Extended abstract: Reasons for limiting childbearing and fertility outcomes in rural Mozambique

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Sub-Saharan Africa has the highest fertility and the lowest rates of contraceptive use of any world region (Khan et al. 2007; UNPD 2009). As of the early twenty-first century, less than half of women who said that they would like to stop or postpone childbearing were using contraception in the region (Sedgh et al. 2007). Perhaps as a result, unintended pregnancy rates in sub-Saharan Africa are also among the highest in the world (Sedgh, Singh, and Hussain 2010). The continued low rates of contraceptive use and high rates of unintended fertility have been investigated in terms of factors related to contraceptive supply, such as availability, costs, and the quality of family planning counseling, and in terms of individual and family characteristics, notably education and women's autonomy. This analysis extends previous research by examining variation in contraceptive use and in fertility outcomes of rural women who intend to stop or postpone childbearing according to their stated reasons for their intentions.

Ample research shows that fertility intentions predict behavior. Women who report wanting to stop or postpone childbearing are more likely to use contraception and less likely to have a child than women who want a child. Yet increasing empirical evidence demonstrates that intentions to conceive or prevent conception are poor measures of underlying attitudes toward fertility, which are multidimensional and occasionally ambivalent. That is, fertility motivation goes beyond a simple dichotomous measure of intentions and incorporates elements such as the strength of intentions, the existence of opposing intentions, and beliefs regarding positive and negative aspects of having children. Improving measures of fertility motivations would also likely improve understanding of contraceptive and fertility behavior. Specifically, whereas measuring the strength of the intention to stop or postpone childbearing directly is inherently difficult in a survey format, an examination of stated reasons to limit fertility could provide important clues to assessing women's determination to carry out their intentions and therefore help better predict their fertility outcomes. It could also help inform policy decisions that are often made of the basis of a rigid and simplistic notion of "unmet need for family planning" by identifying several levels or types of such "need," each requiring tailored interventions.

We use unique longitudinal survey data collected in rural southern Mozambique to consider women's stated reasons for wanting to stop or postpone childbearing. We analyze associations between these reasons and contraceptive use and fertility outcomes. In this extended abstract, we introduce a new measure of motivation and provide preliminary results demonstrating its association with contraception. Initial findings suggest that economic motivations not to have child are more strongly associated with contraceptive use than reasons driven by health concerns or desires to space children appropriately. The full paper will incorporate data from a followup survey two years after the initial data collection to assess the relationship between stated reasons for fertility intentions and the occurrence of a subsequent birth. The paper will also further develop both the theoretical framework and the empirical analysis.

Fertility motivation and fertility behavior

When considering having a child, individuals evaluate positive and negative consequences of fertility across a range of domains, including their own health, the time and financial costs of childbearing, and the implications of children for marital and other relationships (Miller 1995).

This range of positive and negative implications can together be considered as motivation for fertility. The most straightforward measure of motivation is the standard measure of whether women want to have a child soon, postpone childbearing, or stop having children. This measure does predict behavior: Women who report not wanting to have children, ever or in the near future, are more likely to use family planning and less likely to have children than women who want children soon (Bongaarts 1992). However, there is widespread recognition in the demographic literature that the measure is only an approximation of true attitudes toward childbearing, which are complex and multidimensional (e.g., Agadjanian 2005; Johnson-Hanks 2007; Luker 1999; Santelli et al. 2009). The strength of motivation to limit childbearing varies and can even coexist with opposing desires to have (more) children (Bachrach and Newcomer 1999; Edin et al. 2007). In particular, women (and men) can have simultaneous negative feelings about some aspects of having children (e.g., expense and inconvenience) and positive feelings about other aspects (e.g., nurturing and support) (Miller 1995). This variation in motivation to limit childbearing is likely to be associated with reproductive behavior. For example, women with stronger or more consistent negative fertility intentions may in turn be more likely to overcome barriers to effective birth control such as the costs of contraception, inconvenience of access to health services, or resistance from family members (Edin et al. 2007; Miller 1986; Musick et al. 2009). Thus, more nuanced measurement of fertility intentions has the potential to further explain the use of contraception and ultimately unintended fertility.

In this analysis, we use survey data from rural Mozambique to assess a new approach to measuring motivation to limit fertility[1]. In this dataset, women who reported wanting to stop or postpone childbearing were asked why they did not want children (at that time or ever). We hypothesize that these reasons for wanting to limit fertility are associated with variation in the perceived costs of children or strength of desires to prevent conception. To test these hypotheses, we model the explanatory power of these reasons for not wanting children on the use of modern contraception. We will extend this analysis by using reasons to limit fertility to predict observed fertility behavior over a two-year period.

Context

This analysis addresses these questions using data from a survey of rural women in four contiguous districts of Gaza province in southern Mozambique. The data are described in more detail in the data and methods section. A former Portuguese colony that gained independence in 1975, Mozambique was battered by a civil war for the first decade and a half of its independent existence. Since the end of the war in 1992 and the deployment of economic structural adjustment programs in the early 1990s, the country has experienced remarkable macroeconomic growth. Yet with an average per capita annual income of $440, life expectancy of 48 years, and adult literacy rate of 54%, Mozambique remains one of the poorest and least economically developed nations in the world (World Bank 2011). Mozambique is also among the world's worst affected countries by the HIV/AIDS epidemic, and infection rates in Gaza province are the highest of all of Mozambique's provinces. Estimates based on antenatal surveillance data show adult prevalence in Gaza rising from 19% in 2001 to 27% in 2007, and population-based data

[1] Throughout the paper, we use the term "limit" to encompass both "stopping" (ceasing childbearing altogether) and "spacing" (waiting two years or more for the next child). That is, we categorize fertility intentions according to whether or not a woman wants a child now.

from the 2009 National AIDS survey show adult prevalence of 25% in the province (Ministry of Health 2010).

The four districts where the data were collected have a total area of around 5,900 square miles and a population of some 650,000 inhabitants. The mainstay of the local economy is subsistence farming, with unstable harvests due to frequent droughts and floods. Fluctuating agricultural yields and scarcity of non-agricultural employment, combined with proximity to South Africa, have produced massive flows of male labor migration to the neighboring country. Although labor migration from southern Mozambique has continued for generations, its nature and outcomes have undergone considerable change in recent times. Once a sure source of income for migrants, most of whom were formally recruited to work in the South African mining sector, and for their left-behind families, today's migration is increasingly informal and its returns are less predictable (Agadjanian, Yabiku, and Cau, forthcoming; De Vletter 2007).

There is some evidence that fertility transition has begun in Gaza province. According to the 2003 Demographic and Health Survey (DHS), the most recent DHS before the period of our data collection, virtually all women surveyed in Gaza reported knowing at least one modern method of contraception. At the time of the DHS, about 15% of women of reproductive age were using some form of modern contraception, primarily hormonal methods (a considerable increase from the 1.8% reported in the DHS conducted five years earlier), and more than three quarters of non-users reported planning future use. Still, desired family size is high (median of 4.3 children), and contraception is largely used for spacing at low parities. Birth rates also remain high, with an estimated total fertility rate in Gaza of 5.4 children per woman (Instituto Nacional de Estatística and Ministério da Saúde 2005).

Data and methods

Data come from two waves of a longitudinal survey of rural women residing in 56 villages of four districts in Gaza province in southern Mozambique. Data were collected in 2009 and 2011; the sample was based on an earlier survey of married women aged 18-40 in 2006. In each district, 14 villages were selected with probability proportional to size. In each selected village (or randomly selected section thereof if a village was large), all households with at least one married woman were canvassed and divided into two groups: those with at least one woman married to a migrant and those with no such women. These two groups were used as separate sampling frames: from each of them 15 households were randomly selected. Sample weights were constructed in order to account for the differential probabilities of selection of migrant and non-migrant households. In each selected household a woman was interviewed (in households classified as migrant, a woman married to a migrant was interviewed). The resulting original sample in 2006 consisted of 1680 women (420 per district, 30 per village), more or less evenly split between women married to migrants and women married to non-migrants. In 2009, a second wave of data collection was carried out among women still living within the study area (N=1314, 78% of the 2006 sample). A refresher sample was randomly selected to replace women lost to followup. The total 2009 sample of N=1772 women[2] is therefore representative of the

[2] The 2009 sample was larger than the 2006 sample because of the data collection method. If a woman from the 2006 sample could not be located, a new woman randomly selected in the same community was immediately interviewed for the refresher sample. In some cases the original woman was located at a later date (typically in cases

population of ever-married women living in sample villages in 2009. A third wave of data was collected in 2011. Data entry from this data collection is ongoing as of September 2011 and will be complete by winter 2011 in time for analysis for PAA 2012. Preliminary results indicate that approximately 85% of women interviewed in 2009 were located and reinterviewed in 2011.

The 2009 survey collected detailed demographic and socioeconomic information, including pregnancy histories, current and past contraceptive use, reproductive intentions, husband's migration history, and household economic conditions. In parallel with the individual women's survey, a community survey was carried out in each of the villages focusing on village economic and social life, out-migration, and HIV/AIDS issues.

Our analytic sample in 2009 consists of married non-pregnant women who want to limit childbearing. Based on qualitative research suggesting ambiguity in the distinction between "stopping" and "spacing" in this context (Agadjanian 2005), we combine women who want no more children (N=560) with women who want to postpone childbearing for at least two years (N=228) to produce a sample of 790 women who are at risk for unintended pregnancy. Women with missing values on independent or dependent variables (N=5) are excluded from analysis. The final analytic sample consists of 785 women.

The completed paper will analyze (1) contraceptive use in 2009 and (2) birth of an additional child by 2011. Note that postponement is defined as wanting to wait at least two years before having a(nother) child; children born before the 2011 survey would be born within less than two years and thus considered unintended.

Contraceptive use is operationalized as current use of a modern method of family planning. All non-pregnant women are asked about current use. Respondents have the option of reporting up to three methods currently being used, including periodic abstinence, withdrawal, and traditional herbal medicines. Women who reported using at least one modern method (pill, injection, male or female condom, sterilization) are coded as using contraception. Women who reported using no method or only traditional methods are coded as not using contraception.

The primary independent variables for analyses of both contraceptive use and fertility behavior are measures of motivation to limit childbearing. All women who did not want children in the next two years (that is, both women who wanted to stop childbearing and women who wanted to postpone childbearing) were asked why they did not want children at the present time. For the most part, the response options for stoppers and postponers were the same, and responses were combined to create single set of dummy variables for the two groups. Provided response options were: have enough children, tired of giving birth/difficult births, illness or health problems, poor economic conditions, lack of (financial) support from husband, or infidelity by the husband. Respondents were also given the option of specifying another reason not on the list. Multiple responses were possible; about 23% of the analytic sample provided more than one reason for not currently wanting children. Around 12% of the sample gave no reason.

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where the woman had been absent at the time of the survey or had moved to a nearby village and neighbors had contact information for the woman) and interviewed.

Based on exploratory analysis, reasons for not wanting children were collapsed into five categories: have enough children, want longer birth interval (spacing)[3], poor health/too old/tired of giving birth, poor economic conditions, husband is not faithful/does not support family. A residual category was also created for other reasons that did not fit in one of these classifications. "Have enough children" was the most commonly reported response and was the response most likely to be given in combination with another response. In multivariate analyses, "have enough children" is treated as the reference category. For this extended abstract, responses were recoded such that women who reported both "enough children" and some other reason for wanting to limit or postpone childbearing were included only in the other category. Other methods for analyzing multiple responses will be explored in the completed paper.

Models also incorporate sociodemographic control variables that previous research has shown to be associated with fertility intentions and contraceptive use: education, age, household economic conditions, religion, parity, and whether the respondent is in a polygamous marriage.

Multivariate models use logistic regression to predict the dichotomous outcome variable. The SURVEYLOGISTIC procedure in SAS is used with weights to correct for clustering within villages and the non-random sampling strategy.

Preliminary results

The first row of Table 1 shows the distribution of reasons for limiting childbearing among married, non-pregnant women who want to stop or postpone having children. Overall, the most common motivation provided for wanting to limit childbearing was "have enough children" – 45.1% of women in the analytic sample gave this reason. Reasons related to physical limitations (tired of having children, too old to have children, poor health) were also common in this sample, with 33.3% of women giving these reasons. 26.6% of women cited poor economic conditions as the reason they did not want a child (in the next two years). Other motivations were less common. Less than 5% of women reported reasons associated with child spacing (e.g., waiting for the youngest child to get bigger; waiting to wean the youngest child) or with marital problems (husband does not support financially; husband is unfaithful).

<Table 1 about here>

Table 1 also shows associations between motivations for limiting childbearing and sociodemographic characteristics. These associations are largely as would be predicted. For example, women with more children are more likely to say they have enough children than women with smaller families (60.4% of women with four or more children vs. 17.5% of women with two living children and 1.7% of women with zero or one child). Age is positively associated with reporting age/health related reasons, and household wealth (as measured by the household possessions index) is negatively associated with citing economic reasons. These associations provide evidence for the internal validity of these measures of motivation.

Results from multivariate models predicting the use of a modern method of contraception among married non-pregnant women who want to stop or postpone childbearing are shown in Table 2. As described in the methods section, "have enough children" is the omitted category for the

[3] This category was compiled based on responses given as "other, specify" and included reasons such as "waiting to wean the current youngest child" and "waiting for youngest child to get big enough."

motivation measures; for these models, the variable is recoded such that women who report enough children and another reason are assigned the value zero for have enough children and one for the other category. Thus, coefficients should be interpreted as the difference in the log-likelihood of using modern contraception between women giving each reason and women saying they have enough children.

<Table 2 about here>

Controlling for other sociodemographic characteristics, women who report economic reasons for wanting to stop childbearing are more likely to be using contraception than women who report wanting to stop childbearing because they have enough children (b=0.51; OR=exp(b)=1.67). These results suggest that economic pressures are a stronger motivation to prevent additional children than more purely normative reasons such as reaching an adequate family size. This finding is especially striking given that women who give economic reasons for limiting fertility live in less wealthy households on average than other women (Table 1), and thus are likely to experience more financial barriers to obtaining contraception. Women giving other reasons do not use contraception at significantly different levels than women who say they have enough children. It is worth noting, however, that the coefficient for women giving reasons related to marital troubles is large in magnitude (b=-1.20; OR=.30) and approaches conventional levels of statistical significance in some specifications. Women who are concerned about infidelity or lack of financial support from their husbands may feel some ambivalence about childbearing if they expect that having another child would increase their husband's investment in the marriage. Their lower rates of contraceptive use may reflect this ambivalence. Alternatively, women citing marriage-related reasons for limiting childbearing may also face resistance from their husbands to using contraception. The complete paper will explore these possibilities empirically. It is also of interest that these results show essentially no difference in contraceptive use between women who report having enough children (stopping) and women who want to limit childbearing for spacing reasons: the coefficient for spacing is close to zero and far from statistical significance (b=0.03; p=.96).

Associations between sociodemographic characteristics and the use of modern contraception are largely consistent with previous research. Women with five or more years of education are more likely to be using family planning than women with less education, and household wealth is also positively associated with use of contraception. Parity is not associated with contraceptive use in the analytic sample of women who want to limit childbearing.

Discussion and next steps

These preliminary results demonstrate that analyzing reported reasons for limiting fertility can shed light on patterns of contraceptive use in a setting with high birth rates and low levels of family planning. Specifically, women who report that they want to stop or postpone childbearing because of poor economic conditions are more likely to use modern methods of family planning than women who give other reasons. Economic concerns appear to be a stronger motivator to use contraception than other reasons for limiting fertility.

These findings have both methodological and substantive implications. They suggest that at least some part of the range and nuance of women's attitudes toward childbearing can be captured in survey data using fairly straightforward questions. This type of question might be of use to

policymakers and health care providers in identifying women most in need of additional financial and informational resources for accessing contraception.

In order to fully understand the utility of measuring reasons for wanting to limit fertility, it is necessary to show whether this measure is associated with fertility as well as contraceptive use. The analyses reported here show only cross-sectional data on contraception. If the higher contraceptive use among women reporting economic motivations for limiting fertility is not sustained, this short-term association may not translate into better ability to carry out intentions over a two-year period. These results also showed that women who reported that they were too old or ill to have children were not more likely to be using contraception at the time of the survey. If these women have lower fecundity or are less sexually active than other women, they may be able to limit fertility despite their relatively lower use of modern contraceptive methods. To explore these possibilities, the completed paper will add analyses of fertility behavior between 2009 and 2011 as predicted by stated reasons for limiting in 2009 to the current cross-sectional analysis of contraceptive use.

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Table 1: Motivations to limit fertility among non-pregnant married women who want to stop or postpone childbearing

	N	Percent of women who want to limit childbearing because:					
		Enough children	Too old/tired/sick	Economic conditions	Child spacing	Husband unfaithful/ does not support	Other reasons
Analytic sample	785	45.1	33.3	26.6	4.3	4.2	15.3
Age <26	131	23.2	22.5	25.7	13.3	6.2	25.4
Age 26-30	214	41.3	32.9	30.1	3.1	4.2	16.3
Age >30	440	53.7	36.7	25.0	2.1	3.7	11.8
No education	219	45.6	33.8	30.0	2.1	3.0	16.0
1-4 years of education	362	48.8	35.0	26.0	2.2	3.9	15.5
5 or more years of education	204	38.6	29.9	24.0	9.8	6.0	14.4
Household possessions index=1	327	47.3	30.9	30.7	2.5	6.7	15.7
Household possessions index=2	174	49.2	33.3	29.6	6.4	2.2	14.6
Household possessions index=3	209	43.1	35.9	20.2	4.4	3.2	14.8
Household possessions index=4	75	31.7	35.9	19.8	6.4	1.6	16.9
No religion	43	58.0	25.6	22.8	4.2	2.3	25.5
Catholic/mainline Protestant	250	45.9	31.5	23.1	4.4	3.7	15.4
Other religion	492	43.7	34.8	28.6	4.3	4.7	14.5
Not polygamous marriage	587	43.9	35.2	27.6	4.5	3.6	15.1
Polygamous marriage	198	48.7	27.4	23.4	3.7	6.1	16.0
0-1 living children	42	1.7	26.2	15.6	18.2	5.3	43.1
2 living children	124	17.5	29.0	19.8	6.9	4.9	29.6
3 living children	162	32.2	30.8	27.3	5.1	6.7	22.2
4 or more living children	457	60.4	35.9	29.0	2.2	3.2	6.9

Data: N=785 non-pregnant, currently married women in rural southern Mozambique. See text for further details on data. Percents may sum to more than 100%; more than one motivation to limit fertility is possible.

Table 2: Associations between use of contraception and motivation to limit fertility among non-pregnant married women who want to stop or postpone childbearing

	b	SE	
Intercept	-2.21	0.61	***
Motivation to limit fertility (omittted=has enough children)			
Too old/tired/sick	0.25	0.22	
Poor economic conditions	0.51	0.22	*
Child spacing	0.03	0.50	
Husband unfaithful/does not support	-1.20	0.76	
Other reasons	0.06	0.33	
Age (omitted=25 and under)			
Age 26-30	0.07	0.31	
Age >30	-0.16	0.35	
Education (omitted=no formal schooling)			
1-4 years of education	-0.23	0.20	
5 or more years of education	0.52	0.25	*
Household possessions index	0.27	0.09	**
Religion (omitted=no religion)			
Catholic/mainline Protestant	-0.15	0.51	
Other religion	0.02	0.47	
Polygamous marriage	0.24	0.23	
Number of living children	0.04	0.06	
-2 log likelihood			

Data: N=785 non-pregnant, currently married women in rural southern Mozambique. See text for further details on data.