting the use of girls as substitutes in the home for working mothers, the need for which overwhelms any positive income effects of mother’s work on their schooling. In contrast, boys experience just the income effect, so their schooling rises. Lokshin et. al. also find that high local childcare center costs reduce both maternal employment and girls’ schooling (but not boys’); the girls’ schooling effect is presumed to come from working mothers choosing to rely on their daughters to care for their younger children when daycare is expensive.

Similarly, in the rural Indian sample examined by Skoufias (1993), an increase in the female wage reduces the school time of girls but not that of boys. Also in India but in an urban setting, Basu (1993) finds that a higher wage for female laborers in poor neighborhoods of New Delhi increases women’s work outside the home and leads to girls being pulled out of school to do housework. In a comparative econometric analysis of Pakistan and Peru, Ray (2000) finds for Pakistan that a higher woman’s wage reduces girls’ schooling while also increasing girls’ participation in the labor force; this suggests that schooling falls because of complementarity of women’s and girls’ labor rather than substitution for the mother in household work. In contrast, no effects of women’s wages are found for Peru. This last result is consistent with Ilahi’s (1999) analysis of adult wages and children’s time that exploits the panel nature (repeated observations on the same individuals) of the same Peru LSMS survey used by Ray, whose analysis was

²⁰In fact, one often cited coping strategy is to keep expenses down by buying *fewer* prepared foods, thus increasing the burden of domestic work on women or their daughters. Another response documented in a number of studies (see Floro 1995) is to spend more time shopping for bargains and (given lack of cash reserves) to make frequent purchases in smaller quantities. This also would increase the overall work burden on women and girls.

confined to the first year only. While Ilahi does not find significant impacts of adult male and female wages, he does find that local female employment rates have positive and significant effects on the time in household work of both boys and girls, with the effect much larger for girls. Despite this, the female employment indicator was not associated with lower schooling attainment of girls, suggesting that girls' leisure time rather than their school attendance was reduced when their mothers worked. However, it is likely that the time that these girls could devote to schoolwork at home was reduced compared with boys, with consequences for their academic performance that may not be reflected in grade attainment outcomes.

This statistical evidence, while limited, suggests that in some contexts there may be a negative relationship between maternal work and girls' schooling. As indicated, we would expect this relationship to be strongly conditioned by poverty. Wealthier households are more likely to be able to hire domestic help or use formal child care services to substitute for the mother's time in the home, and they can purchase other market substitutes for her time such as prepared foods or appliances. In principle, poor households could pay for these goods and services by borrowing against the future labor market earnings of their daughters. However, in practice credit markets fall far short of operating this efficiently, so for poor families in which mothers work there may be little alternative to pulling girls out of school. Thus even in a situation where parents fully value the returns to educating girls, inadequate investments (from a societal perspective) in girls' education can occur because of credit market imperfections.²¹ As suggested below, government subsidies for childcare can substitute for poorly functioning credit markets as a means of allowing poor families to finance their daughters' education.

3.3 Men's employment and children's welfare

Not much has been to this point about men's or father's employment, other than to place women's activities in a household context, e.g., when discussing differential spending on children out of male and female incomes. Of course, paternal employment plays a crucial role in the welfare of children; after all, men are still usually the main family breadwinner. Male labor force participation in most developing countries is significantly higher than women's. In contrast to the rise in female participation, male participation has declined slightly in the last several decades in much of the world, a result of longer times in school for the young and increased pensions for the old. Still, it remains consistently around 90% in all regions of the world for men age 20-59 (Tzannatos 1999). If they work more in the labor force than women, however, men work much less at home. In most societies in the developing world men have very limited involvement in childcare and child nurturing, at least for very young children and infants (Evans 1995; Anandalakshmy 1994; Olmsted and Weikart 1995). Nor do they appear, by

²¹The other important source of market failure occurs because parents in fact are likely to undervalue the benefits to girls' schooling, either because they are not fully aware of them (for example, better nutrition of children of educated mothers) or because the benefits do not accrue to them (if, for example, daughters will remit less of their earnings to their parents than do sons). Thus even if credit markets are fully functioning (or if they are not but the household is wealthy enough to hire outside child care), parents may consider the benefits of schooling a daughter to be less than the costs, including substitute care and other school-related expenses, of doing so.

and large, to increase their time in these activities when their partners work (see Engle and Breaux 1994 and references therein).²²

These stylized facts suggest that men's work affects children not through participation per se (which is uniformly high) or through changes in paternal time allocated in the home, but instead through the level of their earnings. Naturally such a general picture oversimplifies reality. Although they typically spend little time in care and nurturing of young children, fathers do play important roles in child development in most cultures, at least for older children and particularly for sons in some societies. Evidence (largely from the U.S.) indicates that when fathers participate in child-raising there are important intellectual, social, and emotional benefits for children (Ishii-Kuntz 1995; Rossi 1983; Hoffman 1989). Still, activities related to the nutrition of young children, which is the focus of most of this review, remain overwhelmingly the domain of women and girls.²³

Even so, men's livelihoods can have effects on children's well-being beyond their impacts on income, by influencing the time use of other household members. For example, via the usual income effect, an increase in male earnings is expected to increase the demand for leisure of the spouse. This should reduce her labor force participation or hours of work, as numerous studies confirm (see Ilahi 2000 for discussion).²⁴ In theory, the income effect should also lead to a reduction in her hours of housework. However, some studies indicate that a woman's time in domestic work increases, while her market work falls, when the male wage rises (Ilahi and Grimard 2000). With respect to child care activities, this would not be surprising since time spent with young children is, obviously, not just a chore but also brings utility; therefore like other 'normal' goods, demand for it will rise with income. This will increase the woman's time in care activities in the home (if also reinforcing the traditional gender division of labor). The opposite pattern also occurs: women enter the labor force in greater numbers when household income falls due to declines in the husband's real wage or to male unemployment during periods of recession or structural adjustment (as in the Latin American case studies cited earlier).²⁵ This reduces the time available for child-care activities, with possible risks to children's nutrition, or alternatively, as seen above, to the schooling of girls.

²² However, there are examples of such a male response from a few econometric analyses. Skoufias (1993) finds that a higher female wage in rural India increases male time in housework, presumably because men substitute for their wives in the home when the latter increase their labor supply. In Ecuador, Newman (2001) finds that the introduction of the cut flower industry increased the labor force participation of women while also increasing men's time in housework, compared with areas that did not get these enterprises.

²³ This is not to suggest that norms regarding the division of labor in the household are immutable. Policies directed at changing these norms are discussed in the next section.

²⁴ If the higher male wage induces an increase in male labor supply, women's time allocation may also change via a substitution effect. This would occur for, example, if male and female leisure are complements. However, if these substitution effects are not important, or if the husband is already working the maximum hours possible so there is no change in his labor supply, an increase in the male wage will affect female time use solely through the income effect.

²⁵ This 'added worker' effect during hard times is well documented. See references in Mehra and Gammage (1999) and Buvinic (1996).

In all regions of the developing world, the nature of men's work is changing in ways that affect fathers' abilities to provide for their children as well the nature of their ties to children. For example, as economies move away from subsistence agriculture to wage employment, men become more subject to unemployment due to national or even international economic cycles. This affects not just household income, but in the extreme, family cohesion itself: the likelihood of family abandonment rises when fathers are unemployed or otherwise lack sufficient earnings to support their families (Katzman 1992; Brown et. al. 1994). This is a stark example of how paternal employment (or unemployment) can impact children. Male migration, both rural-urban and international, which is usually motivated by employment considerations, also affects the relations of men to their children. Gender specific migration is common in Africa and Latin America (discussed further below) and has been a major contributing factor to the remarkable rise in the share of female-headed households in these regions over the last several decades. If remittances from absent fathers are adequate, children can benefit, but separation may instead weaken the traditional ties, financial as well as emotional, of fathers to their children. Within rural areas, as already noted, agricultural commercialization changes the types of work done by men and women, with potentially important implications for control over income and child welfare.

4. PROSPECTS AND POLICIES

Although the title of this paper frames the issue unidirectionally in terms of the effects of female employment on children's health and schooling, the problem could instead be viewed as involving conflicts (or complementarities) among three equally important development goals: increasing women's economic status through participation in paid employment; improving child nutrition; and increasing investments in girl's schooling. There are some well known complementarities among these goals that have long been stressed in the development literature. Female education leads to better child health and survival; greater female schooling also leads to increased participation of women in well-paid formal employment. This paper has focused on other aspects of the linkages between these three outcomes for which there exists the possibility of either conflict or complementarity.

The review of an extensive empirical literature yields no general answer to the question "What is the effect of mother's work on child nutrition?" In some cases negative associations are found, but in other cases there is no measured effect of maternal work or the estimated impact is positive. However, as emphasized previously, posing such a broad question is too simplistic to be very interesting or useful: the links between maternal work and child outcomes are complex, involving the cultural context, the nature of work, and a range of intervening factors.²⁶ Furthermore, a research agenda directed at trying to ascertain whether women's work 'harms' or 'benefits' children might be thought to incorporate, at least implicitly, the objectionable presumption that it would be justified to demand of women (but not men) that they not work if the relationship appeared to be negative. Instead, the focus should be on identifying

²⁶ Leslie (1989) makes this point as well in her survey of the earlier literature.

those cases where there may be risks to children, elucidating the specific reasons for the risks, and coming up with policies that reduce the risks (or conversely, enhance the benefits).

For this purpose the research does provides insights. We have some understanding of the conditions under which women's work may be beneficial to nutrition (complementarities) and where it may entail risks (conflict). One factor that emerges strongly is the importance of the quality of alternative childcare. Where substitutes for mother's care are of poor quality, which is likely to be the case when the substitutes are older siblings, young children's nutrition appears to suffer. More research is needed from different settings on the links between mother's work, the choice and quality of childcare alternatives, and child outcomes. A second important mediating factor is the age of the child. Older children are likely to benefit from mother's work because of the consumption expenditures made possible by the additional income. On the other hand, infants, who require very intensive caregiving (including breastfeeding), may incur nutritional risk. Less well understood, and warranting more investigation, are the links between work, a woman's own health, and the quality of childcare. Finally, the literature suggests that the more control women have over their earnings, the more children will benefit from their employment, all things equal.

Less research has addressed the impacts of women's work on investments in children's schooling. Evidence that women are more inclined than their spouses to spend in ways that benefit children suggests that women's participation in paid work will lead to greater investments in schooling. On the other hand, several ethnographic studies and a small number of econometric analyses suggest that the need for substitute childcare when mothers work impinges negatively on the schooling of older daughters. In view of the desirability of achieving greater gender equity in education as well as the existence of a number of important indirect social benefits to female schooling, these findings, while limited in number, should be a source of concern to policymakers. This is especially the case because, as discussed below, trends such as increasing female headship and smaller family size are likely to place increasing pressure on girls to curtail their schooling to substitute for their mothers in the home.

It is important to recognize that while in many or even most cases we may find no negative association of mother's employment and child welfare, this does not mean there is no conflict between the two. Women are constrained in their labor market choices by the need to care for their children and other domestic responsibilities. For women who cannot secure adequate and affordable childcare, this means not working (unless driven to do so by poverty) or entering into informal income-generating activities that are more compatible with childcare but are poorly paid. Hence it is more accurate to say that when women face a conflict between their labor market aspirations and their children's well being, they more often than not resolve the conflict in favor of the latter rather than the former. It might be argued that in such cases, since children's welfare is not diminished, the rationale for public intervention is not clear. After all, families must somehow accommodate unavoidable limits on resources of time, and how this is done is a private decision. However, these decisions are conditioned by traditional views of gender roles as well as women's weak bargaining power within the household. Consequently, they result in the burden of care falling very disproportionately on women, through a narrowing of their labor market possibilities or, alternatively, as an increase in the total burden of market and home work. This provides an equity rationale for public policy: it can serve to redistribute

the costs of caring for children more fairly. There are additional rationales for intervention, including several based on economic efficiency criteria. A full discussion of these issues is saved for Section 4.3.

4.1 Urbanization, changes in families, and women's employment

Research and policy on the relation of women's employment to child health and schooling must address several important long term trends in the family and work lives of women and men in developing countries, which were alluded to in the introduction. Many of these trends are associated with rapid urbanization. While the population of the developing world is expected to rise by about 60 percent from 2000 to 2025, the urban population is projected to almost double (Haddad et. al. 1999). Urbanization is associated with important changes in family structure: family units in urban areas are smaller and have weaker ties to the extended family.²⁷ With fewer aunts, grandparents or other relatives living in the household or nearby, urban households have fewer alternative caregivers for working mothers (Joeques 1989).

Urbanization also typically correlates with a higher share of female-headed households, in part reflecting patterns of rural to urban migration. In Latin America, the majority of such migrants are women without partners. In Africa and much of South Asia, a very different pattern usually obtains, whereby men migrate, leaving women and children behind in rural areas (though usually providing support through remittances). As a result of these trends, the rate of female-headed households is almost 30 percent in Latin America and the Caribbean, over 20 percent in sub-Saharan Africa, and about 15 percent in East and South Asia (Himes et. al. 1992). Children in female-headed households are not always less well nourished than children in male-headed households (Kennedy and Peters 1992, Engle 1995), which in part may reflect that women who head their own households are able to spend a greater portion of family income on children's needs. Nor are female-headed households necessarily poorer than male-headed ones: evidence suggests that they are worse off in Latin America (Buvinic 1996), but this is not generally found in Asia and Africa (Quisumbing et. al. 2001). Even so, if there is no spouse present and remittances or transfers are not adequate, the pressure on a woman to participate in the labor force obviously will be very strong. At the same time, female-headed households tend to be smaller, with fewer potential substitute caregivers for mothers who work. Therefore stresses on women's time, and by implication health risks to themselves and their children, are higher.

The nature of women's paid work changes dramatically with urbanization, in particular with respect to the importance of formal sector employment. In terms of pay and security urban jobs represent a step up for women compared with work in rural settings (Horton 1999). However, they are generally less flexible with respect to hours and less compatible with childcare than agricultural work. Evidence culled from Demographic and Health Surveys from a number of developing countries by Ruel et.al. (1999) confirms that employed urban mothers are less likely than rural women to take their children to work with them.

²⁷ Family size in the developing world has been declining for other reasons as well, such as gender-specific migration (discussed below) and reductions in fertility.

In spite of the connection of formal employment with urban location, in many areas of the world the urban informal sector absorbs more women than does the formal sector. This is especially true for Africa. In West African cities, most working women are found in the informal sector (Becker et. al. 1994; Glick and Sahn 1997). Informal work on the whole offers greater possibilities for combining work and child care, and for many women this is the rationale for choosing such work. However, even in urban informal employment the opportunities for doing this are more limited than in rural work activities. For example, street vending may require working long hours some distance from the home and in an environment that is unsafe for children.

The trends associated with urbanization thus increase the need for substitute care, on the one hand, while reducing the availability of traditional sources of such care on the other. More families therefore seek assistance from outside the family: the use of hired domestic help or institutional childcare is higher in urban than rural areas throughout the developing world (Ruel et. al. 1999). Still, since domestic help is unaffordable for most households and publicly provided childcare remains scarce, the numbers using these alternatives even in urban areas remain low. Community networks among women in urban neighborhoods can serve as a partial replacement for the extended family structure of the rural environment. Overall, however, the childcare problem is more pressing in urban settings, raising concerns about the health of young children of working mothers who cannot secure adequate care. With less access to members of the extended family, the pressure on daughters to substitute in the home for their working mothers is greater in urban areas, all things equal. At the same time, however, daughters are less 'available' as substitute care providers because they are more likely to be enrolled in school (especially at the secondary level), a reflection of the easier access to schools in the urban environment. Low-income working mothers have to resolve the dilemma either by pulling daughters out of school or by somehow getting by, at risks to their children's health and their own.

4.2 Implications of globalization for women's work and children's welfare

Increasing integration into the world economy through trade and globalized production networks is affecting women's and men's livelihoods in profound ways. For women the most important change has been the increase in manufacturing employment in export industries. Women now represent over a third of the manufacturing labor force in the developing world, and almost half in some Asian countries (Mehra and Gammage 1999). In textiles, footwear, or electronics manufacturing in export processing zones (EPZs)²⁸ women can account for as much as 70 to 90 percent of the workforce (Romero 1995). This predominance of women—and in particular, young women—in export manufacturing is remarkable and is only partially explicable by the fact that this work is usually low-skilled and women have fewer skills than men. As many observers have pointed out, there are distinct advantages to employers from having a feminized workforce: it is relatively docile and willing to work for lower wages (see Razavi 1999).

²⁸ Export processing zones are enclaves set up outside a country's normal customs barriers to attract foreign investment. The inducements include exemption from duties on imported intermediate inputs, as well as lower corporate taxes and less regulation than in the normal economy (ILO/UNTC 1988).

Whether this trend is beneficial to women is much debated. Poor or dangerous working conditions in export manufacturing jobs have been widely reported, including in the popular press; there is usually very little or no opportunity for advancement for women; job turnover is very high. At the same time, these jobs usually represent an improvement over the alternatives currently available to women (Mehra and Gammage 1999; Romero 1995). Moreover, through the growth of such employment globalization has served to reduce occupation and pay differentials between men and women (Tzannatos 1999).²⁹

Tracing out all the links between globalization-related changes in women's and men's employment, on the one hand, and children's welfare, on the other, would present a formidable challenge.³⁰ Less ambitiously, we can say that a number of factors will be involved. Changes in productivity and incomes of men and women overall are one. Another will be changes in women's incomes relative to men's. If women gain economically relative to men, the balance of power within households may shift in ways that benefit children. Equally important, power may shift in the public sphere as well, with women gaining greater voice in shaping policies that address their priorities. A third important factor is changes in the nature of women's employment in terms of its compatibility with their domestic roles. Finally, an outward looking economic orientation compels governments to give a great deal of weight to remaining competitive internationally. This will affect domestic policies toward the labor market as well as the ability to raise public revenues that might fund social services affecting families, an issue I discuss further below.

With regard to the constraints facing women, while manufacturing employment may raise women's earnings, it is usually inflexible with regard to hours and incompatible with child supervision. Even if firms provided on-site child-care facilities³¹, long daily commutes on crowded public transportation would make it impractical for many women to take their children to these facilities. The difficulty of combining work and childcare responsibilities in modern manufacturing jobs is a major reason for the prevalence of young unmarried (and childless) women in firms in EPZs.³² Frequently, however, the makeup of the workforce is due to out and out discrimination in hiring. Many employers in EPZs (as well as elsewhere in the formal economy) simply do not hire married women or women with children—or routinely dismiss women upon marriage or pregnancy—to avoid the anticipated work disruptions associated with their domestic responsibilities (Seguino 1997; Pearson 1995). Others require pregnancy tests or

²⁹ This is not an uncontested view; see Joeques (1995). Also, as countries move up the technological ladder, demand for skilled labor rises, putting women at a relative disadvantage unless they are given equal access to training or education. This may be a factor behind reversals in the trend to close the earnings or occupation gender gaps in countries such as Taiwan and Mexico (Seguino 1997; Pearson 1995).

³⁰ Zafiris Tzannatos (forthcoming) explores the implications of globalization for incomes and health of men and women.

³¹ I am not aware of any comprehensive survey of childcare provision by export manufacturing firms in developing countries or specifically by firms operating in export processing zones.

³² Another explanation, offered in the Southeast Asian context, is that such employment is regarded by families as a short term strategy for generating income from daughters before they are married off (Salaf 1981; Greenhalgh 1985). Alternatively, the work may simply be too physically stressful for long-term employment.

even sterilization certificates. Hence many women—or most women, in some cases—are locked out of whatever benefits these jobs have to offer.

Critics of globalization argue that although the rise of women's manufacturing employment implies a significant formalization of *female* labor, on a global scale it represents an *informalization* (or feminization) of labor overall. International competition puts pressure on employers to keep labor costs low, leading them to replace male labor with cheaper and more flexible female labor (Standing 1989,1999). Similarly, to keep or attract business investment, governments are increasingly reluctant to intervene in the labor market to insure job protection and other benefits typically associated with formal employment. The drive to reduce labor costs explains an apparent countertrend in women's work: greater informalization through outsourcing and subcontracting to home-based workers. This process is occurring in both developed and developing countries (Mehra and Gammage 1999; Standing 1999). It is not easy to determine how extensive this activity is although it is clearly on the rise; the problem is that home-based workers tend to 'disappear' from official statistics (Chen and O'Connell 1999). Case studies indicate that in developing countries this work is closely linked with the formal sector, particularly export-oriented firms in textiles, clothing and shoes. The advantage for these firms is that they can pay lower wages and avoid job security and conditions of work regulations that apply to factory based employment.

Despite the lower pay and benefits, it might seem that such home-based employment could at least ease the tensions between work and childcare. However, the implications for children are not necessarily positive. This work is essentially industrial activity carried out in the home (Floro 1995). Children are potentially exposed to hazardous or toxic materials not associated with more traditional forms of income-generating activity in the home. They are also likely to be put to work helping their mothers with their jobs, increasing the risks to their health and safety. Working in isolation, women are not likely to gain in terms of empowerment from their work, which may limit the benefits accruing to children from their incomes. The actual effects of home-based work on child welfare remain largely unknown, however, and deserve further study.

It should not be forgotten that despite rapid urbanization, the majority of the population in the developing world is still rural and in some regions will remain so for some time. In both Africa and Asia more than 60 percent of the population still lives in rural areas. If urbanization adds to the dilemmas facing working mothers, this is not so say that the need for childcare services in rural areas is not also pressing. As noted earlier, it not correct to assume that women's agricultural work is necessarily compatible with childcare. The agricultural sector also undergoes structural change with development and with greater integration into the world economy, and these changes have implications for work and children. For example, large-scale mechanized agriculture employing a wage labor force reduces work-childcare compatibilities relative to work on small family farms. And as described earlier, even commercialization in the context of the family farm can have important impacts on men's and women's time use and relative control over household income, with ramifications for child welfare.

4.3 Policies to reduce conflicts between women's dual roles

Childcare services

The trends outlined in the previous section heighten the importance of policies to address the conflicts women face between their need to work and their need to insure the well-being of their children. Naturally, improving women's access to decent childcare takes center stage in the policy discussion. It is necessary at the outset to indicate what is meant by 'decent' care. It is widely agreed that this means more than simple child-minding and feeding: it includes as well other activities necessary for a child's development, such as engaging the child in social interaction that fosters cognitive and social development (Myers 2000). Recent research has shown that mental stimulation and interaction with children as young as zero to 2 years yields significant developmental benefits (Consultative Group on ECCD 1993; Martorell 1996). Hence there is a great deal of overlap between the concepts of 'child care' and 'child development'; indeed, they are now typically combined in the label 'early childhood care and development (ECCD)'. ECCD interventions are usually conceived as integrated programs and as such provide a range of additional services such as nutritional supplementation, health care, and parent education.

It is important to recognize that while at the conceptual level the distinction between child care and child development may be considered insignificant, in practice there is often a tension between these program goals. Integrated ECCD programs are more likely to be focused on insuring healthy development in children from disadvantaged subpopulations and less likely to be concerned with accommodating the childcare needs of working mothers. This problem is discussed further below.

There are multiple reasons why private markets for childcare/ECCD in developing countries are generally inadequate, justifying the use of public resources to increase the utilization of these services. Perhaps most important is the need for childcare among low-income working mothers who are unable to secure satisfactory family arrangements for care. Since these women typically cannot afford private providers, their children face possible nutritional risks through inadequate care, for example, care in the home from older siblings. Further, recent longitudinal evidence from developing countries indicates that in addition to short-term nutritional benefits, well-designed ECCD programs can have significant positive long-term impacts on primary school enrollment and academic performance; these come through pre-school effects on physical and mental growth (Myers 1995; Young 1996).³³ The most disadvantaged children appear to experience the largest gains, because these programs supply aspects of care that wealthier parents can provide on their own but poor parents cannot (see Young 1996 and references therein). By disproportionately raising schooling attainment and future labor productivity among poor children, these programs should have future benefits in terms of reductions in poverty and inequality, two widely agreed upon social objectives. Again, however, since many or most poor families would be unable to pay for private services of this nature without reducing consumption below minimum levels (and are unable to borrow to make

³³ However, as discussed below, few such studies have used rigorous evaluation designs to assess program impacts.

the investments in human capital that these programs represent), public sector involvement is necessary.

Private markets for ECCD may fall short for the additional reason that many parents are likely not to be fully aware of the benefits to their children, some of which are not immediately or readily apparent (Deutsch 1998b). This will lead parents to purchase socially suboptimal levels of the service, justifying government intervention to increase utilization quite apart from equity considerations.

Gender equity is a second obvious rationale for government intervention in childcare, since women themselves also benefit from access to more affordable childcare. Unless they fully substitute other work activity for reductions in childcare time when these services are provided, their total work burden of home and market activities will be reduced. As noted in Section 3, women who enter the labor force continue to perform substantial amounts of childcare and other household work, meaning that their work time is ‘financed’ in large part by reductions in leisure. Case studies of developing countries usually find that on average (even including women who are not employed) women’s total hours of work on the job and at home exceed those of men, who do much less in the home (United Nations 1995). Publicly supported childcare can lead to greater gender balance in the overall burden of work, by spreading the burden of care over the entire society (male and female) though the taxes used to finance the service.

Gender equity is also served in a broader sense in that women will be freer to make choices about work and career. A handful of recent studies for developing countries show that women’s labor force participation responds positively to reductions in the cost of child care (Lokshin et. al. 2000; Deutch 1998a; Connelly et. al. 1996). Further, access to affordable care will give more working women the option of engaging in full-time formal wage employment, with consequent improvements in their status and earnings. In the long run, it should encourage greater private investments in female education by improving the prospects for women to enter and remain in the labor force.

By reducing the domestic work obligation of women, childcare policies can also have significant implications for economic efficiency. Palmer (1991) characterizes this obligation as a ‘reproduction labor tax’ that distorts the allocation of labor in the economy. Rather than from incomes, the tax is extracted in the form of the labor time of women. Standard microeconomic reasoning demonstrates why this tax is distortionary. Allocative efficiency requires that a factor of production such as labor be allocated so that its productivity at the margin (the output that could be produced by an additional hour of work) is the same in alternative activities.³⁴ This requires that women be free to allocate their labor between home and market-oriented productive work, which is something they cannot do when they are constrained to spend a given amount of their time in domestic tasks. For many women the domestic work constraint will be binding (in microeconomic terms), meaning that their marginal productivity will be higher in

³⁴ When this is not the case, overall output could be increased if labor was shifted from an activity where the marginal product is low to one where it is high. Note that by referring solely to economic ‘output’ this discussion is abstracting from the direct utility received from caring for children. However, this does not alter the basic argument.

market work than in home activities. Consequently their labor will be undersupplied to the market economy and oversupplied to domestic work. Socialization of the cost of childcare eliminates or reduces such labor misallocations by relaxing the constraint on women's use of time, imposing in its place a standard (monetized), hence less distortionary, tax on incomes or profits.

Finally, also potentially benefiting from subsidized childcare are older girls whose mothers work, since there will be less pressure on them to curtail their schooling to help out in the home. Here too there is an efficiency rationale in addition to the obvious equity argument that gender gaps in access to education will be reduced. From the perspective of the large social returns to educating girls, households are likely to underinvest in girl's schooling. As noted earlier, this may occur even if parents fully value such schooling, because of the credit constraints they face: they are unable to borrow against the future returns to their daughter's schooling to pay for the childcare that would free her to attend school. Subsidized childcare can then be viewed as a substitute for a poorly functioning credit market, or alternatively as another form of public investment in (girls') education. In view of the evidence that girls' access to education is strongly constrained by their domestic obligations, government intervention in the market for childcare holds promise as a particularly effective means of increasing girl's schooling.³⁵

The discussion in the previous section makes clear that public support of childcare can be rationalized on both equity and efficiency grounds. The latter arise from failures in the labor market or the credit market, or both, and in the market for childcare/ECCD itself if parents do not fully recognize and internalize the benefits to their children of these services. However, despite these justifications as well as the trends outlined earlier that are increasing the need for non-traditional sources of care, public sector support of childcare in developing countries generally remains very weak. A small but growing number of countries, particularly in Latin America and Southeast Asia, have formulated national childcare or work-family policies. Moreover, throughout the developing world there has been a major growth in early child development interventions (Consultative Group on ECCD 1993). The problem is the inadequate coverage of these interventions, many of which were not expanded beyond the pilot program stage. Though a comprehensive study is lacking, it is estimated that only 1 percent of mothers in developing countries get help in raising their infants beyond that provided by family and friends (Young 1996).

Where childcare programs are available, they are frequently limited in that they tend to be focused on 'older' children, e.g., age 3 to 6 (Himes et. al. 1992). Often this is because the function of these programs is seen as preparation for school. Another reason is the traditional belief that mothers should be with their children at younger ages. Yet the empirical evidence discussed previously indicates that to the extent that nutritional risks to children of working

³⁵ There are other, often more direct, policies for targeting girls' enrollments, such as tuition vouchers or school stipends for girls, arranging for more flexible school hours to accommodate girls' home obligations, and in some contexts, hiring more female teachers (see Bellew and King 1993 and World Bank 2001). Unfortunately, there is little or no basis at this point upon which to compare the costs and enrollment effects of these policies with those of childcare interventions.

mothers exist, they will be greatest among very young children. Together with evidence of the benefits to this age group of early childhood care and development interventions, this strongly suggests that existing programs need to be reoriented to serve mothers of children age 0 to 3 in addition to those with older children.³⁶ Another shortcoming of many current programs is that they are not set up to take children for the entire day, a reflection again of a focus on early education rather than childcare. This obviously limits their usefulness to working women.

Government support of childcare takes many forms across the world (including none). Although this is not the place to review the range of existing policies and programs³⁷, a few points can be noted. As Cochran (1993) emphasizes in his review of 29 country case studies, the cultural and political contexts, including attitudes toward government and the family, are key factors shaping childcare programs. They will determine the private-public mix as well as the nature of the providers, for example, informal family based care or formal center based care. Many successful urban programs in the developing world involve the former, whereby the government trains and partially subsidizes a private nonformal provider, usually a woman from the neighborhood working out of her home (Ruel et. al. 1999). These approaches are significantly cheaper than having the government operate formal care centers, and they also make it is easier to get parents and the community to contribute their own time and money.³⁸ An effective large-scale application of the home-based approach is the Colombian Community Childcare and Nutrition Project, which was serving 800,000 children twenty-eight months after it was initiated (see Evans 1995b). Another practical strategy, particularly helpful to women in the informal sector, is the setting up of mobile creches near where women work. India's mobile creches system, for example, was designed to serve women in the construction industry. This approach has broad applications to agriculture, where temporary creches can be used to serve women engaged in harvesting work.

The most market-oriented form of public support would be to give families vouchers that they could use to purchase childcare services. This option, which subsidizes demand rather than supply, would in principle be the most efficient as it allows parents to choose among competing providers, whether public or private (Deutch 1998a). To date there does not appear to be any evidence on how well this might work in a developing country context.³⁹ When the government subsidizes the private market (whether through vouchers or subsidies to private providers) rather than providing services directly, insuring the quality of private providers is a major concern.

³⁶ Generous maternal or parental leave policies can substitute for publicly provided infant care, as happened in Sweden (Gunnarsson 1993). However, in developing countries this would not reach poor women unless they were in formal employment.

³⁷ Examples or case studies can be found in Cochran (1993), Himes et. al. (1992) and Joekes (1989).

³⁸ One estimate is that the public cost per child is just one-fifth that of formal care centers (Young 1996). Note that private parental contributions of money or time should not be ignored when assessing the costs of alternative programs, especially if mothers tend to bear the largest burden.

³⁹ In her study of low-income neighborhoods of Rio de Janeiro, Deutch (1998a) shows that that a large-scale voucher system would be cheaper than an expansion of the network of public providers. However, she lacks data with which to compare the efficacy (quality) of public and private services.

Adequate systems of regulation, oversight, and licensing of providers thus must be part of any such scheme.

In some developing countries in which there has been national legislation on childcare, individual firms are required by law to provide childcare to their employees. For the government this holds obvious appeal from a fiscal point of view, but it has well-known disadvantages compared with public financing. It depends on enforcement, which is usually inadequate or nonexistent. The beneficiaries are likely to be limited to employees of large formal sector firms. To the extent that the legislation is enforced, it raises the costs to firms of employing women relative to men, hence acts as a disincentive to hiring women. In contrast, public financing of childcare services from taxes (on individuals and/or firms) does not impose such a disincentive. Further, it delinks access to childcare from access to specific types of employment, making it possible for all working women to benefit from these services, including self-employed and informal sector wage workers. This principle, endorsed by the ILO among others, extends to other forms of work-family benefits, such as maternity or parental leave. Successful public financing schemes usually avoid reliance on unreliable general tax revenues and instead set up a special national fund for childcare programs to which employers and individuals contribute. Variants of this approach are in operation in a number of Latin American countries. In Columbia, for example, the main early child development program is financed through a three percent payroll tax (Waiser 1998).⁴⁰

Finally, given resource constraints, it may be necessary to target services to women and children who are most in need or for whom nutritional risks are thought to be present. Based on the evidence reviewed above, this group would include mothers of very young children (under 2 or 3) who must work to support their families, working mothers more generally with very low incomes, and female heads of households. These characteristics, which obviously will often overlap, can in principle be used to indicate program eligibility. However, in countries with weak administrative capacity, this may be impractical given well-known difficulties in applying individual means testing. A better approach may be to simply target poor neighborhoods by funding service providers in these neighborhoods, as was done for example in Mexico's Initial Education Project (see Young 1996).

Although there appears to be ample justification for government support of childcare in developing countries, the limitations of existing knowledge must be emphasized. Many unanswered questions remain about the best approach for specific contexts. To most effectively allocate resources, policymakers must have information on both the costs and the benefits of different alternatives. On the benefit side, while there is evidence of substantial short- and long-term impacts of ECCD, noted above, the number of evaluation studies in developing countries remains small. Very few of these studies used experimental designs in which children were randomly assigned to program and control groups.⁴¹ The other evaluations varied widely in the

⁴⁰ Note that the source of public financing is distinct from the question of the nature of provision: tax-financed public support can take the form of direct public provision through government run centers, subsidies to private providers, or demand subsidies to households.

⁴¹ Exceptions are evaluations of Turkey's mother education program (Kagitcibasi 1996), and childhood nutrition supplementation with stimulation in Jamaica (Grantham-McGregor et. al. 1997).

efforts made to come up with reasonable comparison groups with which to compare outcomes of program participants (see Meyers 1995; Barnett 1997). Therefore for some studies it is not possible to rule out unmeasured differences in participants and non-participants as a factor behind the apparent strong positive impacts of the programs examined; that is to say, selection bias may contaminate these estimates. Therefore additional research on the impacts of different ECCD alternatives using rigorous study designs should be a high priority.

On the cost side, only in the last several years have researchers started to carefully examine the costs of childcare or ECCD services in developing countries. It is difficult to evaluate existing estimates because they refer to a variety of programs, such as half-day preschool, comprehensive ECCD interventions, or more rarely, custodial childcare services (Waiser 1998). Estimates from different settings of annual per child costs differ by an order of magnitude, from well over US \$1,000 to well under \$100. One consistent finding, already noted, is that nonformal systems can yield very large savings over formal care facilities, though with unclear implications for quality (Barnett 1997).

Very rarely have attempts been made to bring information on costs and benefits together to calculate either cost effectiveness (which links outcomes to program costs) or cost benefit (which compares these outcomes measured in monetary terms to program costs). Van der Gaag and Tan (1998) conduct a cost benefit analysis for the PIDI ECCD project in Bolivia. Assigning monetary values to the expected benefits of the project, which include higher earnings brought about through improved cognitive ability and schooling attainment, they calculate benefit to cost ratios in the range of 2.4 to 3.1, depending on the assumptions used about impacts. As Van der Gaag and Tan note, these ratios are larger than for most investments in 'hard' sectors, e.g., irrigation or agricultural development projects. More such analyses are needed for specific country contexts. Further, information is required on the cost-effectiveness or cost benefit of competing alternatives for public childcare/ECCD resources, e.g., formal vs. non-formal systems, or comprehensive but costly integrated ECCD programs vs. services that are more custodial in nature but less expensive. For example, it is not implausible that a given dollar expenditure on an informal low cost care daycare system could, though broader coverage and larger effects on mothers' labor supply and incomes, yield greater nutritional benefits for children than would comprehensive ECCD that had lower coverage or operated during only part of the working day.

Research is also needed on the demand for these services and for specific characteristics of providers. This is especially the case where some level of contributions by parents will be necessary to supplement public financing for wide-scale programs: it is necessary to know how sensitive parents will be to the costs of different types of services. There is a growing literature on the choice among childcare alternatives in the United States and other industrialized countries, but much less has been done in this area for developing countries (see Deutch 1998b for a discussion of the existing literature). The few econometric studies for developing countries typically estimate the effects only of a single variable representing local 'non-family childcare costs', not the effects of cost and various aspects of quality on the choice among competing alternatives.⁴² However, such an analysis is important for the appropriate design of programs

⁴² This is the case, for example, with the studies of Deutch (1998a) and Lokshin et. al. (2000). It should be noted, however, that the focus of these authors is on modeling the joint work and child-care decisions of mothers, not the

and for assessing the possibilities for partial cost recovery through fees. Despite the potential benefits, some families may be reluctant to use non-family childcare alternatives, or may be very sensitive to cost.⁴³

Another highly policy-relevant question for which existing evidence is suggestive but still limited is the effect of these programs on maternal labor force participation, and further, on the choice of employment (informal vs. formal; part-time vs. full-time) and consequently on earnings. Finally, more research is needed on the impact of childcare availability and costs on the schooling of older siblings, especially girls. For example, how do the benefits for girls' enrollments from subsidized childcare compare with those from more direct interventions, such as providing tuition subsidies to families to send girls to school? (See Bellew and King 1993 for discussion of the latter approach).

In principle, the optimal approach to evaluating childcare or ECCD interventions is an experimental study design. Recent years have seen increasing application of experimental studies in developing countries to analyze schooling and nutrition interventions. For logistical and political reasons, many of these experiments have involved randomization at the community rather than individual level; that is, the program is introduced, at least at first, in some communities and not others.⁴⁴ This approach could fruitfully be applied to study the impacts of ECCD or childcare services. Provided that randomization is successfully implemented, it would yield unbiased measures of the community level average impacts of the program on outcomes such as nutrition, cognitive development, and school achievement, as well as maternal employment and older siblings' schooling. However, experimental studies are complex as well as expensive undertakings, and this applies all the more strongly to community randomized designs; when randomizing over communities, true randomization is more difficult to achieve, and the number of communities must often be large to detect significant impacts (Murray 1998). In view of these difficulties, there remains a place for rigorous statistical analysis of childcare choices and outcomes using non-experimental survey data.

Other policies

Among other means of addressing work-childcare conflicts is the introduction of flexibility in work schedules for full-time employees. Evidence from developed countries (cited by Dy-Hammar, forthcoming) indicates that women are more likely than men to take advantage of such 'flexitime' arrangements. Hence even though they are also available to men, these

choice among childcare alternatives. Given the complexity of the former estimation, simplified representations of childcare opportunities are necessary.

⁴³For example, in a well-conducted evaluation of a non-formal provider program in Guatemala City, Ruel et al. (2002) note that participation in the program is only 4% of eligible families. They attribute this primarily to inadequate supply, but they note as well that many of the parents who do not use the service give as the reason that they are uncomfortable having their children cared for by strangers—a demand side limitation.

⁴⁴ Examples of programs that involve community randomization (at least in the initial program stages) are the PROGRESA program in Mexico, which has a nutrition and schooling focus for young children (Skoufias 2001) and the Quetta Urban Fellowship Program in Pakistan, which subsidized private girls' schools in Pakistan (Kim et al. 1999).

arrangements by and large are not altering traditional gender roles vis-a-vis child raising. Nevertheless, they ease the problem of employer disincentives to hiring women because they do not reduce the total hours of work but rather reallocate them over the work day or week. Thus the flexible scheduling of work time is not necessarily costly to employers and may even be beneficial, by increasing retention of employees and reducing absenteeism. If this is the case, the policy imperative is not to find ways for the public sector to absorb additional costs to firms in an effort to insure gender-neutrality, but rather to convince employers of the potential benefits of such alternative work arrangements.

So far the application of flexitime appears to be limited to industrialized countries—at least, research on flexitime has been focused there. Its applicability to the developing world will be restricted because these arrangements are characteristic of formal sector work. Further, they are usually found in white-collar occupations within the formal sector. Even given these limits, however, flexitime has the potential for expanding women's access to formal employment by making such employment easier to balance with childcare.

While women appear in many contexts to have stronger preferences than men for allocating income in ways that benefit children, in some cultures they are unable to control how their own labor earnings are spent. This will limit the benefits to children of women's employment and in some cases, as indicated, it may be the reason for observed negative associations of women's work and child welfare. However, there are a number of ways in which public policy can indirectly influence the gender balance of power in household decision-making and control over resources. Legislation that guarantees women's rights to own and inherit property, that makes divorce and child support easier to obtain, and that provides social assistance to female-headed households will increase a woman's options outside of her marriage, raising her bargaining power within the relationship. Compelling arguments for many of these policies are usually made on the grounds of gender equity. By enhancing a woman's power to determine the allocation of household resources, and in particular her own labor earnings, these policies have the additional advantage of increasing the complementarities of women's work and children's well being.

All things equal, the benefits to children of female employment will be a positive function of the level of a woman's earnings. Especially if women have a higher propensity than men to spend on their children (as well as having control over their earnings), policies that are directed at raising female incomes should strongly benefit children. Significant gender differentials in earnings in the developing world persist, though as noted above they appear to be narrowing. These gaps are due in part to differences in the education and work experience of men and women, but much of the differences in earnings are not explained by these factors and instead reflect (among other possible causes) gender discrimination in pay or in access to better-paying occupations.⁴⁵ Legislation to reduce these forms of labor market discrimination where they are present should raise women's incomes, with potential indirect benefits for children's

⁴⁵Significant gender gaps in pay even after controlling for observed characteristics such as education and age are the norm across the developing world but the extent of the gap is quite variable (World Bank 2001). The 'other factors' noted in the text include unmeasured differences in women's and men's abilities, motivation, and labor force histories.

health and education. In practice, enforcement of these measures will generally be limited to formal sector firms, so many women would not be affected. However, there are possibilities for targeting incomes of women in the informal sector, especially the self-employed: an example is micro-credit schemes to raise women's small enterprise opportunities and earnings.

Note, however, that while policies to improve women's labor market incentives have the potential to increase children's welfare, they can be expected to raise the participation and labor supply of women, not just their hourly earnings. This will tend to exacerbate the tension between the demands of work and care, raising the time stresses on women and potentially reducing the nutrition and schooling benefits to children. As Leslie and Buvinic (1989) pointed out some time ago, programs targeting women's livelihoods have often failed to recognize this dilemma. Therefore it is important that improvements in labor market opportunities for women, while obviously laudable, be accompanied by measures that address the concomitant increase in the need for childcare.

Globalization and constraints on policy

The foregoing policy recommendations are in the spirit of the comprehensive platforms put forth by organizations such as the ILO and the UN Commission on the Status of Women. The ILO's 'Decent Work for Women' proposal, for example, calls for pay equity and work-family measures including job flexibility, the provision of childcare services, and family leave (ILO 1996). However, at the same time as issues of gender equity and work-family balance have been receiving greater international attention, economic globalization and its attendant premium on international competitiveness has acted to discourage new policies affecting labor markets and social protection. So too has the process of economic reform and structural adjustment occurring in many countries. The trend has thus been in the opposite direction, toward deregulation of labor markets and downsizing of public sectors. In the globalized economy, any country that attempts to intervene in isolation will find itself at a disadvantage to the extent that the measures taken raise local labor costs relative to elsewhere, since this will reduce the profitability of exporting and import-competing firms operating within its borders. Firms with a high degree of international mobility, in particular foreign enterprises in EPZs, will move on if they find the costs sufficiently burdensome. On the other hand, if all countries acted in concert to implement similar policies, none would suffer a relative disadvantage.

This 'collective action' dilemma is a key aspect in the debate over labor standards and international trade. This is not the place to enter into this debate (see Elliot and Freeman forthcoming), but it should be noted that the problem applies, at least in principle, to the specific policies discussed here. Consider first the elimination of gender discrimination in the labor market. Non-discrimination is one of the four ILO core standards, contained in separate conventions on equal remuneration and discrimination in employment and occupation. It is a widely agreed upon principle and indeed these two conventions have by now been ratified (which is not to say enforced) by the vast majority of ILO member countries. Nevertheless, gender discrimination may benefit the growth of export sectors in developing countries. Segregation of women into labor-intensive export manufacturing (an outcome of discrimination in access to jobs elsewhere in the economy) keeps female labor supply high, and wages low, in this sector (Seguino 1997, 2000; Maskus 1997). It is plausible therefore that governments

perceive policies to reduce gender discrimination in hiring or remuneration, at least when enacted in isolation, as a threat to their international competitiveness. Consistent with this is the observation made by Himes et. al. (1992) a decade ago that a disproportionate number of countries relying heavily on export manufacturing and female labor had failed to ratify the anti-discrimination conventions. However, more recent rigorous statistical studies of this issue present a mixed picture.⁴⁶

Work-family measures such as childcare, hours flexibility and parental leave are different from core standards, which focus on basic human and labor rights; in the standard taxonomy the former would instead be classified as ‘cash standards’.⁴⁷ Above it was noted that financing childcare and other family services out of tax revenues is preferable to legislating that individual firms provide them to their employees. In addition to avoiding disincentives specifically to hiring women, a more general aspect of public financing of such services is that it avoids having to raise firms’ labor costs; hence it would seem to have no negative implications for international competitiveness. However, the revenue for public programs must come from somewhere. Optimally both individual workers and firms would contribute, the latter through taxes on profits. The problem governments now face is that globalization is increasing the international mobility of both capital and skilled labor. With more firms and people having the option of moving elsewhere in response to higher taxes, governments are finding it harder to raise revenues to finance social programs (Lee 1997; Tanzi and Chu 2000). Indeed low taxes are one of the main inducements offered by governments to attract firms to EPZs.

Hence a single country attempting to act on its own, even if it does not directly intervene in the labor market, suffers a relative disadvantage: the collective action dilemma remains. Of course, the extent of the problem will be a function of the size, hence cost, of the social programs envisaged. With respect to childcare or ECCD programs, the costs analyses that have been done have usually focused on estimating unit costs without making explicit the full budgetary implications of scaling up the programs under review. However, for most such programs such a scaling up would clearly be expensive. For the Bolivian PIDI ECCD program, which uses non-formal providers and costs about US \$350 per child per year, Van der Gaag and Tan (1998) note that the costs of serving all 300,000 eligible low-income children in the country would be about \$100 million per year. This is equivalent to nearly one third of the entire government budget for education and about 6 percent of overall government spending.⁴⁸ Budgetary impacts can be kept down by targeting only the poorest, most nutritionally at-risk children (Consultative Group on ECCD 1997). However, while this may be effective at reducing nutritional risks where they are

⁴⁶ Mah (1997) finds a statistically significant negative association of exports as a share of GDP and ratification of the nondiscrimination in pay convention. However, other studies report no significant association between measures of trade or openness on the one hand and ratification (and/or implementation) of this or other core standard on the other. See Elliot and Freeman (forthcoming), as well as Chau and Kanbur (2001).

⁴⁷Note that unlike core standards, the need for (or right to) comprehensive work-family benefits can hardly be said to command anything like universal agreement, even among industrialized countries: witness the vastly different levels of public support for families in the U.S. and Sweden, for example.

⁴⁸The per child annual cost of this program is not out of line with estimates for similar home-based programs in Latin America that provide both childcare and nutrition. Estimates for Venezuela, Columbia, and Ecuador are US \$468, \$298, and \$175, respectively (cited in Waiser 1998).

most serious, it would fall short of a comprehensive policy of daycare that allows working women to balance their work and childcare needs. Alternatives are to have wide coverage but rely on financial contributions from better-off parents, or to emphasize the daycare aspect of these services (which are cheaper to provide) except for the most disadvantaged groups, who would also receive comprehensive ECCD services.

If childcare was just one of a range of services to be provided under comprehensive programs for social protection or work-family balance (see Dy-Hammar forthcoming), this would certainly imply for many countries the need for non-trivial increases in public resources, possibly leading to resistance or flight on the part of capital and labor. It is hard to say to what extent these types of considerations are preventing more effective work-family policies from being instituted in developing countries, but certainly advocates of such policies need to be aware of the issue. In principle, international coordination of policy to get around the collective action problem, advocated for core labor standards (Lee 1997), is relevant as well for work-family policies. For such policies this points to the importance of coordinated global efforts to get governments to recognize the need for these measures.⁴⁹

Changing gender norms

Finally, the policy discussion so far has largely taken as given existing gender roles within the household, under which the care of children is the responsibility solely or primarily of women or girls. Given this constraint, the key to reducing conflicts between work and childcare is to reduce the burden of the latter on women. Publicly subsidized childcare does this by getting society as a whole (through taxes) to shoulder some of the burden. The 'private' alternative of redistributing the costs within the household, by getting fathers to share in the domestic work, is implicitly perceived to be unrealistic or too difficult.

This may be accurate in the short run, but social norms regarding gender roles should not be regarded as unchangeable. In the last decade coordinated international efforts have begun to address this issue in developing countries. Most visibly, the 1994 United Nations International Conference on Population and Development emphasized the need to promote men's shared responsibility for parenthood. As yet there are few examples of programs directed at fathers in developing countries. Advocates of such approaches stress the need to increase father's roles in caring for children, especially young children, and to increase their financial support for their children, whether or not they live with them (see, e.g., Engle and Breaux 1998). Note that while both would be beneficial to women and children, these two objectives may have distinct outcomes. If fathers are more willing to do domestic work, this may lead through a substitution effect to an increase in women's labor supply. In contrast, greater financial support from fathers may reduce the mother's labor supply since there is less pressure on her to provide resources for her children. One way that paternal involvement in the care of young children can be increased is through encouraging fathers' participation in child health and nutrition programs. At present such interventions essentially are directed exclusively at mothers; that is, their design reflects an acceptance of existing gender roles.

⁴⁹ Dy-Hammar (forthcoming) details the role of the ILO in promoting these policies.

If the experience of industrialized countries is any guide, real changes in male attitudes and behavior will take time. In most of these countries changes in the time contributions of fathers to childcare and other domestic work lag well behind the rhetoric (Evans 1995a). Further, as already noted, some aspects of the development process act to weaken traditional ties (both of time and income) of fathers to their children. Gender-selective migration to cities separates men from their children, as does a higher prevalence of divorce. Among the few studies of fathers and their children in developing countries are two described by Engle and Breaux (1994) for urbanizing West Africa and China, which come to quite different conclusions. In the first case, pressures on men for greater financial success reduced the (already low) time traditionally spent with their children. In the second, in contrast, urbanization seems to have increased expectations of closer relations of fathers with their children.

Beyond whatever impacts direct interventions aimed at men may have, changes in the priorities and expectations of fathers in developing countries are likely to be a function of improvements in incomes and education as well as exposure to alternative role models through the mass media (Engle and Breaux 1994). As means of speeding up these changes, governments, in addition to increasing investments in education, can alter school curricula to promote different perspectives of family roles, and can use the mass media to influence attitudes and behavior. A rather different approach to changing men's behavior is the creation of financial incentives, or the removal of disincentives. One example, at least in principle, is the flexible time arrangements mentioned above. If these do not entail interruptions in employment or risks to career advancement, they will make it less costly for fathers to assume a larger role in the care of their children. Parental leave policy that is gender neutral and not perceived as damaging to job seniority or status may have the same effect.

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