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Husbands, wives, sons, and daughters: Fertility preferences and the demand for contraception in Ethiopia

SUSAN E. SHORT
Assistant Professor, Department of Sociology, Brown University

GEBRE-EGZIABHER KIROS
Associate Research Scientist, Mailman School of Public Health, Columbia University

Abstract. Ethiopia, with nearly 65 million people, is the second most populous country in sub-Saharan Africa. Fertility levels are among the highest in the world. Using the matched wife-husband sample from the 1990 National Family and Fertility Survey of Ethiopia we investigate the fertility desires of wives and husbands and the degree to which they are similar, including whether a preference for sons exists. We model the determinants of the desire to limit or space births, and estimate unmet need. Results indicate high levels of concurrence among husbands and wives on reproductive preferences. Where differences exist, husbands are more pronatalist than their wives. Both husbands and wives prefer to have sons and daughters, but more sons overall. Approximately 22% of wives and husbands desire to limit or space births but do not use contraception. More than half of wives and husbands with an unmet need for limiting are paired with a partner who has no such need. Three implications follow from these results: (1) differences in wives' and husbands' son and daughter preferences may help to explain discordant views among couples when it comes to the desire to limit or space births; (2) husbands' overall contribution to wives' unmet need can be substantial in African societies in the early stages of fertility transition; and (3) wives' preferences regarding children and contraception can result in unmet need on the part of husbands, even in highly gender-stratified societies where men are more pronatalist.

Introduction

Demographic research supports two propositions. First, women's autonomy is associated with reduced fertility (e.g., Balk 1994; Dharmalingam & Morgan 1996; Malhotra et al. 1995; Morgan & Niraula 1995). Second, husband opposition (true or perceived) prevents wives who want to stop or delay childbearing from using contraception (Casterline et al. 1997; Dodoo 1993; Ezeh 1993; Speizer 1999). In a recent article, Mason and Smith (2000) suggest that we need to explore further the mechanisms responsible for these relationships. They present a well-designed study that examines the contribution of gender context to these observed relationships using data from five countries in southeast Asia. They find that gender context, or gender stratification at the

aggregate level, has little effect on couples' concordance in the demand for children, but does affect the relative weight of husbands' and wives' preferences in determining contraceptive use. They also find a somewhat surprising, and very policy-relevant, result. Husbands' pronatalism makes only a small contribution to wives' unmet need, especially in communities where unmet need is high.

Our paper complements previous research in several ways. First, we analyze wives' and husbands' fertility preferences in Ethiopia, a poor country in the Horn of Africa with very high fertility. Due to political context, including instability associated with war, it is only recently that demographic analysis has been possible in this region. Second, unlike Mason & Smith (2000), who feature spatial variation to make inferences about the importance of gender context to unmet need, we feature variation in the sex composition of surviving children. We ask how the number of sons and daughters affects wives' and husbands' fertility preferences, and their desire to limit or space births. We look at husbands' and wives' preferences separately, as well as their concordance. We should expect the preference for sons and daughters to vary among spouses. Yet, few studies have systematically examined this issue, particularly in African contexts.[1] Achieving a better understanding of the differential effects of the sex composition of children on partners' fertility attitudes and behaviors has the potential to enhance our understanding of gender dynamics in couple reproductive behavior (e.g., Stash 1999).

Our analysis, in addition to emphasizing the contribution of sex composition of children to fertility preferences, features calculations of wives' and husbands' unmet need. Like Mason & Smith (2000), we examine the contribution of husbands' preferences to wives' unmet need for limiting. Ethiopia, with its high fertility and low contraceptive use, presents a context very different from Southeast Asia in which to examine this issue. In addition, we measure the contribution of *wives'* preferences to *husbands'* unmet need for limiting. Ethiopia is a highly gender-stratified society in the very early stages of fertility transition (Pankhurst 1992). Our results suggest that even in highly gender-stratified societies where men are more pronatalist than women, wives' preferences may result in unmet need among their husbands.

Our paper also contributes to the new and growing literature on Ethiopian demography (e.g., Berhanu & Hogan 1998; Berhanu & White 2000; Ezra & Kiros 2000; Kiros & Hogan 2000; Lindstrom & Berhanu 1999). A recent analysis suggests the importance of women's autonomy to reproductive behavior in Ethiopia (Hogan et al. 1999). This result is based on data from women of reproductive age in the southern region of Ethiopia. Our analysis builds on this finding by drawing on couple data from a national sample. We examine the reproductive preferences of a matched set of husbands and wives using

data from the 1990 National Family and Fertility Survey (NFFS) of Ethiopia. Unlike other work that relies on wives' reports of their husbands' fertility preferences (e.g., Razzaque 1999), we draw on fertility preferences collected with a separate survey instrument administered directly to husbands. In previous work on couple fertility preferences, aggregate figures for men and women do not differ greatly, whereas figures based on matched couple data reveal substantial disagreement about reproductive goals and behaviors (Becker 1996; Biddlecom et al. 1997; Mason & Taj 1987). With matched data we can examine the extent of spousal agreement among Ethiopian couples.

Developing a better understanding of fertility preferences and contraceptive use in Ethiopia is of significant policy import. Ethiopia, with nearly 65 million people, is the second most populous country in sub-Saharan Africa and has one of the highest levels of fertility of any country (Central Statistical Authority 1999; Population Reference Bureau 1999). In April of 1993, The National Population Policy of Ethiopia took effect. This policy aims to increase the prevalence of contraceptive use from the 1993 level of 4.0% (its estimate) to 44.0% by the year 2015 (National Population Policy of Ethiopia 1993). To implement the policy regional states have established their own population councils and offices of population. Eager to see the effort succeed, international donors are lending their support. To be successful, family planning efforts will need to accommodate the high demand among Ethiopian couples for children. Our paper helps to explain this demand by focusing on both wives' and husbands' preferences, and by elaborating the extent to which they are tied to gender composition of surviving children. It is the only paper we know of to address either of these issues in the Ethiopian context.

Background

Family planning programs strive to provide couples the resources they need to meet their fertility goals. The failure of individuals to contracept when they would like to forego childbearing results in what is defined by researchers as an unmet need for family planning. Those with unmet need may desire to delay the next birth or wish to stop childbearing altogether. Unmet need can result from supply side factors that render family planning services unavailable or from other constraints that serve to prevent individuals from acting on their stated fertility preferences. The most important of these constraints are lack of necessary knowledge about contraceptive methods, social opposition to contraceptive use, and health concerns about side effects related to use (Casterline & Sinding 2000). Evidence suggests that access to services may be less of a problem than demand-side factors in determining unmet need in most settings (Bongaarts & Bruce 1995).[2]

Until recently, the concept of unmet need has most often been applied to women. Numerous factors have been found to prevent women who desire to postpone or stop childbearing from practicing contraception (see Casterline et al. 1997 for a summary). Among these factors are the social costs of practicing family planning. Women's fertility preferences do not always translate into reproductive action because of the real or perceived resistance of others (such as spouses, family members, and community members). In particular, several studies have indicated that husbands' resistance, or perceived resistance, to using contraception can be a significant deterrent to women's family planning use across a variety of settings (Casterline et al. 1997; Casterline et al. 2001; Dodoo 1993). At the same time, researchers caution against characterizing men solely as barriers to family planning use (Greene & Biddlecom 2000). Men are reproductive actors with their own preferences regarding spacing and limiting children. As Ngom (1997) argues, their unmet need also deserves attention. Moreover, men's unmet need for family planning can result from women's resistance to curtailing childbearing (Dodoo 1998; Ngom 1997).

The recognition that men's and women's reproductive goals differ, and specifically that differences in reproductive preferences between partners within a couple affects contraceptive behavior, has led to calls for studies that focus on couples (Becker 1996; Ezeh 1993; Ross & Winfrey 2001). Numerous studies indicate that spousal communication is positively correlated with contraceptive use, although difficulties associated with causal ordering recommend caution before concluding that spousal communication *leads* to contraceptive use (Feyisetan 2000; Hogan et al. 1999; Hollerbach 1983; Omondi-Odhiambo 1997; Phillips et al. 1997). If indeed communication facilitates contraceptive use, the underlying fertility preferences of multiple actors (in the case of married couples, each husband-wife dyad) are certainly relevant to the negotiation and eventual outcome. Moreover, previous research has shown that in some sub-Saharan African settings, wives' and husbands' fertility preferences are significant determinants of reproductive outcomes (Bankole 1995; Dodoo 1998).

When the fertility preferences of wives and husbands differ, previous work elsewhere in sub-Saharan Africa finds that husbands are more pronatalist (Bankole & Singh 1998; Bertrand et al. 1996; Dodoo et al. 1997). We explore whether husbands are more pronatalist than wives in Ethiopia. Because across most settings the desire to continue childbearing is tied not only to the number of surviving children, but also to the sex composition of living children, we explore the importance of the sex composition of surviving children to fertility preferences in our analysis. In other parts of the world, most notably Asia, the importance of son preference to reproductive outcomes has

been well established (Arnold 1997; Riley & Gardner 1997). In Africa, son preference has received far less attention. Though it is unlikely to be as strong as in Asia, there is some evidence of its import in Botswana, Cameroon, and Kenya (Arnold 1997; Campbell & Campbell 1997). We ask whether fertility desires are consistent with such a preference in Ethiopia. Thus, gender enters into our analysis in two respects. First we consider how men's and women's reproductive preferences differ, and second, we pay particular attention to how men's and women's fertility desires depend on the sex composition of surviving children. Using couple data allows us not only to compare the reproductive goals of husbands and wives, but also to assess men's and women's sex preference for children, effectively controlling for other household or couple characteristics.

Our analysis has three components. First, using a series of measures from the National Family and Fertility Survey, we examine wives and husbands' fertility preferences. Subsequently, we model the determinants of the desire to limit or space. Finally, we assess the extent of unmet need in Ethiopia. Because individuals rather than couples hold preferences, we measure unmet need separately for husbands and wives. Subsequently we consider within-couple unmet need and the contribution of spousal disagreement.

The Value of Children

Couples in Ethiopia have a high demand for children. The history of war, famine, and economic crises has resulted in fertility levels that vary over time (Lindstrom & Berhanu 1999), but overall remain persistently high. Families in Ethiopia are organized in a patrilineal manner. Men are heads of the household and there is a clear division of labor between men and women. We expect that men and women will want to have both sons and daughters, but that overall, they prefer more sons. Several characteristics of life in Ethiopia, described below, support this claim.

In Ethiopia, the limited cash economy and high levels of poverty render children's assistance very important. Both boys and girls work, helping with agricultural activities and other household duties. Just the same, children's work responsibilities vary by age and gender. Girls typically help with rearing younger children, cooking, preparing food, fetching water, house cleaning, and looking after crops. Boys are more likely to take care of animals, collect firewood, plough fields, make fences, and help men with their tasks. However, when there is a shortage of girls or boys in the family, tasks may be assigned to whoever is available. For instance, boys can fetch water and girls can look after animals. Boys older than seven years are considered a resource and may be hired out to another household with a shortage of children.

The way parents perceive children is likely affected by the history of war in Ethiopia. Internal conflicts and conflicts with colonial powers over the past several decades mean that today's adults are well-familiar with negotiating life in the context of war. Although the participation and contribution of women is significant, men are thought to be the main actors when it comes to war. Men, because they protect others, are considered brave, and bravery is a characteristic widely valued in society. In addition, in Ethiopia the police force is not well developed, which makes men an important source of security to their families and other kin.

In addition to war, the Ethiopian population has experienced immense social, economic and political disruptions, recurring drought, and environmental problems, such as land degradation and soil erosion. These factors affect the way parents think about children. During crisis periods there is a tendency to believe that males can cope better than females, a factor that may lead parents to prefer sons. On the other hand, in the past sons have been forced to join the army unwillingly. This reality may make daughters attractive to some couples.

Finally, for most Ethiopians, though marriage expenses are not as high as in other parts of the world, marrying off a daughter is more expensive than marrying off a son. Upon marriage both families contribute to help establish the new couple, but the bride's family contributes more. In addition, having a child to inherit the family land and carry on the family name is very important. Having a son enhances the status of women and men, but most especially women. A woman's status in the family and community is measured to some extent by the number of sons she has (Pankhurst 1992).

Taken together, all of these factors help to explain the persistence of high fertility, and what we expect will be a desire for both sons and daughters, but a stronger preference for sons. Moreover, the reasons for preferring sons lead us to expect that both women and men will exhibit son preference. However, because daughters are more likely to assist women with their substantial domestic duties, women may be more partial than their husbands to daughters.

Data

The study draws on data from the 1990 National Family and Fertility Survey. This survey was conducted by the Central Statistical Authority in Ethiopia, and is the first major demographic survey conducted in Ethiopia since the 1981 Ethiopian Rural Demographic Survey. Although the National Family and Fertility Survey (NFFS) was designed to be nationally representative, due to security issues, parts of the north-eastern and north-western highlands, and

a few lowland areas, could not be surveyed. However, the NFFS covers about 80% of the geographic areas initially sampled, including areas that account for more than two-thirds of the country's population (Central Statistical Authority 1993). The survey used a multistage, stratified sampling procedure, with major strata based on regional and rural-urban divisions. The primary target of the survey was women aged 15–49 and the total sample includes 8,757 such women. Because our interest is in couple fertility desires and associated contraceptive behavior, we limit our analysis to a special sub-sample of 709 wife-husband pairs.

The National Family and Fertility Survey is the first survey in Ethiopia to collect couple data on reproductive behavior. Husbands were randomly selected from the roster of currently married women covered by the survey.[3] A series of questions was asked separately of fecund women and their husbands regarding their desires for children and their knowledge and practice of contraception. A woman was considered fecund if neither she nor her husband was sterilized, and she believed herself to be physically capable of having a child if she wanted one (Central Statistical Authority 1993). We also restrict our sample to currently monogamous couples, a full 95% of all couples surveyed. Our final analysis sample is 596 couples. Although the past decade has seen a rising interest in the fertility preferences and behaviors of men, it is only in the last decade that data have become available which allow information on women and their spouses to be matched at the individual level. That such data are available in Ethiopia, a country with high fertility, and the lowest GNP per capita of any country in Africa is noteworthy.

Fertility Preferences of Wives and Husbands

Although several decades ago the validity of survey-based measures of fertility preferences was suspect, empirical research since that time has demonstrated the validity of these measures (Bankole & Westoff 1998; Casterline & Sinding 2000; Hermalin et al. 1979; Westoff 1990; Tan & Tey 1994). We use two measures of fertility desires. One comes from a question on ideal family size and the second from a question on the desire for additional children.

In Table 1 we present responses to the question on ideal number of children. The distribution of responses shows that men are more likely than women to provide a numeric response. Slightly more than half of women report that their ideal number of children is "up to God", whereas only 37% of their husbands reply similarly. In 21% of couples both the husband and wife report that their ideal number of children is "up to God". Taken as a whole, responses indicate that the demand for children is very high. Fewer than 6% of husbands or wives state that their ideal number of children is some

Table 1. Percentage distribution of desired family size by wives' and husbands, Ethiopia, 1990 (N = 596)

Desired family size	Wives	Husbands
0	0.6	0.1
1	0.1	0.8
2	2.0	1.5
3	1.7	3.3
4	13.6	9.6
5	4.3	6.0
6	8.5	11.0
7&+	13.6	30.3
"Up to God"	55.6	37.4
Total	100.0	100.0

Note: All percentages are weighted.
Source: 1990 National Family and Fertility Survey.

number less than four. There is also some suggestion that men may be more pronatalist than women. Among those providing a numeric response, the modal response for husbands is seven or more children; women's responses are more varied.

To what extent do husbands and wives agree with one another? Some 30% of women and men give the same response as their spouse regarding ideal number of children. If we look only at couples where both the husband and wife give a numeric response (not shown), approximately one-quarter of spouses give the same number. Among those that do not agree, husbands are much more likely to want more children. Wives suggest a higher number than husbands in approximately one-quarter of couples, whereas husbands provide a higher number than their wives in about half of couples.

Next we explore husbands' and wives' desires for boys and girls. For their ideal family size, respondents were asked how many girls and boys would be best. We present a cross tabulation of the ideal number of sons and daughters for all women and men (Table 2) who provide a numeric response to the question on ideal number of children. The diagonals of each table reflect the number of respondents who would like an equal number of girls and boys. Women overwhelmingly (75%) respond that they would like equal numbers of girls and boys. Some 14% would prefer more sons and 11% more daughters. The data for husbands reveal a different pattern of preferences. Most men (48%) report that they would like more sons than daughters. An almost equal

Table 2. Distribution of wives' and husbands' ideal number of sons and daughters for those providing numeric response, Ethiopia, 1990

Number of sons desired	Number of daughters desired						
	0	1	2	3	4	5+	Total
Wives							
0	**5**	0	1	0	1	1	8
1	1	**15**	6	1	0	0	23
2	0	7	**107**	9	4	0	127
3	0	3	13	**40**	3	2	61
4	2	0	2	3	**29**	4	40
5+	2	0	2	2	3	**26**	35
Total	10	25	131	55	40	33	294
Husbands							
0	**1**	0	1	0	0	0	2
1	2	**9**	7	1	0	0	19
2	4	13	**57**	7	1	1	83
3	3	11	29	**47**	2	6	98
4	1	0	29	14	**19**	1	64
5+	5	1	20	31	35	**53**	145
Total	16	34	143	100	57	61	411

Source: 1990 National Family and Fertility Survey.

percentage (45%) prefers an equal balance. Very few, some 7%, indicate that they would prefer more daughters. Taken together, Tables 1 and 2, which are based on questions about ideal family size, suggest that husbands prefer more children than their wives, and also prefer to have more sons than daughters. Moreover, fatalism is pervasive. If we assume that individuals giving fatalistic responses desire many children, the demand for children is higher yet.

Although responses to a question on ideal number of children are a useful indication of demand, they are not as valid as asking couples whether they want an additional child (e.g., Bankole & Westoff 1998). The latter usually involves a shorter time horizon and takes into account the children already born, doing away with the problem of ex-post rationalization. In the NFFS, respondents are given three choices about their desire for an additional child. They can respond that they want, do not want, or are undecided about, an additional child.

Table 3 shows the percentage of wives and husbands who want an additional child by the number and sex of their surviving children.[4] Although the desire for an additional child decreases for men and women as the number of surviving children increases, the overall demand for children is substantial. Among those with five or more children, over 40% of women, and nearly two-thirds of men, report that they want an additional child. For any given number and sex composition of children, when a difference exists ($p < 0.05$), husbands are more likely than wives to want another child. In addition, there is some suggestion that women's preferences are more sensitive to the sex composition of surviving children at lower parities. Among women with two or three children, if they have fewer than two boys, they are more likely to want another child. Men, on the other hand, are more likely to want to continue to have children regardless of the sex composition of surviving children. Among couples with five or more children there is some suggestion that husbands with more boys than girls are least likely to want another child. Any differences related to sex composition, however, whether for women or men, are modest. In general, among higher parity couples, there appears some preference for a balanced family.

In Table 4 we examine within-couple agreement on the desire to limit or space children. In these analyses we include individuals who are expecting another child at the time of survey. These individuals (about 10% of the sample) report on fertility desires beyond the child they are currently expecting. Limiters are defined to be those who clearly indicate that they want no more children; respondents who indicate that they are undecided about whether they want more children are not counted as limiters. Overall, 25% of wives and 16% of husbands report that they want no more children. As the number of surviving children increases, so does the likelihood that husbands and wives will want to limit fertility, although women exhibit higher demand for fertility limitation than men regardless of number of children. Among those with six or more children, fewer than half of wives or husbands wants to stop childbearing; some 46% of wives and 38% of husbands want no more children. There is little indication that husbands' or wives' desire to limit is affected by the proportion of boys among their surviving children.

Table 4 also shows the desire to space for the sample of couples that includes husbands and wives who both agree that they want another child. Individuals with a desire to space are those who indicate that they would like their next child to be born at least two years later (Westoff & Bankole, 1995). Overall, 42% of women and 33% of their husbands indicate a desire to space. Wives and husbands' desire to space increases with the number of surviving children. Those with more than two children have a greater desire to space than those with 0–2 children. There is some evidence that husbands desire

Table 3. Percentage of wives and husbands who want more children by number and sex of surviving children, Ethiopia, 1990

Number and sex of living children	Wife	Husband	Difference	*N*
No children	88	99	11*	47
One child				
Girl	91	85	−6	51
Boy	73	89	16	37
Two children				
2 girls	75	90	15*	26
1 girl, 1 boy	72	90	18**	56
2 boys	60	84	24*	29
Three children				
2 + girls	67	76	9	45
2 + boys	56	82	26*	37
Four children				
3 +girls	53	68	15	30
2 girls, 2 boys	57	89	32**	28
3+ boys	58	73	15	33
Five or more children				
Girls > boys	44	67	23**	93
Girls = boys	62	79	17	18
Girls < boys	45	62	17**	66
Total	63	79	16**	596

* $p < 0.05$; ** $p < 0.01$.

Notes: All percentages are weighted. McNemar's (1947) chi-square for paired data is used to test the statistical significance of husband-wife differences.

Source: 1990 National Family and Fertility Survey.

the next birth sooner if they have more girls than boys. Some 39% of those with at least half boys indicate a desire to space compared to 29% of those with more girls than boys.

We report three measures of within couple agreement – the percentage who agree based on the weighted data, the Kappa index, and Yule's Q. The Kappa index is a measure that compares the observed level of agreement to that which might be expected under the hypothesis of independence. Statistical significance indicates that the Kappa is different from 0. The Kappa index ranges roughly between 0 and 1, where 1 indicates perfect agreement. Finally, Yule's Q is a measure of agreement that takes into account marginal

Table 4. Percentage of wives' and husbands' who desire to limit or space by number of surviving children and proportion boys, Ethiopia, 1990

Number and sex composition of surviving children	Wife	Husband	Percent in agreement	Kappa	Yule's Q	*N*
Desire to limit						
Number of children						
0–2	14	6	86	0.19**	0.70	246
3–5	28	19	76	0.33**	0.75	243
6+	46	38	80	0.59**	0.91	107
Proportion boys[a]						
Boys < girls	28	19	78	0.38**	0.77	245
Boys ≥ girls	26	16	82	0.44**	0.89	304
Total	25	16	81	0.41**	0.84	596
Desire to space						
Number of children						
0–2	39	25	68	0.27**	0.51	169
3–5	44	35	54	0.06	0.13	105
6+	44	36	59	0.17	0.46	29
Proportion boys[a]						
Boys < girls	46	29	57	0.11	0.88	119
Boys ≥ girls	43	39	60	0.17*	0.27	143
Total	42	33	61	0.18**	0.38	303

* $p < 0.05$; ** $p < 0.01$.
[a] Sample limited to couples with at least one child.
Note: All percentages are weighted.
Source: 1990 National Family and Fertility Survey.

distributions in assessing the extent of agreement in cross tabulation. Yule's Q ranges between −1 and 1, with 0 indicating no relationship.

Table 4 indicates high levels of agreement among spouses, especially with respect to the desire to limit births. Spouses have the same desire in regard to limiting in 81% of couples, and the other measures of agreement further shore up the conclusion that agreement on the desire to limit is high among spouses. In regard to spacing, spousal agreement is not as high. Overall, 61% of spouses agree on the desire to space. The Kappa index and Yule's Q also reflect significant, but more moderate, levels of agreement. These results suggest that although differences exist among husbands and wives in fertility preferences, the majority of couples agree.[5]

Determinants of the Desire to Limit or Space Births

To examine more closely the desire to limit or space births we estimate a series of logistic regression models limiting our sample to couples that have at least one child. We consider two outcomes, the desire to limit fertility and the desire to space the next birth. For each of these two outcomes we estimate three models – one for wives, one for husbands, and one for husband – wife agreement. The dependent variable for husband-wife agreement, labeled both, indicates that both the husband and wife desire to limit (or space). Our models include variables for the number of boys and the number of girls. These measures are categorical because we reason that the difference between two and three sons (or daughters) may be different than the difference between five and six sons (or daughters). Control variables include age of the wife, age difference between the wife and husband, wife's education, husband's education, place of residence, religion, and whether the wife and husband discuss family size.[6]

We include a control for the difference in the age of the spouses to capture relative differences in power (Casterline, Williams, and McDonald 1986). Because our sample includes only monogamous couples, we also expect that marriages with husbands much older than wives may be marriages organized more around practicality than romance. A subset of these is likely second marriages, where, for example, a widower remarries a younger woman. Place of residence is a set of dummy variables that distinguishes among couples who claim their place of residence as Addis Ababa (the capital), other towns, or rural villages. Religion distinguishes between Christians and others. The residual category consists mainly of Muslims. Only 4% practice other religions, most animist or traditional religions. We expect that Christians will have a lower demand for children than Muslims (Hogan et al. 1999). Previous work has indicated that couple communication is positively associated with the use of contraception in sub-Saharan Africa (Omondi-Odhiambo 1997; Phillips et al. 1997). It is possible that couple discussion of family size affects desires regarding limiting and spacing. Discussion with a spouse about family size is asked of husbands and wives in the NFFS. Our measure reflects discussion when both the husband and wife report discussion.

After estimating main effects models, we estimated models that included interactions between the number of boys and the number of girls. It is reasonable to expect that the effects of having four girls might be different for a couple who has one boy and a couple who has four boys. However, differences in model fit between main effects models and interactive models did not prove significant ($p < 0.05$), and the results we report are based on the main effects models. These results are presented in Tables 5 and 6.

Table 5. Logistic regression coefficients predicting wives' and husbands' desire to limit births, Ethiopia, 1990

Variablesb	Wife	Husband	Both
Number of surviving sons < 2 (rc)			
2	0.91**	0.47	0.77*
3	0.69*	0.73*	0.77*
4+	1.61**	1.99**	2.41**
Number of surviving daughters < 2 (rc)			
2	0.69**	1.07**	1.22**
3	0.89**	1.74**	1.89**
4+	1.03**	1.96**	1.84**
Wife's age (rc = 25–34)			
15–24	−0.12	0.16	0.13
35–49	0.47	−1.28	−0.66
Husband - wife age difference (rc = 6–10)			
< 6 years	0.28	0.22	0.39
11 & above	0.32	0.87**	0.82*
Wife primary + education (rc = none)	−0.01	−0.12	0.01
Husband primary + education (rc = none)	−0.06	0.81**	0.53
Couple discusses family size	0.41	0.48	0.47
Place of residence (rc = other towns)			
Rural	−1.07**	−0.56	−0.78*
Addis Ababa	0.04	1.48**	0.82*
Religion (rc = Muslim/others)			
Christian	0.69**	1.02**	1.30**
Constant	−1.99**	−4.35**	−5.18**
N	549	549	549
Log Likelihood	−292.59**	−218.14**	−181.53**

* $p < 0.05$; ** $p < 0.01$. Note: rc = reference category.
Source: 1990 Family and Fertility Survey, Ethiopia.

As shown in Table 5, husbands' and wives' desires to limit are sensitive to both the number of sons and daughters. We summarize these effects in Figure 1 which shows the probability that husbands, wives, or both, desire to limit births. These probabilities are based on simulations generated from the full model results. In calculating these probabilities we fixed the number of daughters and the number of sons, and let all other variables take their actual values. Predicted probabilities are calculated for each observation and mean probabilities are reported.

Table 6. Logistic regression coefficients predicting wives' and husbands' desire to space births, Ethiopia, 1990

Variables	Wife	Husband	Both
Number of surviving sons < 2 (rc)			
2	−0.50	0.01	−0.88
3+	0.47	0.22	0.94*
Number of surviving daughters < 2 (rc)			
2	−0.16	0.39	−0.43
3+	0.15	0.19	−0.25
Wife's age (rc = 25–34)			
15–24	0.62*	−0.29	0.25
35–49	−1.53	−0.03	−0.03
Husband – wife age difference (rc = 6–10)			
< 6 years	−0.23	−0.05	−0.81**
11 & above	−0.70**	−0.53*	−1.06**
Wife primary + education (rc = none)	−0.10	0.11	−0.33
Husband primary + education (rc = none)	−0.08	0.18	−0.03
Couple discusses family size	0.40	0.42	1.46*
Place of residence (rc = other towns)			
Rural	−0.30	−0.22	−0.48
Addis Ababa	−0.60	0.06	−1.42
Religion (rc = Muslim/others)			
Christian	0.25	0.06	0.54
Constant	0.14	−0.47	−0.99
N	307	379	262
Log Likelihood	−199.78**	−244.11**	−108.86**

* $p < 0.05$; ** $p < 0.01$.
Note: rc = reference category.
Source: 1990 Family and Fertility Survey, Ethiopia.

We have shaded all cells where the probability of wanting no more children is greater than 0.40. Several patterns are suggested. First, at lower parities, wives are more likely than their husbands to want to limit. For example, the probability that wives want to stop when they have two boys and two girls is 0.45. For their husbands, it is 0.27. Second, both men and women exhibit a preference for sons. For example, wives with three sons and four or more daughters have a 0.47 probability of wanting to stop, whereas those with four or more sons and three daughters have a 0.64 probability of wanting to stop. The pattern is similar for their husbands. The respective probabilities are 0.47 and 0.65. Third, the gender composition of children emerges as a

Number of Girls	Number of Boys			
Wives	Less than Two	Two	Three	Four or More
Less than Two	.16	.30	.26	.45
Two	.26	.45	.40	.60
Three	.30	.49	.44	.64
Four or More	.33	.52	.47	.67
Husbands				
Less than Two	.10	.15	.17	.35
Two	.21	.27	.31	.53
Three	.30	.38	.43	.65
Four or More	.34	.42	.47	.69
Both				
Less than Two	.04	.08	.10	.26
Two	.12	.20	.24	.47
Three	.19	.30	.34	.60
Four or More	.18	.29	.34	.59

Figure 1. Probability that wives, husbands, or both, want to limit by number and gender of surviving children: Simulated probabilities based on models in Table 5.

more important influence on women's desire to stop than on their husbands. Although for both husbands and wives having four or more sons significantly and positively affects the desire to limit, wives show a preference for at least two boys and two girls. Once they have two boys and two girls, the probability that wives want to limit is greater than 0.40. Although they prefer more sons, husbands appear most likely to want to stop when they have six children. We suspect that the importance of gender emerges at lower parities for women because they want fewer children overall.

Turning to couple agreement in Figure 1, the preference for four or more sons is most striking. Husband and wives are most likely to agree on the desire to limit when they have four or more sons and at least two daughters. If we compare probabilities associated with agreement to those computed based on the individual husband and wife models, we are struck by the apparent disagreement among spouses with six children but less than four sons. Husbands and wives with three sons and three or more daughters, and two sons and four or more daughters, individually appear ready to limit when they achieve these family compositions. Apparently, they may not be paired with a partner who thinks similarly. Having many children, but fewer than four sons appears to be contested terrain. These results suggest that the desire to assure some

minimum number of sons in the context of Ethiopia's high child mortality provides upward pressure on fertility.

We note briefly that factors beyond the number and gender composition of children also matter to the desire to limit. Returning to Table 5, as expected, Christians, and those living in more urbanized areas, are more likely to want to limit births. These factors are important for wives, husbands, and wife-husband agreement to limit. Education and spousal age difference also affect husbands' desire to limit. Husbands with more than a primary school education, and husbands that are more than ten years older than their wives, are more likely to want to limit fertility. The effect of age difference holds in the model predicting husband-wife agreement to limit as well.

Next we consider spacing. Table 6 presents the model results. The variables for the number of sons and the number of daughters distinguish between three categories instead of four because couples who are not interested in limiting tend to have fewer children. The pattern is simple and striking. Husbands and wives who have three or more son are most likely to agree to want to space the next birth. Net of the number of daughters, they are 2.6 times more likely than those with fewer than two sons to want to space the next birth.

Table 6 shows that few other factors matter to spacing. Among wives, younger women are more likely to desire to space than those between 25 and 34 years. Age difference between the spouses also proves important, and appears to have a curvilinear effect. Among couples with husbands six to ten years older than their wives, both husbands and wives are more likely to agree to space compared to couples with husbands more than ten years older than their wives or less than six years older than their wives. Spousal age difference effects emerge in the individual husband and wife models as well. Finally, when both husbands and wives report that they discuss family planning, they are more likely to agree to space the next birth. Given ambiguity on causal ordering, we hesitate to draw too strong a conclusion from this result, but confirm the positive association found in other research.

Unmet Need

We explore the link between fertility preferences, as expressed through the desire to limit or space, and actual behavior, in this case contraceptive use, through the calculation of unmet need. We begin with all monogamous couples in the matched sample and calculate unmet need for women and their husbands separately drawing on the weighted data. Although new and interesting modifications to the measure of unmet need, and especially couple unmet need, have been developed by Bankole & Ezeh (1999), we prefer

to rely on the standard DHS method (Westoff and Bankole 1995) for this analysis.[7] We make this decision for two reasons. First, to our knowledge, these are the first calculations of unmet need for Ethiopia. By using the standard measure we can compare Ethiopia's unmet need to that of other sub-Saharan African countries reported in the DHS report (Westoff & Bankole 1995). Second, we are interested in calculating the contribution of husbands' disagreement to wives' unmet need, and, similarly, wives' disagreement to husbands' unmet need. We believe that isolating these contributions is informative and will allow us to make comparisons with the estimates of Mason & Smith (2000) for Southeast Asia. Our approach also reflects our view that fertility preferences are the property of an individual rather than a couple. Thus, we tend to emphasize concordance, though in several instances we do present couple measures.

The calculations of husbands' and wives' unmet need are summarized in Figure 2.[8] Contraceptive use is low in Ethiopia. Our sample indicates that only 6.0% of currently married monogamous couples use modern methods. Thus, despite the high demand for children, levels of unmet need in Ethiopia are substantial. The total unmet need for women is 22.3%. It is very similar to that of their husbands – 21.7%. For both women and men slightly more than half of unmet need is an unmet need for spacing; the rest is an unmet need for limiting. These figures are comparable, but on the lower end of those reported for other countries in sub-Saharan Africa (Westoff & Bankole 1995; Westoff & Bankole 2000). If we examine unmet need for limiting and spacing separately for wives and husbands, we observe that wives' unmet need for limiting is somewhat higher, approximately 25% higher, than that of their husbands. This pattern is consistent with wives' greater desire to limit fertility.

Thus far, our comparisons of unmet need for wives and husbands are based on aggregate level measures. The need to estimate mistimed births does not allow us to assess the extent of agreement on total unmet need at the couple level. However, we are able to assess agreement if we consider only the unmet need for limiting.[9] Calculations (not shown) reveal that 63% of wives with an unmet need for limiting are married to husbands who do not have an unmet for limiting; and, some 51% of husbands with an unmet need for limiting are married to wives who do not have an unmet need for limiting. These percentages are higher than most reported by Mason & Smith (2000) and suggest that spousal disagreement may indeed explain a substantial proportion of unmet need in African societies in the very early stages of fertility transition. We should be cautious, however, not to overinterpret the result. Although the proportionate contribution is substantial, the absolute magnitude of the effect is small because of low levels of unmet need for limiting.

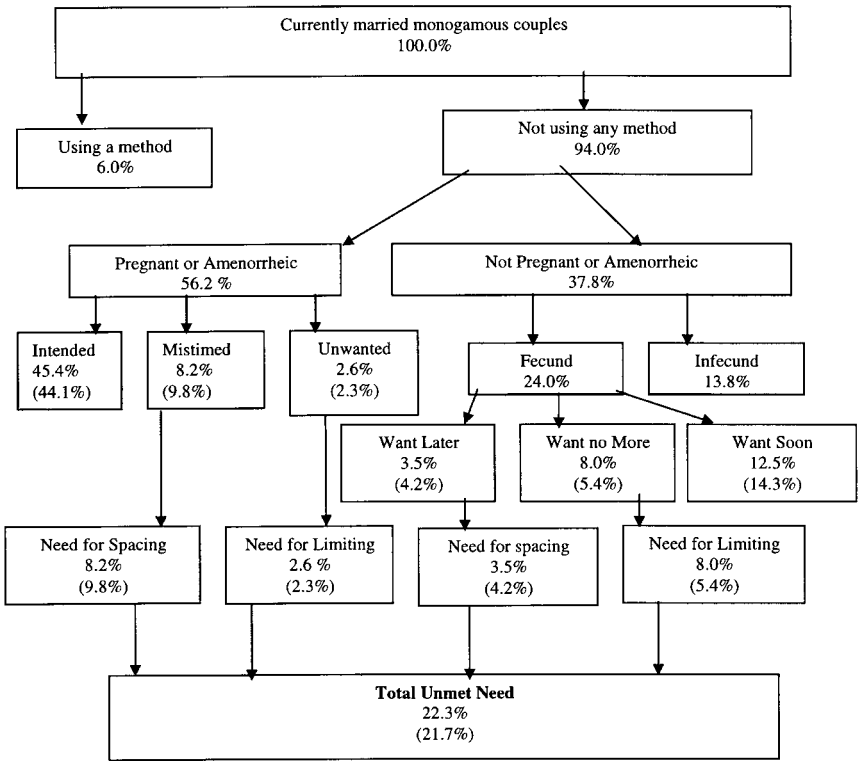

Figure 2. Unmet need among currently married wives and husbands, Ethiopia, 1990.
[a] Figures for husbands appear in brackets.

We raise two further points concerning these calculations. First, it is noteworthy that women's disagreement contributes substantially to their husbands' unmet need for limiting in this setting, a gender-segregated society that advantages men, and where men are more pronatalist than their wives. Second, our calculations illustrate that, at least in settings similar to Ethiopia, calculating only husbands' contribution to wives' unmet need ignores another dimension of spousal disagreement – wives' contribution to husbands' unmet need. A calculation of spousal opposition as a whole (summing the contribution of husbands' disagreement to wives unmet need and wives' disagreement to husbands' unmet need), the total contribution of disagreement to unmet need takes on greater significance. Perhaps we should not be too quick to dismiss its role.

We explore further the reasons for unmet need with data on future intentions to use contraception. In the survey, husbands and wives who were not currently using contraception were asked about their intention to use contraception in the future. Those who reported that they did not intend to use were

Table 7. Reasons current non-users do not intend future use of family planning methods: percentage distribution for wives and husbands

Reason	Wives	Husbands
Religious prohibition	1.4	3.7
Opposed to family planning	1.8	3.2
Spouse disapproves	1.8	0.0
Side effects	4.0	1.5
Lack of knowledge	19.5	9.4
Difficult to obtain	0.6	0.9
Inconvenient to use	0.0	0.4
Fatalistic	38.5	35.6
Menopause/subfecund	4.9	7.3
Other	23.4	35.4
Unsure/Don't Know	4.1	2.1
Missing	0.0	0.6
Total (%)	100	100
N	396	353

Notes: All percentages are weighted. Number of cases differs for wives and husbands because individual reports of current contraceptive use and intended future use differ.
Source: 1990 Family and Fertility Survey, Ethiopia.

asked to provide a reason. These reasons are summarized in Table 7. The reasons provided are consistent with the low contraceptive prevalence in Ethiopia. Relatively few husbands or wives cite opposition to family planning, side effects, or spousal disapproval. Rather, they give fatalistic responses regarding fertility control, cite lack of knowledge, or provide responses other than those listed.[10] These findings highlight the continued role of fatalism in fertility outcomes in the region. They also suggest that spousal disagreement when it comes to unmet need operates more through disagreement over the number and spacing of children rather than over disagreement on the use of contraception. We might expect such a result in a society in the early stages of fertility transition with a low level of contraceptive prevalence. Since the time of this survey, new efforts have been launched to promote the delivery of family planning services. Nonetheless, data collected in Southern Ethiopia in 1997 indicate that the majority of rural women still did not know of any modern methods of contraception at that time (Hogan et al. 1999).

Conclusion

The demographic significance of Ethiopia when it comes to population growth in Africa is substantial. It is one of the largest and poorest countries that, even in the midst of crises, has maintained high levels of fertility. Using data from a national level fertility survey, we examined fertility desires of a matched sample of husbands and wives. Our results confirm that, in 1990, both men and women had a high demand for children. Overall, husbands and wives largely concurred on reproductive preferences. Where differences existed, husbands were more pronatalist than their wives. Once they had two daughters and two sons, many wives were interested in limiting fertility. Approximately 22% of wives and husbands desired to limit or space births, but did not use contraception. Despite reasonably high levels of concurrence among spouses, our calculations reveal that spousal disagreement still figures prominently as an explanation for unmet need for limiting.

In contrast to settings with higher levels of contraceptive prevalence, in Ethiopia, lack of exposure and limited knowledge about contraception were the major reasons for non-use. These results suggest that an increase in the provision of services could have a substantial impact on unmet need. Although spousal disagreement about fertility contributed to unmet need, this disagreement was by and large not due to disagreement over contraceptive use. Few social barriers to the use of family planning emerged from our study. Although reasons for nonuse of contraception will undoubtedly change as efforts to introduce family planning become more widespread, the opportunity exists to recognize the social context of reproductive decisions in the initial stages of program development.

To our knowledge, family planning outreach efforts in Ethiopia today are aimed primarily at women. A case-control study carried out in 1990 and 1991 in Addis Ababa found that home-based family planning education increased the adoption of contraception two to twelve months later for all couples, but with a rate of increase nearly double when outreach workers met with husbands and wives (Terefe & Larson 1993). Insofar as men are reproductive actors with individual goals not always in sync with those of their wives, programs that strive to meet reproductive needs may be most successful if they recognize men as reproductive actors in their own right, and plan outreach accordingly (see also Feyisetan 2000).

Since the time of our study the situation with respect to family planning has changed considerably. In May of 1991 the Ethiopian People's Revolutionary Democratic Front (EPRDF) overthrew the Derg, the previous socialist regime. The new government commissioned a committee to draft a population policy that "reflect[ed] the changed orientation of the economy from one that is centrally planned to one that is market oriented". As reported earlier,

The National Population Policy of Ethiopia, which favors fertility limitation, took effect in April 1993 (Tefferra & Strong 1997).

Despite these efforts, it is not clear that contraceptive use has increased substantially over the decade. A preliminary report on the Ethiopia Demographic and Health Survey 2000 indicates that current use of any modern method among currently married women of reproductive age stands at 6.3% (Central Statistical Authority and Macro International Inc. 2000). This figure is nearly identical to that reported for the 1990 sample we analyze. Interestingly, the DHS report indicates that current use reports are higher for currently married men, 8.8%. This result, men reporting higher levels of contraceptive use than women, is consistent with what is found in several other African settings (Ezeh et al. 1996). Although this figure may represent an increase in men's use of contraception, including the use of condoms to prevent AIDS, we hesitate to draw too strong a conclusion from it. The NFFS sample we analyze differs in important ways from the DHS sample upon which these estimates are based. The DHS reports are for men and women (not a matched husband-wife sample). Also, the DHS samples include polygynous marriages. Interesting work by Ezeh & Mboup (1997) suggests that these sample differences, as well as differences in question wording, may be important to the way men and women report on contraception.

High fertility and low levels of contraceptive use in a country of 65 million people convince us that recent attention to demographic issues in Ethiopia is well-placed. Ethiopia is a country of particular demographic significance on the African continent. Nonetheless, we suggest that our results have broader implications as well. First, through our analysis we highlight the need for researchers – and especially researchers interested in couple research – to pay attention to the distinct preferences of men and women for girls and boys. These differences may help to explain disagreement that is later associated with nonuse of family planning. Second, husbands' contribution to wives' unmet need can be substantial in African societies in the early stages of fertility transition. In our study, nearly two-thirds of women's unmet need for limiting could be attributed to husbands' disagreement. This figure is considerably higher than that found in several southeast Asian settings (Mason & Smith 2000), and suggests that contextual factors can play a significant role. Finally, our results provide further evidence that we should not ignore wives' contributions to husbands' unmet need. Nearly half of husbands' unmet need for limiting was explained by wives' disagreement. In Ethiopia, a highly gender-stratified society that advantages men, and a setting where men are more pronatalist than women, this contribution of wives' disagreement to husbands' unmet need is especially noteworthy.

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Notes

1. For an example in Nepal see Niraula & Morgan 1995.
2. The concept of unmet need, including its meaning, measurement, and utility, has been debated within the demographic community. For a detailed review of this debate and compelling arguments for the continued analytic usefulness and policy-relevance of unmet need see Casterline and Sinding (2000). For a detailed critique of the measurement of unmet need, including the disjuncture between the conventional measure of unmet need and the 'real' need for contraception, as well as suggestions for possible modifications to the conventional measure, see Bankole & Ezeh (1999). See also Ross & Winfrey (2001) on measurement.
3. Unmarried women and their partners were not included in the survey. Thus, our analysis is limited to currently married couples. In Ethiopia marriage is near universal and most births occur within marriage.
4. If the wife (husband) knows she (his wife) is currently pregnant, which is true for less than 10% of the sample, the question begins "after the child you are expecting . . . ".
5. In the survey, questions on spacing are asked only of individuals who indicate that they do not want stop having children. To assess couple agreement on spacing (with couple-based measures) we necessarily limit the sample to couples where neither partner indicates they want to stop having children. On the suggestion of a reviewer, we also examined desire for spacing among individuals, irrespective of spouses' desires to limit (not shown). As might be expected, the desire to space is higher among those individuals paired with a spouse who wants to limit compared to those paired with a spouse who does not want to limit. When the sample includes these individuals, 53% of wives and 40% of husbands want to space. These figures are consistent with the argument advanced by Bankole & Ezeh (1999) that individual unmet need for spacing may be exaggerated when viewed from a couple perspective; potential spacers can be paired with spouses who want more children.
6. In the models presented we include variables for husband's education and wife's education. We explored alternate specifications that included only one or the other. Final results are not sensitive to specification.
7. We make one modification. Because there is no question on the wantedness of the *previous* birth we need to use other information to quantify the percentage of previous births among pregnant or amenorrheic women that are mistimed or unwanted. We estimate the percentage of mistimed births among this group to be equal to the percentage of all fecund, noncontracepting women (or men) who want to space the next birth. We count the previous birth as unwanted if the ideal number of children is less than the number of surviving children. Ex-post rationalization would lead to an underestimate of unwanted children, which would result in a more conservative estimate of unmet need.
8. Women's reports of contraceptive use are used. Contraceptive use is low and the difference between husbands' and wives' reports is negligible. Some 6.3% of husbands report contraceptive use. Fecundity is determined from husbands' and wives' reports. If either reports sterility, the couple is assigned to the infecund category.

9. The drawback of measuring couple agreement on unmet need for limiting only is that we are unable to account for spouses with an unmet need for limiting who may be partnered with spouses with an unmet need for spacing. Calculating couple-level agreement on unmet need for limiting is still informative, and other recent research has considered only the unmet need for limiting (Mason & Smith 2000).
10. Other reasons were recorded but are unavailable.

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