

Social Identity and Community Effects on Contraceptive Use and Intentions in Southern Ethiopia

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In this study, data gathered in southern Ethiopia are used to explain how ethnic and religious identities affect current or intended contraceptive use. The only compositional factors that increase the likelihood of birth limitation are having a member of the family with a higher level of education and community access to health services. Compositional factors by themselves do not explain Muslim and ethnic variations in contraceptive use and intentions. Village health and economic crises do not promote birth limitation. One normative economic factor—the practice of sons' inheritance of land from their fathers—considerably reduces the likelihood of contraceptive use, but does not account for religious and ethnic differentials. No evidence is found of a minority-status effect on contraception. Exposure to ethnic and religious diversity in the community of residence substantially increases the likelihood of emergent birth limitation, especially among the predominant Muslim Silte population. (STUDIES IN FAMILY PLANNING 2004; 35[2]: 79–90)

This study grows out of an extensive history of research on ethnic and religious differences affecting fertility control in developing countries. In countries with a large Muslim population, the number of children ever born is generally found to be greater and the use of contraceptives less likely among Muslims than among members of other religious groups. Across countries, Islam often is associated with resistance to birth limitation, although the success of family planning programs in Indonesia and Iran suggests that such a relationship is far from invariable. In many developing countries, the focus of research has been less on diversity in ethnic identity than on the way in which particular traditional religious or ethnic beliefs and practices affect the role of women and reproduction. In this study, we examine the situation in southern Ethiopia, in which Islam and the Orthodox Christian church are conservative, pronatalist forces. Ethnic groups are also a major cultural force in reproduction, however, and different religious affilia-

tions are present within the ethnic groups, providing a context allowing greater understanding of the effects of religion on birth control.

Ethiopia is characterized by ethnic, linguistic, and religious diversity (Library of Congress 2002). No group is ascendant in all areas of the country; ethnic groups are mixed residentially in some communities and are segregated in others. Although all observers agree that the unique personal identities that result from this diversity are fundamental elements of social organization, attitudes, and behaviors, previously, no systematic treatment of these issues was offered in demographic studies. This omission may, in some part, be due to the political sensitivity of such studies and their potential results.

At issue here are the mechanisms through which these two dimensions of social identity (religious affiliation and ethnicity) produce observed differences in contraceptive use. Alternative mechanisms include: (1) whether the apparent impact of religious affiliation and ethnicity is accounted for by demographic controls, individual and household characteristics, or differences in community characteristics (the compositional hypothesis); (2) controlling for these background characteristics, identifying whether normative differences across the ethnic and religious groups mediate the impact of social identity on emergent birth limitation (ideation hypothesis); and (3) whether living in a village in which women's social identity is in the majority increases birth

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limitation (the minority-status hypothesis). We seek to determine whether exposure to persons of diverse social identities in their communities reduces the impact of women's own social identity on fertility control (the socialization hypothesis).

The Setting

As in many African countries, ethnic groups in Ethiopia have been distinct for a long time. This long period of exclusiveness, compounded by ethnic competition for political power, has resulted in an increased intensity of ethnic affiliation (Library of Congress 2002). Ethnic commitments in Ethiopia intensified after the new government came to power in May 1991. Since then, an increasing number of political parties based on ethnic identity have been formed, and new federal regions have been demarcated along ethnic lines. Awareness of ethnic identification and the variety and vitality of ethnic institutions have, therefore, increased. In this context of ethnic competition and conflict, the issue of the numerical strength of the various groups has gained salience, and with the increasing atmosphere of ethnic intensity, any differences in fertility and fertility-related behaviors will have important social, economic, and political consequences for the future of the country.

The SNNPR (the government abbreviation for the Southern Nations, Nationalities and People's Region) is one of the nine federal regions of Ethiopia (see Figure 1). It has a land area of 117,506 square kilometers and had

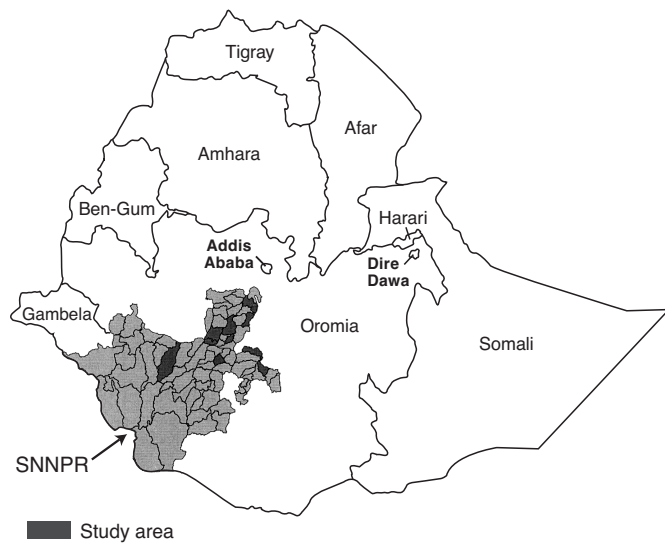
a population of 11.1 million in mid-1997. The region accounts for more than one-tenth of Ethiopia's land area, and about one-fifth of its national population. Although the SNNPR has the highest population density in the country—95 persons per square kilometer—it is one of the least urbanized regions of Ethiopia. In 1997, less than 7 percent of its population was living in urban areas; the largest city and regional capital, Awassa, had a population of 69,000. This densely populated region is characterized by high infant and child mortality, a high level of fertility, and an extremely low level of contraceptive use. In 1994, the region had an infant mortality rate (IMR) of 102 deaths per 1,000 live births and a total fertility rate (TFR) of 6.8 children per woman of reproductive age (CSA 1996).

The SNNPR is diverse in terms of ethnicity: It is inhabited by more than 80 ethnic groups, of which more than 45 are indigenous to the region (CSA 1996). These groups are distinguished by different languages, cultures, and socioeconomic organizations. The largest groups are the Sidama (18 percent), Wolayta (12 percent), Gurage (9 percent), Hadiya (8 percent), Silte (7 percent), and Kembata (4 percent). Each group is numerically dominant in its respective administrative zone, but large ethnic minority populations reside in each zone as well.

The SNNPR is also diverse in terms of its religious composition and differs from other regions as a result of its experience with Protestant missionary activity. Four major religions are represented in the population of the region: Protestantism, Orthodox (non-Protestant) Christianity, Islam, and traditional (nonmonotheistic). Unique to the SNNPR among the regions of Ethiopia, Protestants form the largest religious group, accounting for about 35 percent of the population. Protestant denominations include the Fellowship of Evangelical Believers (the Ethiopian branch of the Sudan Interior Mission), the Evangelical Church Mekane Yesus (with Scandinavian, German, and American Lutheran roots), the Bethel Evangelical Church (sponsored by the American United Presbyterian Church), and the Seventh-day Adventist Church.

Orthodox Christians and Muslims constitute the second- and third-largest religious groups in the region, comprising 28 and 17 percent of its population, respectively. The Orthodox Christian religion is rooted in the writings of St. Mark, and combines elements of belief in a trinitarian God with non-Christian traditional beliefs. Weekly religious services are only a small part of being an Orthodox Christian. Several holy days require prolonged services, singing and dancing, and feasting. One of the most important religious requirements is the keeping of 165 fasting days per year, when meat, dairy products, alcohol, and sexual relations are prohibited. Islam came to Ethiopia at the time of Mohammed. Ethiopian

Figure 1 Ethiopia



Muslims are orthodox Sunni. Although Muslims in Ethiopia recognize that they are subject to Ethiopian law, local matters involving individuals or families often are settled in *Shia* (Islamic religious) courts.

More than 15 percent of the population of the SNNPR adhere to traditional beliefs or have no organized religion. These beliefs are diverse in their specifics, but commonly include the existence of a remote God identified with the sky and best addressed through spirits. These spirit beliefs closely resemble the spirit elements of Christian and Muslim believers. Practitioners of other religions (including Baha'i, Jehovah's Witnesses, and Jews) are an insignificant minority, barely 2.5 percent.

Regardless of religious affiliation, all but the most-educated clerics and laity believe in the existence of active spirits (*adbar*), and Ethiopians worry about the evil eye (*buda*). The *adbar* are believed to protect the community rather than the individual or family. The female *adbar* is thought to protect the community from disease, misfortune, and poverty, whereas the male *adbar* is said to prevent fighting, feuds, and war, and to bring good harvests. People normally pay tribute to the *adbars* in the form of honey, grains, and butter. This emphasis on the social and behavioral aspects of religious identity and shared interests in spirits reduce to some degree the doctrinal differences that are so problematic elsewhere (Library of Congress 2002).

The extreme ethnic and religious diversity of the population makes the SNNPR an ideal setting in which to explore the ethnic and religious identities of individuals and how these sources of identity influence contraceptive behavior. The various groups intersect and differ in a variety of ways, producing distinctive patterns of individual identity. Some communities are relatively homogeneous; others are diverse. Providers of reproductive health services and researchers in Ethiopia believe that the country's extraordinary heterogeneity produces cultures that present great difficulties for promoting fertility limitation and contraceptive use.

Data and Methods

The data used in this study are drawn from the Community and Family Survey (CFS) conducted in May 1997. The CFS, a representative survey covering SNNPR, was a collaborative project of the Demographic Training and Research Center (DTRC) of Addis Ababa University and the Population Studies and Training Center (PSTC) of Brown University (DTRC/PSTC 1998).

The CFS used a stratified probability sample of women aged 15–49. Households were identified using a three-stage cluster sampling procedure. Five major zones in

the region were selected, representing about 80 percent of the population of the SNNPR. The 20 percent who were not represented live in extremely remote mountainous and lowland areas. Even in the sample areas included in the study, reaching the peasant associations sometimes required a full day's walk or travel by draft animals.

The five selected zones were stratified into rural and urban areas. In the rural stratum, one highland and one lowland *wereda* (a unit roughly similar to a New England township) were selected at random from each zone to capture agricultural ecology niches. Twenty rural communities were selected at random for the survey (two per *wereda*). The urban sample is representative of the selected zones as a whole. Places are designated as urban based on their legal status as local government centers. Often these are small agricultural towns. The only major town in the SNNPR is Awassa, which is the site of four of the nine urban areas. Nearly all eligible women in the selected households were successfully interviewed, resulting in a final sample of 2,550 women aged 15–49 (DTRC/PSTC 1998).

This 1997 microlevel survey gathered a wealth of information on the marital and fertility behaviors of women aged 15–49 and on their family and community situations. Information was also collected on the household situation (from heads of households) and on the community (from knowledgeable community leaders). Data concerning marriage and reproductive outcomes were collected from individual respondents. Information about ethnic origin, religion, household characteristics, and various other aspects of the lives of these women and their husbands was obtained from the household record as reported by the household head. Community-level variables were collected through focus-group discussions with key community informants.

For this analysis, we selected a population subgroup for which the research questions are appropriate and for whom all religious and ethnic information about the women and their husbands is available. We excluded women aged 19 and younger (N = 505) because of selection biases on marriage for younger women. Of the remaining women, we excluded women who were not currently married (N = 429) and women of second or higher-order marriage (N = 366) in order to obtain necessary information on the husband's social identity and economic characteristics. For this study, we thus use data for 1,250 currently married women in their first marriage aged 20–49 and married to the head of their household.

The response rate in the 1997 CFS was 95 percent for household interviews; for individual interviews it was almost 100 percent (DTRC/PSTC 1998). Previous analysis of information collected in the 1997 CFS revealed

no serious biases, misreporting, missing cases, or out-of-range values (Hogan et al. 1999). We attribute this finding to the use of local people as field supervisors who (using a letter from the regional governor) gained access to communities and the cooperation of the village heads. Interviewers for the women's survey were women from the local areas; most had a high-school education. All interviews were conducted in one of five local languages or Amharic, as the respondent preferred. This procedure differs from that of most national surveys, which employ Amharic-speaking interviewers who question respondents through a translator. We believe that choosing interviewers of the same linguistic and ethnic group as the respondents greatly facilitated the fieldwork and substantially improved the quality of the data.

Variables and Measures

Table 1 provides detailed information about the variables and definitions used in this study. Means and standard deviations for these variables are provided in Table 2.

Women interviewed in the CFS were asked: "Do you or your husband currently use any family planning method to avoid or delay becoming pregnant?" Only 2 percent of currently married women aged 15–49 answered affirmatively (Hogan et al. 1999). Those not using a method were then asked: "Do you or your husband intend to use any family planning methods in the future?" About one-fifth of the women surveyed indicated a predisposition toward future use. In Ethiopia, where use of modern contraceptive methods has just begun, we expect that effects of ethnic and religious group membership and community diversity on contraception are more likely to be expressed in receptivity toward future use than in use per se. Using this information, we constructed a binary dependent variable, "emergent birth limitation." This variable is coded as 1 if the respondent is currently using a contraceptive or intends to use one in the future and 0 if she neither uses one currently nor plans to use one later. Although these thresholds may seem low for measuring the potential for fertility limitation, they are appropriate to the southern region of Ethiopia where the transition to a low-fertility regime has only barely begun. In other analyses, we have shown that the index of contraceptive use for rural Ethiopia was constant from 1984 to 1994 to 2000, indicating that data for 1997 are still accurate for the analysis of the country's early birth limitation (Sibanda et al. 2003). Only 26 percent of women surveyed gave responses indicating emergent birth limitation.

The ethnic identity of the respondent and her husband was determined from the response of the house-

hold head to the following question: "To what ethnic group does [name] belong?" Although the CFS identified 52 ethnic groups in the study area, we consider only seven major ethnic groups (Gurage, Hadiya, Kambata, Konta, Sidama, Silte, and Wolayta) and a category of "other" for the remaining women. Thus, we maintain a reasonable number of women in each ethnic category.

The religious identity of the respondent and her husband was determined from the response of the household head to the question "What is [name's] religious denomination?" For this study, the responses to this question for women were divided into four religious categories: Protestant, non-Protestant Christians (nearly all Coptic Orthodox, with a few Catholics, and other Christians [whom we refer to as Orthodox Christians]), Muslim, and traditional. The CFS also asked the woman whether she and her husband were of the same religion before they married. If the answer was negative, the wife was asked whose religion she practiced after marrying.

Our measures of ethnic and religious identity were developed using a simplified version of social identity developed in earlier work by Hogan and Berhanu (2003). They used data on spouse selection to calculate indexes of dissimilarities on the social distances of groups, identifying 22 ethnoreligious groups (that is, groups defined by the combination of ethnicity and religion). The strongest evidence for the appropriateness of defining social identity on the basis of religion and ethnicity is the persistently high degree of marital homogamy. Hogan and Berhanu used the 22 distinct social identities to examine fertility and family planning behavior. Their research ignored key community characteristics, however, and calculated no interactions of social identities and community characteristics.

In order to be able to extend this analysis to include a more complete set of personal, family, and community characteristics in our models as controls and to measure interactions between social identity and community characteristics in fertility limitation, we distinguish a reduced set of eight ethnic and four religious identities and test for interactions between the dimensions of social identity.

Importantly for this research, considerable religious diversity exists within ethnic groups in the sample. Among the Hadiya, 52 percent are Protestant, 22 percent are Orthodox, and 23 percent are Muslim. Among the Wolayta, about half are Protestant and half are Orthodox. The Kambata group is composed of 53 percent Protestants, 33 percent Orthodox Christians, and 10 percent Muslims. Among the Gurage, the Orthodox are in the majority (79 percent), and 13 percent are Muslim. The Konta are about half Orthodox and half traditional. Only among the Silte

Table 1 Definition of variables in the analysis of contraceptive use and intention, SNNPR, Ethiopia

Variable	Operational definition
Outcome variable	
Emergent birth limitation	1 if a woman has reported current use or expressed future intention to practice contraception, 0 otherwise
Social identity	
Religious category	Four major religious categories are included: Protestant, non-Protestant Christian, Muslim, and traditional
Wife's reported ethnicity	Eight ethnic groups are included: Gurage, Hadiya, Kambata, Konta, Sidama, Silte, Wolayta, and other
Compositional factors	
Wife's literacy	1 if a woman is literate (can read and write in any language), 0 otherwise
Housing quality	An index of housing quality is created by summing binary values on whether the household has (1) or does not have (0): a window, a corrugated iron roof, two or more rooms, a radio, a television, and a plow. The ordinal values range from 0 (none of them) to 6 (all of them). This variable constitutes the most objective measure of household wealth both in rural and urban areas.
Household education	The mean of the highest educational grade attained by each household member aged 10 and older
Perceived household economic status	Household head's perception of the household's economic status compared with that of other households in the community, measured as (a) below average, (b) average, and (c) above average
Inadequate water	The community has (1) or does not have (0) any problem obtaining adequate water for drinking and cooking at certain times of year.
Epidemic	There has (1) or has not (0) been any serious outbreak of infectious disease that killed many children and adults in the locality during the last six years .
Health-service availability	At least one (1) or no (0) modern health service (mobile or permanent) is available in the community.
Craft-work activity	Key community informants' consensus on the proportion of families in the community producing craft work (such as leather, pottery, iron, and wooden items and blacksmith articles) in their home for sale, 1 if "half or more," 0 otherwise
Years of severe food shortage	Community informants' consensus about the number of years of severe food shortage the community faced in the past six years. The response range is 0 (none) to 5 (5+ years) and is treated as an interval variable in the multivariate analysis.
Norms	
Polygynous marriage	1 if the woman is in a polygynous union, 0 if she is in a monogamous union
Homogamous marriage	Marriage is homogamous (1) if both the wife and the husband are from the same ethnic, religious, and language groups, exogamous (0) otherwise.
Wife's involvement in household decisionmaking	Women were asked various questions about their decisionmaking autonomy within their household. These questions include: Who makes the decision: (a) to purchase major (expensive) items such as blanket, cassette recorder/radio, watch; (b) to calculate how much of earned money to spend on food or how much of a food item produced should be eaten; (c) to distribute food and how much food and what food to distribute within the household; (d) to spend money on medical or health-care services for a sick man; and (e) to spend money on medical or health-care services for a sick woman. Women were also asked whether they would join a women's group or association in their area; 1 if both wife and husband or the wife alone makes the decision, 0 otherwise. Binary responses to these six questions are summed to create an ordinal variable that ranges from 0 (no involvement at all) to 6 (wife completely involved in decisions either as an independent decisionmaker or as a joint decisionmaker with the household).
Patterns of household formation	Four types of household structure are defined by cross-classification of the family type upon first marriage and the current family type: (a) Postmarital patrilocal and current simple (that is, woman married into her husband's parental house and is currently living in a family made up of wife, husband, and their biological children); (b) postmarital simple and current simple (that is, married into her own house and currently living in simple family); (c) postmarital patrilocal and current complex (that is, moved into her husband's parental house and currently living in an extended family household); and (d) postmarital simple and current complex (that is, married into her own house and forming an extended family household).
Community farmland inheritance practice	1 if inheritance is reported to be the major mechanism or system in which people in the community obtain access to farmland, 0 otherwise (gift at marriage, contract/lease, sharecropping/rent, government redistribution, and other)
Concentration factors	
Ethnoreligious composition	1 (majority) if woman is a member of a particular ethnic and religious group in which that category is numerically the local majority, 0 otherwise
Ethnoreligious diversity	Standardized entropy index measuring community level of ethnoreligious diversity, from a minimum of 0 for complete homogeneity (the community is composed of a single ethnic and religion group) to a maximum of 1 (complete diversity—none of the members in the community belongs to the same ethnic and religious category as the others)
Demographic controls	
Wife's age	Age of the wife in completed years
Age at first marriage	Wife's age at first marriage
Spousal age difference	Husband's age minus wife's age
Parity	Number of children ever born alive
Number of children dead	Number of couple's children who have died

Table 2 Mean values of characteristics of outcome and explanatory variables of Southern Ethiopian female respondents aged 20–49 in first marriage

Variable	Mean	Standard deviation
Currently using / intending to use family planning	0.26	0.44
Social identity		
Religion		
Protestant	0.41	0.49
Non-Protestant Christian	0.29	0.45
Muslim	0.22	0.41
Traditional	0.08	0.27
Ethnicity		
Gurage	0.06	0.23
Hadiya	0.20	0.40
Kambata	0.09	0.29
Konta	0.08	0.27
Sidama	0.21	0.40
Silte	0.13	0.33
Wolayta	0.10	0.30
Other	0.14	0.35
Compositional factors		
Wife literate	0.20	0.40
Housing quality	1.73	1.50
Household education (mean)	1.74	2.64
Perceived household economic status		
Below average	0.19	0.39
Average	0.42	0.49
Above average	0.39	0.49
Community characteristics		
Inadequate water	0.58	0.49
Epidemic	0.55	0.50
Health services available	0.50	0.50
Craft-work activity	0.48	0.50
Years of severe food shortage	1.75	1.43
Norms		
Polygynous marriage	0.27	0.44
Homogamous marriage	0.81	0.39
Wife involved in household decisionmaking	2.70	2.24
Household formation		
Postmarital patrilocal and current simple	0.45	0.50
Postmarital simple and current simple	0.27	0.45
Postmarital patrilocal and current complex	0.17	0.37
Postmarital simple and current complex	0.11	0.32
Community farmland inheritance practice	0.42	0.49
Concentration factors		
Ethnoreligious majority	0.57	0.50
Ethnoreligious diversity	0.48	0.21
Demographic controls		
Wife's age (years)	30.82	7.49
Wife's age at first marriage (years)	17.38	3.59
Spousal age difference (years)	9.26	7.94
Parity	4.28	2.98
Number of children dead	0.71	1.27

is there no variation in religion; virtually all of the Silte are Muslim. In the SNNPR, most Muslims belong to ethnic groups in which they are the minority. Only among the Silte are Muslims predominant.

We compare the social identities of individual women to the social identities of the women who live in their local communities and distinguish women who are in the

majority in both their ethnic and religious identities (57 percent) from those who are not in the majority. When women live in communities where their own social identities are the majority, the norms of the majority group may be expected to be reinforced, whereas if they are in a minority situation, their fertility may be higher, consistent with the minority-status hypothesis.

Another major factor characterizing communities is ethnoreligious diversity. We determine whether a community is “homogeneous” or “diverse” using a measure of diversity called the “entropy index” (White 1986).

The entropy index is defined as:

$$H_i = - \sum_{k=1}^{k=K} P_{ik} \ln(P_{ik}),$$

where $i = 1$ to I ($I = 29$, the number of communities), and

$$P_{ik} = N_{ik} / N_i,$$

where N_{ik} = the number of persons in the k^{th} ethnic or religious group in the i^{th} community, N_i = the total population size of the i^{th} community, and K = the total number of ethnic, religious, or ethnoreligious groups in the SNNPR.

The entropy index is not bounded from above. Because comparison is our main interest here, we formed a norm for this index by dividing by its maximum value, $\ln(K)$, where K is as defined above. The resulting index has a value that ranges between 0 and 1. Larger values of this index (close to 1) indicate ethnic or religious diversity in a community (48 percent of the women experience such diversity), whereas lower values of the index (close to 0) suggest homogeneity in ethnoreligious composition. Residence in a community with great diversity in social identities exposes women to a variety of beliefs and behaviors, some of which perhaps promote contraceptive innovation not sanctioned by their own ethnic and religious groups.

We include a variety of demographic controls in the models. Both the timing of first marriage (with a mean of 17.4 years) and the age difference between spouses (with a mean of 9.3 years) are important factors affecting the timing of childbearing, completed family size, fertility preferences, and contraceptive use (Casterline et al. 1986; Hogan et al. 1999). Early marriage increases the exposure time to the risk of conception. Large differences in the age of husbands and wives are likely to be indicative of the husband's greater power within the marriage. The number of children ever born (the mean parity is 4.3 children) and the number of children who have died (a mean of 0.71) indicate which women are of high parity and perhaps more willing to adopt contra-

ceptives. These variables serve as controls for all of the multivariate models of current and intended contraceptive use, including those models that examine the observed differences in social identities.

Important compositional factors that either precede, are the products of, or are simply correlated with social identity are included as controls for understanding how basic social demographic factors (women's education and household economic status) account for differences by social identities in emergent birth limitation. Only 20 percent of women in the SNNPR are literate. The physical ecology and public infrastructures of communities differ remarkably by lowland and highland location, access to water and control of waterways for irrigation and flood prevention, food security, and government services. We measure community problems with drinking water (58 percent), epidemics (55 percent), famine (with a mean of 1.7 out of five possible years), craft work, and health services (only half of the communities considered offer any health-service access) as indicators of community variations relevant to reproductive strategies. Famine and epidemics directly affect the survival of children. The availability of health services can provide access to reliable methods of contraception.

Variations among the ethnic and religious groups are measured with respect to their norms concerning women's roles, marital and residential practices, and inheritance of land. Postmarital and current household structure is important, with patrilocal residence (and the presence of a mother-in-law) leading to larger family sizes. Polygyny (the situation of one-fourth of the women sampled) is often associated with women's low status and gender inequality within marriage, which in turn may translate into high fertility and a low level of contraceptive use (Boye et al. 1991; Ezeh 1997). Homogamy of the husband and wife (found in 81 percent of couples) is important in reinforcing the effects of social identity on emergent birth limitation. Finally, in communities where the major mechanism for redistributing property is sons' inheritance from fathers (42 percent), the male members of the households will dominate. Land that is provided as a gift at marriage, through contract, lease, or government redistribution will ensure male dominance less often. Those communities (48 percent) having some nonagricultural (craft) occupations may have greater exposure to the world outside the village and may provide an environment in which couples are more likely to prefer a smaller family size and to make a greater human capital investment in women and children. This situation may not be the case in rural Ethiopia, however, where craftworkers (smiths, tanners, potters, weavers, and woodworkers) are marginalized minorities.

Ethiopian craftworkers are spatially segregated, economically disadvantaged, politically disempowered, socially excluded, and culturally subordinated (Pankhurst 2001).

Methods of Analysis

The multivariate method of analysis used here is the logistic regression model (predicting the likelihood of a woman's contraceptive use or intention). An odds ratio of 1.00 indicates that the independent variable has no effect. An odds ratio greater than 1.00 indicates an increased likelihood of emergent birth limitation relative to the likelihood of fertility limitation of the reference category. An odds ratio less than 1.00 indicates a reduced likelihood of emergent birth limitation.

The use of community variables means that the statistical models include multiple women from the same *kebele* (community), and therefore that the observations are not independent. We have corrected this problem by adjusting the standard errors of the estimated coefficients for clustering effects using the Huber correction procedure in the Stata software program (StataCorp 1999).

Findings

Table 3 shows how each of these demographic controls, compositional factors, norms, and community social identities varies across the religious and ethnic groups. Age at marriage is similar across the major religious groups, with only the traditional group having a lower (by about two years) age at marriage. The compositional patterns are complex, with major religious differences involving the much smaller proportions of Muslim and traditional women who are literate, their greater exposure to community problems, and their lesser access to health services. Norms differ across religious groups, with homogamous and polygynous marriages being more common among Muslims. More noteworthy is that the norms considered are key aspects of marriage in each religious group. Muslim women are much more often patrilocally coresident after marriage, and more often remain in complex families over their reproductive years than do women of other religions. Inheritance of farmland is more dominant among the Protestants and Orthodox Christians, whereas Muslims' access to land is highly restricted. Muslims more often live in communities in which they are the majority group, and less often experience contact with persons of other social identities than do those of other religious groups.

The Sidama, Silte, Gurage, and Konta experience younger ages at marriage, are more often in polygynous unions, and have fewer literate women than other groups,

Table 3 Women aged 20–49 in first marriage, by distribution of compositional factors, norms, concentration factors, and control variables, according to religious and ethnic identity, SNNPR, Ethiopia, 1997

Variable	Religious identity				Ethnic identity							
	Protes- tant	Non- Protestant Christian	Muslim	Tradi- tional	Sidama	Hadiya	Wolayta	Kambata	Silte	Gurage	Konta	Other
Compositional factors												
Wife literate (percent)	27.7	24.2	7.6	3.0	9.0	24.2	34.4	27.9	1.9	20.0	0.0	43.3
Mean housing quality	1.6	2.2	1.5	0.8	0.9	1.8	2.0	1.9	1.3	2.9	1.0	2.8
Household education (mean)	2.3	2.1	0.6	0.5	1.0	1.8	3.0	2.0	0.3	1.6	0.1	3.6
Perceived household economic status (percent)												
Below average	17.9	19.6	22.9	9.0	23.4	13.5	7.8	11.7	30.6	25.7	8.3	24.4
Average	33.3	44.6	50.2	53.5	22.7	35.3	47.7	51.4	45.9	60.0	67.7	44.4
Above average	48.7	35.8	26.9	37.4	53.9	51.2	44.5	36.9	23.6	14.3	24.0	31.1
Community characteristics												
Inadequate water (percent)	51.5	52.1	72.4	75.7	48.4	55.6	89.1	59.6	56.1	17.1	100.0	60.1
Epidemic (percent)	54.6	46.3	76.4	24.2	32.8	59.5	76.6	81.1	98.7	22.9	0.0	49.4
Health services available (percent)	53.4	56.2	38.2	42.4	33.6	42.9	89.8	31.5	47.8	31.4	54.2	73.3
Craft-work activity (percent)	54.4	65.0	15.3	43.4	60.9	36.5	78.1	58.6	5.1	88.6	54.2	36.1
Mean years of severe food shortage	1.9	1.7	1.6	0.8	0.7	3.0	1.5	2.7	1.5	0.4	0.5	2.4
Norm												
Polygynous marriage (percent)	23.6	22.0	38.6	25.3	32.8	23.8	22.7	12.6	45.9	22.9	30.2	15.6
Homogamous marriage (percent)	80.3	77.4	86.6	87.9	94.9	78.6	89.8	72.1	93.6	87.1	99.0	43.9
Wife involved in decisionmaking (mean)	3.1	3.0	2.2	1.2	2.7	2.9	5.0	2.4	2.0	3.1	0.0	2.9
Household formation (percent)												
Postmarital patrilocal and current simple	41.9	37.2	65.1	29.3	41.8	54.8	32.0	33.3	72.0	55.7	15.6	37.8
Postmarital simple and current simple	27.7	35.0	9.5	48.5	38.3	13.5	36.7	26.1	3.2	14.3	64.6	32.2
Postmarital patrilocal and current complex	17.9	13.0	20.4	11.1	12.5	24.2	7.0	24.3	20.4	17.1	6.3	15.0
Postmarital simple and current complex	12.5	14.9	5.1	11.1	7.4	7.5	24.2	16.2	4.5	12.9	13.5	15.0
Community farmland inheritance practice (percent)	56.3	42.7	18.6	31.3	48.1	50.8	15.6	79.3	26.1	61.4	0.0	46.1
Concentration factors												
Ethnoreligious majority (percent)	69.0	28.9	78.6	32.3	61.3	59.2	60.2	44.1	94.9	62.9	33.3	27.2
Mean ethnoreligious diversity	0.5	0.5	0.3	0.6	0.6	0.5	0.5	0.4	0.2	0.3	0.5	0.7
Demographic control (mean)												
Wife's age (years)	30.0	31.9	30.9	30.3	29.6	31.6	30.3	33.4	30.4	32.4	30.0	30.5
Wife's age at first marriage (years)	17.5	17.6	17.2	15.5	15.0	19.0	17.8	19.9	16.5	16.4	16.7	18.1
Spousal age difference (years)	8.8	9.6	9.4	9.9	10.9	9.0	8.2	10.1	8.3	10.3	8.0	8.6
Parity	4.1	4.6	4.5	3.9	4.4	4.5	4.5	4.2	4.4	4.8	3.0	4.1
Number of children dead	0.4	0.7	1.2	0.8	0.5	0.8	0.8	0.4	1.2	0.7	0.8	0.6

and are characterized by poorer household socioeconomic status. The Gurage are much less likely to live in a community with problems. Nearly all Wolayta have access to health services compared with 55 percent or fewer of the other ethnic groups. The Silte nearly all live in communities in which they are the majority, and therefore are the least likely to encounter other ethnic and religious groups. Although not as systematically as with religious differences, the factors hypothesized to be implicated in contraceptive use and intention to use show clear variations by ethnic group.

Table 4 displays measures of these effects of social identity on emergent birth limitation by building models in accordance with the hypotheses advanced here. Model I documents the overall relationship of religious affiliation to contraceptive use and intention to use, con-

trolling for demographic variables. Model II documents the extent to which ethnicity matters, controlling for religion and the demographic factors. The compositional explanation for observed religious and ethnic differences in emergent birth limitation is assessed in Model III. Model IV examines whether normative factors explain the remaining religious and ethnic differences. Finally, Model V tests the minority status and socialization hypotheses as mechanisms that enhance or moderate religious and ethnic variations in emergent birth limitation. In the comparison of change in the chi-square test statistic and degrees of freedom, the addition of each panel of variables is found to contribute significantly to the overall fit of the model predicting emergent birth limitation. The religious, ethnic, compositional, and normative factors, and the degree of exposure to other religious

Table 4 Logistic regression models showing odds ratios of emergent birth limitation among women aged 20–49 in first marriage, SNNPR, Ethiopia, 1997

Variable	Model I	Model II	Model III	Model IV	Model V
Religion					
Protestant (r)	1.00	1.00	1.00	1.00	1.00
Non-Protestant Christian	1.33	1.16	1.21	1.09	1.09
Muslim	0.15***	0.30***	0.48*	0.27***	0.27***
Traditional	1.53	1.18	1.54	1.51	1.43
Ethnicity					
Gurage		0.39*	0.27**	0.31*	0.33*
Hadiya		0.80	0.52*	0.49*	0.55
Kambata		0.36**	0.26***	0.33**	0.50
Konta		1.18	1.85	1.14	1.49
Sidama (r)		1.00	1.00	1.00	1.00
Silte		0.18*	0.12**	0.10**	0.21
Wolayta		2.21***	1.25	0.56	0.67
Other		1.92**	0.92	0.83	0.80
Compositional factor					
Wife literate			1.41	1.23	1.19
Housing quality			1.05	0.99	0.90
Mean household education			1.13**	1.11*	1.11*
Perceived household economic status					
Below average			1.03	1.17	1.14
Average (r)			1.00	1.00	1.00
Above average			1.15	1.17	1.12
Community characteristics					
Inadequate water			0.99	1.16	1.08
Epidemic			0.97	1.18	1.22
Health services available			1.49*	1.76**	1.81*
Craft-work activity			1.03	0.68	0.66
Years of severe food shortage			1.03	1.09	1.14
Norm					
Polygynous marriage				0.97	1.02
Homogamous marriage				0.85	0.94
Wife involved in decisionmaking				1.03	1.06
Household formation					
Postmarital patrilocal and current simple (r)				1.00	1.00
Postmarital simple and current simple				1.19	1.11
Postmarital patrilocal and current complex				1.18	1.22
Postmarital simple and current complex				1.25	1.21
Community farmland inheritance practice				0.30***	0.30***
Concentration factor					
Ethnoreligious majority					1.03
Ethnoreligious diversity					9.40***
-2 Log L	1,283.6	1,213.9	1,167.5	1,132.8	1,121.5
Degrees of freedom	8	15	25	32	34

*Significant at $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. (r) = Reference category.

Note: Wife's age, wife's age at first marriage, spousal age difference, parity, and number of children dead are control variables.

and ethnic groups all contribute independently to the explanation of contraceptive use and intentions.

The only religious group difference in emergent birth limitation is that Muslims are only 15 percent as likely as Protestants to practice contraception. The much lower rate of contraceptive use and intention to use among Muslims is 30 percent of the Protestant rate when ethnic identity is controlled and 48 percent when compositional factors are controlled. Clearly, although the factors we introduce to explain emergent birth limitation

are themselves significant predictors, they fail to explain the distinctive results for Muslim behaviors.

When results are controlled for religion, ethnic differences in emergent birth limitation are pervasive; the Wolayta and those in the "other" category have much higher rates of contraceptive adoption (compared to the Sidama), and the Gurage, Kambata, and Silte much lower rates. When controlled for population composition, the much greater rate of contraceptive adoption among the Wolayta disappears. The lower rates of the Gurage, Kam-

bata, and Silte persist net of controls for population composition and norms, but disappear for the Kambata and Silte when religious and ethnic concentration in their communities are considered. Only the very low likelihood of contraceptive adoption among the Silte remains unexplained.

Higher educational levels in the household are associated with modest increases in contraceptive adoption. The only normative factor implicated in contraceptive adoption is that relating to patterns of property inheritance; in communities in which the usual practice is to pass land from fathers to sons, there are more sons born and a reduced likelihood of contraceptive adoption. Accessibility to health services is associated with a 50 percent to 80 percent increase in emergent birth limitation.

Clear, direct effects of the two dimensions of social identity on emergent birth limitation can be observed. The impact of ethnicity is largely explained, however, by compositional factors and geographic concentration, whereas the marked differences between Muslims and those of the other religions are unaffected by these controls and by normative differences between the groups. To determine whether interactions exist between social identity and community variables, net of main effects and controls for personal and family variables, we re-estimated Model V of Table 4, adding interaction terms

for religion and ethnicity with each community characteristic in turn. The chi-square test statistic, degrees of freedom, and significance level ($p < 0.05$) indicated that the interactions were important for religion with epidemics and food shortages in local communities, and for ethnicity with inadequate water supply, craft-work activity, and community diversity.

Table 5 displays these statistically significant interactions, providing the main effects of ethnicity or religion and of the community characteristics on emergent birth limitation. For ease of presentation, the coefficients shown are the beta coefficients rather than the odds ratios shown in Table 4. (Although all ethnic groups were included in the estimated models, we do not show the coefficients for the interactions of Kanta and other ethnic groups with community factors because their small sample sizes would produce unstable estimates). We indicate the nature of the interaction coefficient to assess whether it intensifies or moderates the main effects of religion and community characteristics. Finally, we provide the overall coefficient (taking into account the main effects and the interaction) for the effect of religion or ethnicity and community characteristics on birth limitation.

Muslims display little likelihood of emergent birth limitation. This effect is diminished for Muslims living in communities having severe food shortages, but it be-

Table 5 Regression coefficients of statistically significant models, compared with Model V, that contain social identity measures and community factors one at a time, for southern Ethiopian women aged 20–49 in first marriage

Interaction terms	$\beta 1$ Social identity [95% CI]	$\beta 2$ Community [95% CI]	$\beta 1$ $\beta 2$ Interaction [95% CI]	β Logit [95% CI]
Orthodox Christian X epidemic	-0.24 [-0.80,0.31]	0.09 [-0.51,0.99]	0.52 [-0.22,1.26]	0.37 [-0.28,1.01]
Muslim X epidemic	-0.95 [-1.97,0.06]		-0.83 [-2.32,0.65]	-1.70* [-2.81,-0.58]
Traditional religion X epidemic	-0.47 [-1.25,0.31]		2.29* [1.04,3.54]	1.91* [0.82,3.00]
Orthodox Christian X food shortage	-0.23 [-0.85,0.40]	-0.04 [-0.22,0.15]	0.14 [-0.10,0.39]	-0.12 [-0.66,0.42]
Muslim X food shortage	-3.27* [-5.11,-1.43]		0.97* [0.20,1.74]	-2.33* [-3.59,-1.07]
Traditional religion X food shortage	-0.51 [-1.30,0.29]		0.61* [0.26,0.97]	0.07 [-0.62,0.76]
Gurage X inadequate water	-1.41* [-2.70,-0.12]		0.66 [-1.34,2.65]	-1.19 [-2.88,0.50]
Hadiya X inadequate water	-0.47 [-1.31,0.37]	-0.44 [-1.27,0.39]	-0.43 [-1.56,0.71]	-1.33* [-2.30,-0.37]
Kambata X inadequate water	-0.99 [-2.19,0.21]		0.48 [-1.15,2.11]	-0.95 [-2.16,0.26]
Wolayta X inadequate water	-1.44* [-2.76,-0.13]		1.70* [0.17,3.22]	-0.18 [-0.97,0.61]
Gurage X craft-work activity	-0.64 [-2.56,1.28]		-0.70 [-3.02,1.61]	-1.76* [-3.05,-0.47]
Hadiya X craft-work activity	-0.52 [-1.30,0.26]	-0.42 [-1.36,0.52]	-0.08 [-1.33,1.17]	-1.02* [-1.94,-0.09]
Kambata X craft-work activity	-0.35 [-1.45,0.74]		-0.71 [-2.41,0.99]	-1.48* [-2.64,-0.32]
Silte X craft-work activity	-2.57* [-4.90,-0.24]		2.69 [-0.26,5.65]	-0.30 [-2.36,1.76]
Wolayta X craft-work activity	-0.64 [-1.72,0.44]		0.79 [-0.68,2.26]	-0.27 [-1.25,0.72]
Gurage X community diversity	-1.64 [-5.06,1.78]		1.51 [-3.57,6.58]	0.72 [-1.64,3.07]
Hadiya X community diversity	-1.66 [-4.03,0.71]	0.86 [-1.66,3.37]	2.02 [-2.30,6.35]	1.22 [-1.11,3.55]
Kambata X community diversity	-2.22 [-4.53,0.10]		3.36 [-1.17,7.88]	2.00 [-0.84,4.83]
Silte X community diversity	-4.63* [-7.96,-1.29]		7.22* [2.08,12.36]	3.45* [0.36,6.53]
Wolayta X community diversity	0.36* [-1.63,2.36]		-0.30 [-3.61,3.00]	0.92 [-0.98,2.82]

* Significance at $p < 0.05$.

comes significantly more negative for Muslims living in communities with water shortages. No indication is seen that the effects of religious identity on emergent birth limitation are especially diminished or reinforced for Muslims by life in a community in which they are in the minority (as suggested by the minority-status hypothesis), by community diversity, or by exposure to many different religions and ethnic groups (as suggested by the socialization hypothesis).

The Gurage and Wolayta both have lower levels of contraceptive use and intention to use, but when they live in communities with inadequate water supplies, these differences disappear. The low likelihood of emergent birth limitation among the Silte disappears when they live in villages where craft-work employment is available, and becomes positive when they live in diverse communities. Several other ethnic differences become statistically significant when interactions with community variables are considered.

Combinations of ethnic and religious categories are known to have distinct relationships to past fertility behavior, desire for additional children, and practice of contraception (Hogan and Berhanu 2003). A formal statistical test for interactions between ethnic group and religious identification on emergent birth limitation was not statistically significant when compositional, normative, and community factors were taken into account, however.

Conclusions

This research began with the observation that substantial variations exist in the current or planned future use of modern contraceptives according to religious affiliation and ethnic identity (referred to here together as social identity). Three mechanisms were advanced in this study to account for these differences. The compositional hypothesis is that these ethnic and religious differentials are accounted for by compositional characteristics. The lesser likelihood that Muslims display emergent birth limitation is unaffected by compositional controls for individual and community characteristics. Ethnic group differences are only partially accounted for by individual and compositional factors (with the positive coefficient for the Wolayta disappearing). The only compositional factors that increase the likelihood of a woman's using a contraceptive or intending to use one are her living in a family with a higher level of education or in a community with access to health services. In general, health and economic crises in the villages, crises often exacerbated by population size, do not promote con-

traception. We find little evidence to support the compositional hypothesis.

A second possible explanation is that normative values and behaviors relating to the roles of women and the household and family structures are vehicles through which religious and ethnic differences in the use or intended use of contraceptives are transmitted. In fact, the normative behaviors identified have little direct impact on emergent birth limitation and do not explain Muslim or ethnic group differentials. A normative economic factor—the inheritance of land by sons from their fathers—considerably reduces the likelihood of contraceptive use, perhaps because it weakens the economic power of the wife and necessitates the birth and survival of sons.

We find no evidence of any minority-status effect on birth limitation for the population overall, nor does the minority-status hypothesis hold for any ethnic or religious group. Exposure to ethnic and religious diversity in community of residence substantially increases the likelihood of emergent birth limitation. This effect is especially great among the Silte (who are mostly Muslim), changing an initial inclination to avoid birth limitation to a positive tendency in those instances in which they live in communities with a diversity of other ethnic groups. Thus the socialization hypothesis is confirmed for the impact of diversity on birth limitation and is particularly powerful among the Silte. This finding provides some indication that, as population migration continues and more complex towns develop, a tendency will emerge toward increased birth limitation among all of the ethnic and religious groups in Southern Ethiopia.

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