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# Gender Preferences in Africa: A Comparative Analysis of Fertility Choices 

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#### Abstract

Summary. - This paper proposes a new method to infer gender preferences from birth spacing. We apply it to Africa, where the least is known about gender preferences. We show that son preference is strong and increasing in North Africa. By contrast, most Sub-Saharan African countries display a preference for variety or no preference at all. Further analysis concludes that traditional family systems predict well the nature of gender preferences, while religion does not. Last, the magnitude of preferences is stronger for wealthier and more educated women. © 2015 Elsevier Ltd. All rights reserved.


Key words - gender preferences, fertility, Africa

## 1. INTRODUCTION

In the early 90 s , Sen (1990) coined the term «missing women» to draw attention on the excess mortality of women in Asia: he estimated that approximately an extra hundred million women would be there if men and women received similar care in health, medicine, and nutrition. Since then, a large literature focusing mainly on South Asia and East Asia has described the discrimination against girls, mentioning for instance sex-selective abortions (Sen, 2001), differential child mortality (Rose, 1999), or differential health status (Pande, 2003). By contrast, Sub-Saharan Africa appears to do remarkably well. Sex ratios at birth are close to one, and survival rates as well as health outcomes are generally better for girls than for boys (Anderson \& Ray, 2010; Wamani, Astrom, Peterson, Tumwine, \& Tylleskar, 2007). All this may explain why gender preferences for children in Sub-Saharan Africa are rarely studied.
This paper focuses on fertility behavior as an alternative mechanism generating gender inequality, even when aggregate sex ratios are balanced. In their seminal paper, Ben-Porath and Welch (1976) infer the existence of gender preferences from the correlation between the probability to stop having children and the gender composition of existing ones. The idea has given rise to formal models of differential stopping behavior in favor of sons, predicting that an average girl has more siblings than an average boy ${ }^{1}$ (Jensen, 2005). There might be important implications for gender inequality because girls would then face more competition for household resources. ${ }^{2}$
On the other hand, the analysis of differential spacing behavior is of special importance in the African context. Indeed, when couples have many children, gender preferences are more likely to lead to differences in birth intervals rather than in sibship size. Jensen (2005) and Basu and de Jong (2010) advocate looking at birth intervals to find evidence of gender preferences in a high-fertility context. Under son preference, differential spacing behavior implies that an average boy is breastfed longer than an average girl, ${ }^{3}$ which may translate into inequality between boys and girls (Jayachandran \& Kuziemko, 2011). Another reason to consider birth intervals is to account for health risks related to spacing, and not only
to the number of births: according to the medical literature on developing countries, short birth intervals are associated with adverse outcomes for mothers (Conde-Agudelo \& Belizan, 2000) and children (Conde-Agudelo, Rosas-Bermudez, \& Kafury-Goeta, 2006). The authors show that intervals lower than 24 months multiply the risk of infant death by 2.5 , and intervals lower than 15 months multiply the risk of maternal death by two. If gender preferences turn out to induce short birth spacing, they could be a significant cause of maternal and infant mortality in Africa.

In this paper, we propose a new indicator of gender preferences based on differential birth spacing. We use a duration model of birth intervals to test if the gender composition of previous children influences the duration before the next birth. The main advantage of duration models is to deal properly with right-censored observations, i.e., families that are not yet complete by the time of the survey (Leung, 1991, 1988). We infer the existence of son (resp. daughter) preference when birth spacing is shorter for couples with fewer sons (resp. fewer daughters); and we deduce that preference for variety prevails when couples having a balanced mix of sons and daughters wait longer than couples having same-sex children. The conceptual framework underlying this strategy is a unitary model of the couple ${ }^{4}$ choosing optimal spacing and stopping rules. People might have a taste for balance in the gender composition of children, or a girl/boy bias; then, costs and benefits may differ for sons and daughters. What is labeled as «gender preferences» is the outcome of a decision problem based on tastes and prices. Using duration models of birth intervals, son preference has been tested and validated in Asia, ${ }^{5}$ but not in Africa. To our knowledge, there is no empirical study based on fertility behavior that documents systematically the variation in gender preferences in Africa. We contribute to fill

[^0]in this gap using Demographic and Health Surveys in 37 African countries.

We find that, in North Africa (Morocco, Tunisia, and Egypt), son preference is strong and has increased over time. By contrast, in most Sub-Saharan African countries, behavior is consistent with either preference for variety or no preference. South Africa, in particular, is characterized by a strong taste for balance. There is weak evidence of son preference in Mali, Senegal, and in the Great Lakes region, but the impact on fertility patterns is not substantial. We further investigate the role of socioeconomic factors in shaping gender preferences. Wealthier and more educated women display the same type of preferences as the others, but the magnitude of their preferences is much larger. Then, in Sub-Saharan Africa, there is no correlation with religion: Muslims exhibit the same preferences as other religious groups. On the other hand, traditional kinship structure accurately predicts the nature of preferences: son preference prevails in patrilineal ethnic groups only. Last, we discuss the different mechanisms through which gender preferences may translate into differential spacing. We conclude that our indicator mostly captures individual choices implemented through modern or traditional birth control methods.

The outline of the paper is as follows. Section 2 provides background on theoretical motives for gender preferences and a review of empirical evidence in Africa. Section 3 presents the data and some descriptive statistics. Section 4 discusses the empirical strategy and the identification assumptions. The main results are reported in Section 5, and some robustness tests are described in Section 6. Section 7 concludes.

## 2. GENDER PREFERENCES IN AFRICA

## (a) Theoretical motives for gender preferences

The most important motive put forward by the literature on gender preferences is the traditional structure of family systems. In patrilineal ${ }^{6}$ and patrilocal ${ }^{7}$ family systems, men are the fixed points in the social order, so that investment in daughters is considered as investment in another family's daughters-in-law. In Asia, such a system has produced economic incentives to have sons. For instance, the money spent for a son's marriage remains in the family while the dowry paid for a daughter's marriage is a net expense. In the same vein, female labor force participation is only valued once the daughter is adult, hence benefiting the family-in-law. ${ }^{8}$ Last, sons act as old age insurance for their parents, because they are the ones who remain in the family's house. They also act as widowhood insurance for their mother, because widows' claims on the late husband's resources enjoy a higher social legitimacy if they have sons (Agarwal, 1994; Gupta et al., 2003). Mothers, in particular, really need a son because their status improves substantially when their sons get married: they can exert their power over daughters-in-law. Ultimately, women play a dramatic role in the perpetuation and reinforcement of patriarchy. Demographers working on Africa have come to similar conclusions (Lesthaeghe, 1989). Among the key factors shaping the reproductive regime in this region, they mention traditional inheritance patterns. In matrilineal societies, having daughters is necessary to perpetuate the lineage, whereas families need sons in patrilineal societies. But Africa is different from Asia along at least two dimensions. First, the system of brideprice prevails in almost all ethnic groups: the groom has to pay for the bride, contrary to what
happens in a system of dowry. Second, the kinship structure is more flexible: adoptions and exceptions to allow daughters to inherit land in the absence of a son are not unusual in African patrilineal societies. Eventually, the imperative to have a biological son is weaker in Africa than in Asia.

Another motive specific to Africa is the depth of Islamic penetration. In North Africa, the influence of the Islamic law is strong. These societies are characterized by property concentration, endogamous marriages, and women seclusion, which implies that women's security and status critically depend on their ability to have sons. In Sub-Saharan Africa, traditions and customs have generally advocated common land ownership, exogamous marriages, women labor participation, and women's societies, which renders women less dependent on their sons (Lesthaeghe, 1989).

The last part of the literature focuses on the impact of modernization factors on gender preferences; female education and labor participation, access to modern contraceptives, urbanization, economic growth, and mass media are the most studied factors. The modernization hypothesis states that socioeconomic development would equalize the value of daughters and sons to their parents, leading to preferences for variety. However, modernization also brings about birth controlpromoting smaller family size and facilitating sex-selective reproductive behavior-which could intensify, at least in the short run, traditional gender preferences. So far, the debate is still open, since empirical studies have found mixed results, depending on the context, the indicator, and the empirical specification they look at. ${ }^{9}$

## (b) Empirical evidence so far

In her review of the empirical evidence on gender preferences, Fuse (2008) concludes that, although North Africa has not been subject to much research compared to East or South Asia, there is evidence of strong gender bias against girls. She further writes that «of all sub-regions in the world, it appears that the least is known about Sub-Saharan Africa».

Cross-country analyses generally find evidence of son preference in North Africa, but not in the rest of the continent (see Arnold (1992) on declared preferences and fertility behavior and Chakravarty (2012) on breastfeeding duration). SubSaharan Africa is characterized by a female advantage in infant mortality (Anderson \& Ray, 2010), as well as in nutritional status and health outcomes (Wamani et al., 2007). It does not display any systematic gender differences in breastfeeding and health-seeking behavior (Garenne, 2003). Regarding declared preferences, ${ }^{10}$ Fuse (2008) reports that most women in this region have no ideal gender composition, or would prefer to have the same number of sons and daughters. As for household resources, Deaton (1987) found no evidence of differential allocation between boys and girls in Ivory Coast.
Still, some studies show that son preference may appear in Sub-Saharan Africa in case of income shocks. For instance, Flato and Kotsadam (2014) find that infant mortality increases more for girls than for boys during a drought; they further explain that such a difference is due to discrimination, since the effect is larger in communities more likely to discriminate against daughters (strong declared son preference, preference for a small family size, and low female employment). In the same vein, Friedman and Schady (2012) find that girls are more exposed than boys to mortality risk in case of aggregate economic shock.

Last, a specific study on Nigeria shows that women with first-born daughters are significantly more likely to end up in

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