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World Development Vol. 45, pp. 17–30, 2013

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0305-750X/\$ - see front matter

<http://dx.doi.org/10.1016/j.worlddev.2012.12.018>

# The Effect of Women's Bargaining Power on Child Nutrition in Rural Senegal

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**Summary.** — We examine how women's bargaining power affects child nutritional status using data from rural Senegal. In order to correct for the potential endogeneity of women's bargaining power we use information on a mother's ethnicity relative to that of the community she resides in order to construct an arguably exogenous exclusion restriction. While standard OLS estimates suggest that if a mother has more bargaining power, her children will have a better nutritional status, our IV estimates indicate that the true impact is underestimated if the endogeneity of bargaining power is not taken into account.

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*Key words* — woman's bargaining power, child nutrition, instrumental variable, Senegal, Africa

## 1. INTRODUCTION

Since the Beijing conference on women in 1995 the increase in women's relative to men's power in the household, usually known as women's bargaining power, has become a primary policy goal in developing countries. This willingness to empower women in developing countries is based on the idea that social justice is an important aspect of human welfare and has been reinforced by the finding that an increase in women's power relative to men's confers benefits on child health (Ahmed, 2006; Duflo, 2003; Hoddinott & Haddad, 1991; Lundberg, Pollak, & Wales, 1997; Maitra, 2004; Quisumbing & Maluccio, 2000; Thomas, Contreras, & Frankenberger, 1999). Such a link is generally explained by several factors. First, as stated in Smith, Ramakrishnan, Ndiaye, Haddad, and Martorell (2003), women are the main caretakers of children, and the quality of caring practices for children is one of the three key determinants of their nutritional status, the other two being household food security and health environment. Women's power to make decisions in this domain thus has a direct impact on child nutrition. Second, women's power has an indirect effect because it influences women's own health and nutritional status, both of which are vital for proper care for children and, during pregnancy, for children's birth weights. A third explanation that is valid in the absence of income pooling relies on the fact that men and women have distinct income allocations: men tend to use a larger proportion of income for production, household maintenance, social investment and personal consumption, while women's income is used more to meet daily consumption, such as food, clothing, and health care (Blumberg, 1989; Lele, 1986).

Although, there is now a large literature indicating a positive effect of women's bargaining power on child nutrition, much of the existing studies suffer from two potentially important weaknesses. Firstly, many studies rely on very indirect proxies of female bargaining power. Indeed, an accurate measure of

women's bargaining power is difficult to obtain because of its context-specificity, multidimensionality, and the difficulty in measuring a "process" (Malhotra, Schuler, & Boender, 2002, Section 2). In this regard, commonly used proxies have ranged from measures of woman's economic possessions, such as earned (Browning, Bourguignon, Chiappori, & Lechene, 1994) or unearned income (Schultz, 1990; Thomas, 1990), inheritance (Quisumbing, 1994), assets brought into the marriage (Thomas *et al.*, 1999), and current assets (Quisumbing & De La Briere, 2000). However, such measures are also likely to capture other aspects of a household. For example, earned income inherently also reflects labor supply decisions (Lundberg & Pollak, 1996), while unearned income, such as pensions, unemployment insurance, or interest on earnings accumulated over the life cycle, is most likely related to past or present household behavior (Behrman, 1997; Lundberg & Pollak, 1996) and may depend on tastes and labor market conditions (Quisumbing & Maluccio, 2000). Moreover, asset ownership might be correlated with other household choices, for instance, traditional households could at the same time prevent women from owning assets and have less healthy children (Behrman, Pollak, & Taubman, 1995 cited in; Duflo, 2003). Finally, in the presence of assortative matching, a woman's asset level could affect child health through her spouse's characteristics (Duflo, 2003). For these reasons, more recent studies (Ahmed, 2006; Allendorf, 2007; Becker,

\* Data collection was supported by the Microinsurance Innovation Facility of the International Labour Organization (Grant No. PO40052422). We thank David Fielding, Murat Genç, and Alexis Le Nestour from the University of Otago as well as the three anonymous reviewers from World Development for their excellent comments and suggestions. We also thank Robert Johnston from UNICEF for providing the MUAC bracelets as well as information on their use. Final revision accepted: December 19, 2012.

Fonseca-Becker, & Schenck-Yglesias, 2006; Elder & Rudolph, 2003; Friedberg & Webb, 2006; Hindin, 2000; Mullany, Hindin, & Becker, 2005; Woldemicael, 2010) have relied on “direct evidence of power” indicators (Kishor, 2000) that capture the nature of decision-making or control of resources by each spouse in the household. However, even when the researcher uses such direct proxies, there might be measurement error in women’s bargaining power that could result in an attenuation bias. For instance, an important issue in correctly measuring women’s bargaining power might be whether the husband of a nonpowerful woman was present during the interview and biased the responses of the woman.

The second major weakness in much of the existing literature is the failure to take account of the potential endogeneity of women’s bargaining power in econometrically estimating its effect on child health. More specifically, even in the case where direct measures of women’s power in the household are available, these are likely to be correlated with other unobservable (to the econometrician) variables that affect child health, and hence estimates of its effect may be biased. Of particular concern in this regard is unobserved parenting ability of the spouses. For instance, one could argue that women who have a greater bargaining power are likely to have better intrinsic characteristics since they managed to achieve a greater power in the household thanks to their good maternal skills, but that these characteristics also result in greater health in their children. In contrast, one could argue that in countries where social norms dictate that males are the guarantors of the well being of the household members and in this respect, are expected to make decisions for their members, women who have a high bargaining power are more likely to belong to deviant households. Indeed, a woman could have a greater bargaining power as a result of the disengagement of her husband in household’s decisions, that is, when the husband does not invest his money and time toward his wife and his children. In this situation we would observe that women who have greater bargaining power have children who do worse. Thus the endogeneity bias could, depending on the context, lead to an over- or an under-estimation of the effect of women’s bargaining power on child nutrition. To the best of our knowledge this issue has as of yet not been specifically examined.

In this paper we address these measurement and estimation concerns using the case study of Senegal. The choice of Senegal is motivated by a number of reasons. Firstly, chronic malnutrition (stunting) and acute malnutrition (wasting) affects 16% and 8% of the children under-5 and cause 31% of all deaths that occur among children under-5 (Demographic and Health Survey, 2006). Secondly, average Senegalese women’s relative decision-making power is among the lowest in the world, well below the South Asian average (Smith *et al.*, 2003).

Our data set consists of a rich sample of 505 farming households located in the Saint Louis region of Senegal. These data allow us to firstly, as do some of the more recent studies, focus on direct measures of female power as specifically incorporated in the questionnaire as shown in Appendix 1. To control for the potential endogeneity of our bargaining power measure, we take advantage of the fact that for historical reasons, women of different ethnicities have different bargaining power inside the household and that the extent of this may depend on the ethnicity of the neighborhood that they are living in, but that relative ethnicity, as we shall argue, is not directly related to children’s nutritional status. Our econometric results indicate that women’s bargaining power is a strong determinant of child nutrition. An increase in one standard deviation of the women’s bargaining power index improves the child Mid-Upper Arm Circumference (MUAC)  $z$ -score by 0.81 standard deviations after controlling for the endogeneity of women’s bargaining power.

The remainder of the paper is organized as follows. In the following section we outline our theoretical framework. The third section describes the Senegalese background, our data and the construction of variables used in our estimation. In Section 4, we outline our empirical specification and describe the econometric results of its estimation. Finally, concluding remarks are contained in the last section.

## 2. THEORETICAL FRAMEWORK

In order to demonstrate the potential importance of controlling for the endogeneity of bargaining power in estimating its impact on child nutrition, we adapt to our context the non-unified preferences framework that determines the effect of a mother’s bargaining power on child health as proposed by Maitra (2004). Accordingly, changes in child health result not only from a change in the budget constraint but also from changes in the utility function due to relative changes in power inside the household. It is assumed that parents i.e. the mother ( $m$ ) and the father ( $f$ ) make decisions regarding the quality of child health attainment. More specifically, consider a general household’s utility maximization problem where the two parents choose commodities purchased on the market ( $X$ ) and non-market goods ( $Z$ ) to maximize the difference between their utility level  $U$  and their reserve utility, ( $U^*$ ), the latter of which represents the utility of each parent outside the union. We assume that this reserve utility depends on factors that affect bargaining power inside the union ( $\varphi$ ), and here for convenience sake defined as the relative bargaining power of the mother. The bargaining power itself depends on each spouse’s characteristics ( $A_n = m, f$ ), such as his/her ability on the labor market (productivity, occupation, educational attainment, *etc.*), his/her social status, the wife’s rank in the household in the context of polygamy, extra-household environmental factors ( $E$ ) that include marriage market characteristics, laws (e.g., labor laws, property rights, and divorce law), and social norms in the neighborhood, and a vector of prices ( $p$ ) that is assumed to proxy the prices in the area mainly the prices of medical services and food. We also assume that bargaining power may be influenced by other potentially unobserved parental characteristics such as parenting ability,  $\gamma_n = m, f$ . In this regard one might be inclined to expect that mothers who have better intrinsic characteristics may be able to have greater power as husbands may feel less urgency to interfere in the child’s upbringing. However, in the Senegalese context this is a priori not necessarily true since “women should be submissive to male authority” (Sow, 1996).<sup>1</sup> Deviant, more independent behavior on the part of the mother may thus be associated with more bargaining power. Similarly, it might be that household heads who do not seriously take their socially expected role as guarantor of the well-being of the household may also allow greater power to the woman. In this case we would observe that children in those households would have poorer access to food, poorer care, and a worse health environment. Thus, a priori, the relationship between good/bad parenting ability and bargaining power is not clear.

The two parents choose to maximize:

$$\begin{aligned} \text{Max } V = & [U_f(X, Z) - U_f^*(A_f, E, p, \gamma_f)] \times [U_m(X, Z) \\ & - U_m^*(A_m, E, p, \gamma_m)] \end{aligned} \quad (1)$$

Subject to the full income constraint  $pX = w_m T_m + w_f T_f$ , where  $w_n$  is the wage rate and  $T_n$  is the time endowment for parent  $n$ . As a solution to this maximization problem, one obtains a reduced form demand equation for child health ( $H$ ),

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