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# Religion and the Decision to Use Contraception in India

SRIYA IYER

*This article investigates two hypotheses put forward to explain the effect of religion on the decision to use contraception in India. The first hypothesis is the “pure religion effect,” that the intellectual content of religion influences contraceptive behavior. This hypothesis is explored by examining women’s views on the theological content of Islam and Hinduism in relation to birth control, provided by a sample of 186 rural Hindu and Muslim women from southern India. The second hypothesis examined is the “characteristics” hypothesis, that religious differences in contraceptive adoption are explained by socioeconomic characteristics of religious groups. This is tested by a logit model that shows that there is no statistically significant difference between Hindus and Muslims in the effect of religion on contraceptive adoption, after controlling for socioeconomic characteristics. Taken together, the qualitative and quantitative findings have significant implications for religious groups and for population policies in India.*

Even as the population of India surpassed the one billion milestone in the year 2000, the research that has examined recent fertility trends (Dharmalingam and Morgan 1996; Säävälä 1999) has not taken into account adequately the causes of religious differentials in fertility found among subgroups of the population, such as between Hindus and Muslims. This article evaluates whether religion in India influences one proximate determinant of fertility—the decision to use contraception—even after controlling for the impact of other socioeconomic factors that influence contraceptive use. The first section puts forward why we should care about religion and contraception in India in the context of research on Hinduism, Islam, and contraceptive behavior. The next section describes the data and methods used to investigate this issue empirically. To explore the relationship specifically between religion and contraception, a detailed micro-level data set was collected in five villages and the town of Ramanagaram in Ramanagaram *taluk* in the south Indian state of Karnataka. This data set consists of detailed demographic information on a sample of rural Hindu and Muslim women in order to understand the relationship between their adherence to religion and the decision to use contraception, a relationship that is notoriously difficult to unravel in fieldwork. This information is presented in the third section. Next is an outline of a binomial logit model of the socioeconomic and religious determinants of contraceptive use for the sample. Results of this estimation follow and then the implications of the quantitative and qualitative findings are discussed for state-level population policies in India.

## WHY SHOULD WE CARE ABOUT RELIGION AND CONTRACEPTION?

There are two hypotheses that propose certain links between religion and contraceptive adoption; these are the “pure religion effect” hypothesis—that the intellectual content of religion or theology affects contraceptive use; and the “characteristics” hypothesis—that religious differentials in contraceptive adoption reflect socioeconomic differences between individual members of different religions (Chamie 1977; Riccio 1979; Westoff 1979; Sander 1995). In India, there are 42 percent of Hindus and 28 percent of Muslims currently using a method of family planning (International Institute of Population Sciences 1995). The question we need to ask, therefore,

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is whether the differences between Hindu and Muslim contraceptive behavior can be explained either by the “theology” or “characteristics” hypotheses?

A number of studies have examined whether the particular philosophical content of Islam affects demographic behavior (Youssef 1978; Musallam 1983; Obermeyer 1992). In India, Islam has traditionally been portrayed as not permitting birth control or abortion in any situation (Subamma 1988). However, some demographers argue that the position of Islam on birth control and abortion depends very much on the interpretation of different schools of Islamic jurisprudence (Obermeyer 1992:43). According to this view, Islam does permit family planning, an inference drawn from the absence of any reference to the prohibition of birth control in the Koran, and from the writings of the medieval theologian Al-Ghazali, who outlined many situations where birth control within Islam is permissible: for example, if there is concern about the wife’s health. Some schools of Islamic jurisprudence also permit abortion up to the time when the fetus is regarded as being “ensouled,” after which abortion is prohibited by all schools (Obermeyer 1992). In contrast to the case of Islam, Hinduism regards decisions to use contraception as women’s personal matters that are not usually within the purview of religious injunction. One explanation for this may be notions of “purity and pollution,” which are strictly upheld in the day-to-day practice of traditional Hinduism. For example, the reproductive functions of women, such as menstruation or childbirth, are viewed as making women temporarily “impure.”<sup>1</sup> However, it should be noted that some Hindu texts do stipulate norms in the context of multiple partners (Deshpande 1978:92). There are also indirect references to the control of births in the context of norms about abstinence. For example, Vyasa argues that, “He [the householder] should avoid intercourse with his wife when she is old or barren or ill-behaved, when her children die or when she has not yet attained maturity, when she gives birth to daughters only or has many sons” (Radhakrishnan 1947:189). There is thus some considerable debate about whether the theological content of Islam and Hinduism condone or castigate birth control. This implies that at a practical level the effect of Hinduism and Islam on the decision to use contraception is influenced by differing interpretations of scriptural content by individuals in real-life situations and by the institutions through which these religions operate: for example, in matters relating to birth control, the *ulema* (clerics) are in a position to interpret Islam for followers, whereas in the case of Hinduism, the lack of explicit scriptural injunctions may mean that priests are not consulted on these matters. It is possible that differences in contraceptive adoption between these religious groups are explained by such theological differences. However, it is equally possible that the socioeconomic characteristics of Hindus and Muslims in India differ and that this accounts for demographic differences between them.

#### DATA AND METHODS

To test these competing hypotheses, a detailed micro-level data set was collected in five villages and the town of Ramanagaram in Ramanagaram *taluk* in the south Indian state of Karnataka (Iyer 2002). Ramanagaram was chosen for conducting fieldwork for several reasons. First, in Karnataka, as in other states in India, there has been a steady decline in fertility rates over the past decade, mainly due to state-sponsored coordinated family planning and literacy programs. Yet in India as a whole, in Karnataka state and in Ramanagaram *taluk*, there is a mean difference in fertility of one child on average between Hindus and Muslims. The mean number of children ever born in Ramanagaram is 2.7 for Hindus and 3.7 for Muslims. Secondly, Ramanagaram has been exposed to family planning and literacy programs such as the National School Health Programme. The first Family Planning Health Centre in Karnataka was set up in Ramanagaram in 1952. Moreover, Ramanagaram was also studied by the Mysore Population Study (United Nations 1961). Ramanagaram is therefore a good test area in which contraceptive technology is freely available, having witnessed the inception of official policy on family planning in India.

In terms of educational infrastructure in Ramanagaram, there are only six primary schools and no professional colleges. This lack of educational infrastructure is reflected in the low mean level of

education for the women interviewed in the sample (5.5 years). In terms of health infrastructure, Ramanagaram has one public hospital with two doctors and no specialists. There is also an informal system of education and health infrastructure in Ramanagaram that co-exists with the formal sector provided by the nationwide Integrated Child Development Services (ICDS) program, which provides a package of education and health services for women and children.

The sample chosen covered Ramanagaram town and five other villages that were intimately connected with the small-scale economy of Ramanagaram *taluk*. The sampling procedure adopted was a two-stage quota sampling technique. The five villages will be referred to as villages A, B, C, D, and E. Depending on the size of the town or village, a proportional sample size was selected. There were a total of 201 households surveyed: 111 Hindu households, 75 Muslim households, and 15 Christian households. The interviews were conducted with individual women in these households, supplemented by group discussions with four to eight women in each group. The analysis below discusses the Hindu and Muslim households only, as this is the more interesting contrast for this region.

### RELIGION AND CONTRACEPTIVE ADOPTION

In the Ramanagaram survey, there were 47 percent of ever-married women in the whole sample; 57 percent of Hindus and 40 percent of Muslims had ever used any method of birth control.

As shown in Table 1, for the women who used contraception, the most popular means of birth control is the sterilization (tubal ligation) operation, which was used by 68 percent of all women,

**TABLE 1**  
**MARGINAL DISTRIBUTIONS OF SELF-REPORTED CONTRACEPTIVE USE**  
**AMONG HINDUS AND MUSLIMS AND WOMEN'S VIEWS ON RELIGION AND**  
**CONTRACEPTION, RAMANAGARAM SAMPLE**

Contraceptive method used	All Women		Hindus		Muslims	
	No.	%	No.	%	No.	%
Sterilization operation	59	67.8	41	69.5	18	64.3
Inter-uterine device	5	5.7	5	8.5	0	0.0
Birth control pills	15	17.2	8	13.6	7	25.0
Condoms	5	5.7	3	5.1	2	7.1
More than one method	3	3.5	2	3.4	1	3.6
Total number of women using any method of contraception	87	100.0	59	100.0	28	100.0
Does your religion permit contraception?						
Yes	91	48.9	90	81.0	1	1.3
No	78	41.9	4	3.6	74	98.6
Don't know	17	9.1	17	15.3	0	0.0
Total	186	100.0	111	100.0	75	100.0
View regarding position of religion on contraception						
Agree	62	33.3	40	36.0	22	29.3
Disagree	28	15.1	4	3.6	24	32.0
Don't know	19	10.2	14	12.6	5	6.6
Did not answer	4	2.2	3	2.7	1	1.3
No view	73	39.3	50	45.0	23	30.7
Total	186	100.0	111	100.0	75	100.0

70 percent of Hindus and 64 percent of Muslims.<sup>2</sup> For example, Padma, from Ramanagaram town, age 23 stated, "I will have an operation after three children." However, some women did have their reservations. For example, Puttibai from village A, age 35, remarked, "The population is less today because operations are in vogue, but I will not have one as they are said to be painful." This predominance of the tubal ligation method is similar to findings from Karnataka and other Indian states, where this method accounts for 87 percent of total current contraceptive practice. In the Ramanagaram sample, spacing methods were more popular among the Muslims. The second most popular method of family planning was birth control pills, which was used by one-quarter of Muslim women, but only by 14 percent of Hindu women. A permanent method of contraception is so favored by the women of Ramanagaram, as indeed by women in other Indian states, because most family planning services are performed by the public sector, which emphasizes permanent methods of birth control. Another contributory factor is the very small degree of communication about contraception by couples: in Ramanagaram only 37 percent of Hindu women and 23 percent of Muslim women reported that they discussed contraception with their husbands. Many women put forward the view that the tubal ligation is a contraceptive method that could be adopted without the need to discuss it with their husbands. For both Hindu and Muslim women in Ramanagaram, mothers, friends, mothers-in-law, and sisters were the chief confidants on family planning matters. Qualitative evidence suggests that female extended family urge women to undergo the operations after they have achieved what is perceived to be an ideal family size of two or three children. For example, Devamma, a Hindu mother of three sons and two daughters, aged 51 from village C, said, "I encouraged my daughter and daughters-in-law to have two children quickly and go in for the operation. Then they are not troubled any more. . . . There is no problem as with the pills, which they may not remember to take. After all, why should they be burdened with so many children as I?"

The research undertaken in Ramanagaram attempted to ascertain whether women's assiduity in practicing religion influenced their decision making about contraception. The questionnaire administered focused on the religious characteristics of the women and their families. Such questions are not included in the 2001 Indian Census data or in larger surveys such as the Indian National Family Health Surveys (NFHS). This makes the data collected in Ramanagaram particularly important. The women were asked five questions about their religious beliefs and practice. First, the women were asked how faithfully they practiced their religion. They were asked to respond on a scale of 1 to 5, where 1 was "not at all," 2 was "not very much," 3 was "medium," 4 was "quite a bit," and 5 was "very much." Muslims rated themselves as being more "faithful" to their religion than the Hindus, and the difference between them statistically was found to be significant. The women were asked about the role of the local priest in their lives: "How much does it matter to you what the local priests think of you?" The Muslims were more concerned with the opinions of priests than the Hindus, and the difference between them statistically was found to be significant. The women were also asked if they would seek advice from local priests about their lives, and the difference in means was statistically significant between Hindus and Muslims. Thus, it appears that the Muslim priests exercise more influence over their communities than the Hindu priests. The Ramanagaram women were then asked how frequently they visited places of worship. Hindu women visited places of worship frequently, followed a long way behind by Muslim women. This was mainly because a large proportion of Muslim women (64 percent) were not allowed to go to the mosque because of *pardah* restrictions.<sup>3</sup> Even so, Muslim women prayed simultaneously at home during prayer time, indicating the importance of religion in their lives. Finally, the women were asked if they interacted with neighbors who did not belong to their religion. What is striking is how little the two religions interacted outside their own religious community: the lower proportions for the Muslims (62 percent) than for the Hindus (73 percent) is understandable, since the former are a minority in a predominantly Hindu region. This difference, however, between Hindus and Muslims was not found to be statistically significant.

Do these Indian women's religious beliefs exert an impact on their decision to use contraception? The women in Ramanagaram were asked two questions about what they thought was the position of their religion on contraception, as shown in Table 1. The first question was, "Does your religion permit contraception?" There were 81 percent of Hindus who said that they thought that their religion permitted contraception, but only 1 percent of Muslims thought the same. A Hindu woman, Saraswati, aged 38 from Ramanagaram town, remarked, "The Muslim religion does not allow contraception, unlike us Hindus." However, there was considerable variation in Muslim women's presentation of what they regarded as the Islamic ban on contraception. Shamsheeda, age 33 years, and a Muslim mother of four children, said, "Whatever God gives is his will." But a leading Muslim social worker from Ramanagaram explained the position of Islam on contraception as follows: "Everyone is having an operation. The *Koran* says that we can take pills when the stomach [womb] is empty, but when there is a birth [conception], we can't take the tablets. We need to reconsider this." The women were then asked what their personal views were concerning the position of their religion on birth control. Many women were reluctant to answer this question openly, reflected in the large proportion (37 percent) who said that they had "no view." Gauramma, a Hindu woman aged 26 from village C, remarked, "Our religion does not say anything, hence I have not hesitated to have an operation." The number of Hindus who said that they had "no view" (45 percent) is much higher than among the Muslims (31 percent). The other interesting difference across religious groups is in the percentage disagreeing with the position of their religion on contraception. This was 32 percent for Muslims, compared to 4 percent for Hindus. This finding is interesting because as discussed above, although there is debate about whether theologically Islam permits contraception, the perception among Muslim women in Ramanagaram is unambiguously that it does *not* permit birth control. This perception was most likely influenced by the local Islamic clergy, as shown, for example, in an interview with the *mullah* of Ramanagaram.<sup>4</sup> He stated that he did not encourage birth control, but rather believed that children were "gifts of God." However, over one-quarter of Muslim women in Ramanagaram disagreed with this position. For example, a Muslim woman, Fatima, age 52, from Ramanagaram, who was educated to the Masters level, remarked, "I had two births and then got myself operated. My husband encouraged me. We have a responsibility to restrict our fertility . . . I follow the *Koran*, what is correct, . . . but you see, men are selfish. They do not allow girls to study. Husbands do not like wives in control of their lives or their fertility." Other Muslim women who did limit their fertility implicitly contrasted the position of priest and theological writings, as in the case of Shahzamma, from Ramanagaram town, aged 35, who remarked, "I am educated, therefore I have a small family. We do not need to consult the priest because everything is written in the *Shariat*."

Women also made distinctions between various permanent and temporary methods of contraception. Most women interpreted "contraception" synonymously with "sterilization." However, some Muslim women did clarify that any prevailing opposition to contraception was specifically toward sterilization rather than pills or more traditional methods, such as abstinence. In Karnataka, all forms of family planning services are provided through government and private medical outlets. Demographers argue that doorstep delivery of contraceptives is an important way to reduce the costs of contraception (Arends-Kuenning 1997; Bongaarts 1997). In the Ramanagaram sample, 31 percent of Hindu women and 19 percent of Muslim women responded that they depended on the "nurse" (typically an auxiliary nurse or midwife) who came round once a fortnight to provide family planning advice and services.

Thus, approximately half the sample had used a method of contraception, the most popular of which was the sterilization operation. The decision to use contraception was influenced by husbands and by other female family members. Religion was an important part of women's lives in Ramanagaram and it played a part in influencing family planning, but women were hesitant to reveal their views about this openly. A greater proportion of Muslim women than Hindus disagreed with what they perceived to be the position of their religion on contraception. Finally,

Muslim women used the doorstep delivery of contraceptives less, but this was not because it was difficult to obtain. Together, these findings suggest strongly that the main motivation associated with contraceptive use in Ramanagaram was its acceptability rather than its availability.

### A LOGIT MODEL OF RELIGION AND CONTRACEPTIVE USE

This section examines quantitatively the “characteristics” hypothesis. A binomial logit model of contraceptive choice was estimated (McFadden 1973; Heckman 1976; Heckman and Willis 1976; McFadden 1984). In logit estimation, it is hypothesized that the probability that an event occurs is determined by the function  $p_i = F(Z_i) = 1 / (1 + e^{-Z_i})$ . The marginal effect of  $Z$  on the probability (denoted by  $f(Z) = dp/dZ = e^{-Z} / (1 + e^{-Z})^2$ ) is given by the derivative of this function with respect to  $Z$ . The model is fitted by maximum likelihood estimation, which uses an iterative process to estimate the parameters. To describe the effect of a particular explanatory variable on the probability of occurrence of the event, the usual method used is to calculate the marginal effect at the sample mean, i.e., at the mean value of the explanatory variable used in the model. When more than one explanatory variable is used (as in the models presented below), the marginal effects are calculated by multiplying  $f(Z)$  by the estimates of the coefficients of the logit regression. To assess the influence of religion and other socioeconomic variables on the decision to use contraception, a binomial logit model was used because the dependent variable was dichotomous—it took the value 1 if the woman had ever used a method of contraception (permanent or temporary); if she had never used a contraceptive method (permanent or temporary), she was assigned the value 0. The explanatory variables used in the econometric estimation were the education of the woman, her husband’s education, household income, the woman’s occupation, her husband’s occupation, marital consanguinity, the woman’s current age, the woman’s reported ease of access to government contraceptive services, the number of female extended family members, and religion.

The choice of these variables was motivated both by theoretical and by empirical considerations (as discussed below). Both women’s education and husband’s education are measured in terms of the total number of years of education. Whether the woman performed an occupation is measured in three ways: first, to take the value of 1 if the woman was employed in a home-related occupation and 0 otherwise; second, to take the value of 1 if the woman was employed in a silk-related occupation and 0 otherwise; and third, to take the value of 1 if the woman was employed in a skilled occupation and 0 otherwise. Whether the husband performed an occupation is measured in three ways: to take the value of 1 if the man was employed in a skilled occupation and 0 otherwise; to take the value of 1 if the man was employed in domestic industry and 0 otherwise; and, third, to take the value of 1 if the man was a farmer and 0 otherwise. Household income is measured in terms of the household’s total monthly expenditure, total monthly food expenditure, and in terms of a dummy variable that took the value 1 if the household owned a television and 0 otherwise. The woman’s age measured in years at the time of survey was included as an additional explanatory variable. A measure of the accessibility and quality of government services was included in the form of a question that asked women whether in their perception access locally to government contraceptive services was easy. Religion is included in the econometric models and is measured as a dummy variable that takes the value 1 if the woman is Muslim and 0 if the woman is Hindu; and in terms of an “index of piety,” which is an average of the woman’s responses to five questions on her practice of religion and her assiduity to it (as discussed above). Two measures of family composition are included in the econometric models. Consanguineous marriage is common in Karnataka and has traditionally involved a large age gap between spouses, which may contribute to reducing interspousal communication on contraception and decrease contraceptive use. This variable is measured in terms of a dummy variable that takes the value 1 if the woman married a relative but 0 otherwise; and in terms of a statistical measure, the coefficient of inbreeding.<sup>6</sup> A second measure of family composition is the influence of the extended family, measured in terms of the total number of female extended family residents in the household, who

**TABLE 2**  
**LOGIT MAXIMUM LIKELIHOOD ESTIMATION OF THE DETERMINANTS OF**  
**CONTRACEPTIVE USE AMONG HINDU AND MUSLIM HOUSEHOLDS,**  
**RAMANAGARAM SAMPLE**

Regressor	Coefficient	Sig.	T Ratio [Prob.]
Constant	-2.06		-1.59 [0.11]
Women's education (total number of years)	0.07		1.52 [0.13]
Husband's education (total number of years)	0.15	***	3.23 [0.00]
Number of female extended family members resident	-0.27	**	-1.95 [0.05]
Government-provided services (perception of access)	3.15	***	2.69 [0.01]
Woman is Muslim	-0.81	**	-2.18 [0.03]
Woman's age	-0.04	**	-2.31 [0.02]
Maximized value of the log-likelihood function	-91.6713		
Goodness of fit	0.71676		

*Notes:* Dependent variable is use of contraception: 1 = woman has ever used a contraceptive method; 0 = woman has never used a contraceptive method. Sample: 173 ever-married Hindu and Muslim women.  
 \*\*\* = significant at the 0.01 level; \*\* = significant at the 0.05 level; \* = significant at the 0.10 level.

may have an important role to play in influencing a couple's decisions about using contraception. Most often, the hypothesized direction of influence is thought to be negative.

**RESULTS**

Preliminary logit models estimated (not reported here) used backward elimination based on the value of the likelihood ratio. These models were estimated with the purpose of arriving at the best specification of certain regressors for which alternative measures were available. Of all the preliminary regression models estimated, the model that emerged as the best initial specification used woman's total years of education, husband's total years of education, total monthly expenditure, a dummy variable that took the value 1 if the woman performs a home-related occupation, a dummy variable that took the value 1 if the husband performs a skilled occupation, a dummy variable that took the value 1 if the marriage was consanguineous, the woman's age, the number of female extended family members, a dummy variable that took the value 1 if government services are perceived as being accessible, and the religion dummy, which took the value 1 if the woman is Muslim (using the Hindus as the base category). The resulting logit estimation, reported in Table 2, showed that the woman's education, husband's education, the perception of access to government services, the number of female extended family members resident, the woman's age, and whether the woman was Muslim emerged as the most significant determinants of the probability of contraceptive use.

According to this model, a greater degree of education for the woman's husband increases the probability of contraceptive use. The model also predicts that if a woman is older, she is less likely to use contraception. If there is one more female family member resident, the woman is less likely to use contraception. If the woman perceived that government services were accessible, she was more likely to use contraception. Finally, the model predicts that if a woman is Muslim, she is less likely to use contraception. However, it is also important to examine whether religion affects the slope of the regression, i.e., whether the socioeconomic factors that affect contraceptive use act differently for Hindus and Muslims. To investigate this, interaction terms between the other explanatory variables and the Muslim dummy variable were introduced into the model. At every stage of the regression procedure, a restriction was imposed that hypothesized that the coefficients on a particular regressor and its interaction term were equal to zero. This hypothesis was tested



**TABLE 3**  
**LOGIT MAXIMUM LIKELIHOOD ESTIMATION OF THE DETERMINANTS OF**  
**CONTRACEPTIVE USE AMONG HINDU AND MUSLIM HOUSEHOLDS,**  
**RAMANAGARAM SAMPLE**

Regressor	Coefficient	T-ratio [Prob.]	Marginal effect <sup>a</sup>
Constant	-2.9539**	-1.8698 [0.063]	—
Woman is Muslim	0.3887	0.2645 [0.792]	†
Woman's education (number of years of education)	0.11663*	1.8256 [0.070]	0.0291
Number of years of education for Muslims	-0.05162	-0.6754 [0.500]	-0.0129
Husband's years of education	0.1196**	2.0849 [0.039]	0.0299
Muslim husband's years of education	0.0432*	0.4770 [0.063]	0.0407
Government-provided services (perception of access)	3.2796***	2.6737 [0.008]	†
Perception of access by Muslims	—	—	†
Female extended family resident	-0.4476**	-2.2369 [0.027]	-0.1118
Muslim female extended family resident	0.3898	1.2633 [0.208]	-0.0144
Woman's age	-0.0194	-0.7370 [0.462]	-0.0049
Muslim woman's age	-0.0399	-1.0457 [0.297]	-0.0148
Model statistics			
Scale factor for the calculation of marginal effects	0.24982		
Maximized value of the log-likelihood function	-89.9590		
Mean of CTPRUSE	0.50867		
Mean of fitted CTPRUSE	0.46243		
Goodness of fit	0.73410		
Pesaran-Timmermann test statistic	6.2119 [0.00]		
Pseudo R <sup>2</sup>	0.24964		

*Notes:* Dependent variable is CTPRUSE : 1 = woman had ever used a contraceptive method; 0 = woman had never used a contraceptive method. Sample: 173 ever-married Hindu and Muslim women. Base category: Hindus.

<sup>a</sup>Marginal effect = coefficient\* scale factor. This is evaluated at the sample mean of the regressor.

† Not reported because the explanatory variable is a dummy variable.

— One Muslim interaction term was excluded from the model because of its perfect correlation with other regressors.

\*\*\* = significant at the 0.01 level; \*\* = significant at the 0.05 level; \* = significant at the 0.10 level.

by using a likelihood ratio test and the model was reestimated on the basis of the outcome of this test.<sup>7</sup> The final model estimated using this procedure is reported in Table 3.

The model indicates that women's education has a positive impact on contraceptive use for Hindu women in Ramanagaram. Calculated at the sample means, a one-year increase in total education increases the probability of contraceptive use by 0.12 for Hindus. However, a Wald test established that the effect of total education on the probability of contraceptive use did not differ significantly between Hindus and Muslims. Total education of the husband was the next variable to emerge as significant. Calculated at the sample means, a one-year increase in husband's total education increases the probability of contraceptive use by 0.16 for Muslims and by 0.12 for Hindus. A Wald test established that husband's education does not have a different effect on

contraceptive use for Muslims than for Hindus. The importance of husband's education indicates that men should be targeted, through the education system, the health system, or the media, if it is desired to influence contraceptive adoption by their wives. A woman's occupation exerted no effect on contraceptive adoption. It may be that because so many of the Ramanagaram women were employed, that there is not enough variation in these variables to account for differences in contraceptive use. Husband's occupation was also not a significant predictor of the probability of contraceptive use. This model also shows that none of the three different measures of income explored significantly determined contraceptive choice. This suggests that income does not affect the demand for children, perhaps because its effect is cancelled out by various substitution effects.

The presence of female extended family members resident in the household significantly decreased the probability of using contraception among Hindu women. For Hindu women, calculated at the sample mean, one additional female family member reduced the probability of contraceptive use by 0.45. However, a Wald test established that this difference between Hindus and Muslims was not statistically significant. The conventional role of female extended family, and especially the mother-in-law, is to discourage contraceptive use among couples, borne out by the econometric findings. However, it emerges from the qualitative evidence collected during fieldwork that female extended family may be performing a role with respect to contraception that is quite different to that postulated in much of the older literature on the subject (and directly contradicts the econometric findings). For example, Naseema, a Muslim mother of seven children, age 45, from Ramanagaram town, remarked, "We need to improve ourselves, have fewer children. I wish people had spoken to us when we were young, now there is so much difficulty . . . the family planning people keep telling us the population is growing. We should have more responsibility." This view was also found among Hindu women. For example, one Hindu woman, aged 51, from Ramanagaram town, stated quite clearly that she encouraged all her daughters and daughters-in-law to "have their children and stop with an operation." Such remarks suggest that attitudes favoring increased contraceptive use may be an important contributing factor to the fall in fertility in India in recent years, although one that is hard to measure except by micro-level fieldwork.

There are two possible explanations for why the qualitative and quantitative findings from Ramanagaram are at odds with one another. The first is that quantitatively, female extended family may be exercising a negative effect on the decision to use contraception not because there is a direct causal link between these two factors, but because there is an indirect connection. For example, it may be that those who live with extended family are also those who come from more conservative homes in which the use of contraception is discouraged. The other possibility is that female extended family members are actually discouraging the use of family planning, but that women are not willing to admit it openly in a questionnaire survey. However, consanguineous marriage appears not to affect a woman's decisions about contraception. This finding seems in contrast with the significant effect of the female-extended-family variable. In combination, this suggests that while extended family (as measured through members resident) can exert an impact on demographic outcomes, the same may not be true of the influence of extended family, as measured through the influence of inbreeding, in south India.

The perception of access to government contraceptive services emerged as very significant for both religious groups overall. This finding suggests that although most women in the Ramanagaram sample had easy access to contraception, access was probably still a major issue for the remainder. A woman's age was not found to significantly affect contraceptive use. Finally, the religion dummy variable for Muslims was not significant in the interaction model. This finding is very interesting from the point of view of the present study because it is in contrast with the preliminary model presented in Table 2 in which the Muslim religion dummy was significant. In the preliminary model, the Muslim dummy had a negative effect on contraceptive use. The findings from the interaction model suggest that although the Muslim religion does have an effect on contraceptive use in Ramanagaram, it is expressed primarily through differences in how the

socioeconomic “characteristics” of individual members of different religions affect their contraceptive use. As discussed earlier, there is some considerable debate about the influence of Islam and Hinduism on the acceptability of using contraception. However, in this model, Hinduism is not having an effect on contraceptive use significantly different from the effect of Islam. The findings from the interaction model suggest that rather than theological doctrines, it may be the way religion is being interpreted to women by the community that is influencing their contraceptive use via decisions they make about other aspects of their lives such as whether to give their children an education. Consistent with other evidence presented above, community interpretations of religion may be more important than individual religious observance in explaining contraceptive use.

The logit coefficients and analysis of the marginal effects suggest that similar combinations of factors account for patterns of contraceptive use among the religious groups. Among Hindus, the factors positively affecting the probability of using contraception are the education of the woman, her husband’s education, and perception of the accessibility of government services, while the factor affecting it negatively is the number of female family members resident. The woman’s age is unimportant. For Muslims, the factors positively affecting the probability of using contraception are husband’s education and perception of accessibility of government contraceptive services. The estimated regression lines for Hindus and Muslims did not differ in terms either of intercept or of slope, indicating that the factors that affect decisions about contraception in Ramanagaram do not vary significantly between them.

## DISCUSSION

This article examines two hypotheses put forward to explain religious differences in contraceptive use in India. The first hypothesis—the “pure religion effect”—is examined by outlining the theological positions of Islam and Hinduism on birth control and by examining in a local context women’s views on religion and contraceptive adoption. The second hypothesis—the “characteristics” effect—is examined quantitatively by a logit model that investigates whether the influence of religion is important in explaining contraceptive behavior even after controlling for the effects of other socioeconomic factors that affect contraceptive use.

The first section showed that Islam and Hinduism differ with respect to their positions on birth control. The study then examined qualitatively rural Hindu and Muslim women’s responses to survey questions on contraceptive adoption. The findings presented in the third section show that just under one-half of the Ramanagaram sample had ever used a method of contraception, and of the women who had used contraception, over two-thirds had opted for a sterilization operation. Interspousal communication about family planning was low, but women did discuss these issues with other female extended family members. Women were hesitant to reveal their views when questioned about the impact of religion on contraception. Muslim women thought that their religion disapproves of contraception, and one-quarter of them disagreed with this position. This proportion was much larger than that found among Hindus. The quantitative evidence presented showed that while religion exercised an influence on contraceptive adoption at the mean, this effect was not upheld between Hindus and Muslims after controlling for the effect of other socioeconomic factors. The estimated regression lines for Hindus and Muslims did not differ in terms of intercept or in terms of slope.

Taken together, quantitative and qualitative evidence suggests that individual beliefs held by men and women about whether their religion prescribes or proscribes contraceptive use may be fundamental to demographic decisions. The effect of religion may also be exercised through the local religious community, particularly through religious leaders. However, this is expressed in terms of decisions about socioeconomic matters such as whether to continue an education, taken by individual members of different religions. The micro-level findings presented here are therefore significant because they suggest a framework for investigating the relationship between religion and contraceptive adoption and because they provide policy guidance for the future.

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## NOTES

1. This is reflected in the Hindu custom that no members of a family in which a birth has just taken place are allowed to visit a temple or to engage in auspicious religious occasions from between 10 to 40 days after the birth. This is also true of deaths, although the period of mourning extends for one whole year.
2. This finding was corroborated in interviews with doctors in Ramanagaram *taluk*.
3. There were 27 Muslim women who rated their frequency of visits to places of worship as “medium” to “very much,” even though none of them went there for prayers. This question was often misinterpreted by Muslim women as referring to how frequently they prayed. Moreover, some Muslim women did visit the burial sites of saints or seers (*dargha*) nearby, which they considered as places of worship.
4. Oral communication in an interview conducted with the *mullah* of Ramanagaram.
5. This coefficient is a statistical measure of the proportion of gene loci at which an individual is homozygous, and is used to describe the mean level of inbreeding in a population. It takes a value between a minimum of 0 (unrelated) and a maximum of 0.125 (two sets of grandparents in common). The average coefficients of inbreeding for the three communities were 0.03 for the Hindus, 0.03 for the Muslims, and 0.02 for the Christians, which are all high by the standards of other populations.
6. The likelihood ratio (LR) test was of the form:  $LR = 2[L(H_1) - L(H_0)] \sim \chi^2(r)$ ; where  $L(H_1)$  = the maximized value of the log-likelihood function under the unrestricted model;  $L(H_0)$  = the maximized value of the log-likelihood function under the restricted model; and  $r$  = the number of restrictions.

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