UNDERSTANDING RELIGION AND THE ECONOMICS OF FERTILITY IN INDIA

SRIYA IYER*

Faculty of Economics and Politics, and St. Catharine’s College, University of Cambridge, England**

Published as Centre of South Asia Studies Occasional Paper 2, Centre of South Asia Studies, Cambridge, 2002.

* Faculty of Economics and Politics, Austin Robinson Building, Sidgwick Avenue, Cambridge, CB3 9DD, England. Tel: +44+1223+353229. Fax: +44+1223+335475. E-mail: si105@econ.cam.ac.uk.
** For very useful comments and discussions, I thank Partha Dasgupta, Jean Drèze, Chander Kathir-Velu, Pramila Krishnan and Sheilagh Ogilvie. I acknowledge the support of the British Academy which provided the funding for this research.
This paper explores the impact of religion on women’s fertility in India. Religion is conceptualised as affecting demography in two ways: through its philosophical content, and in terms of the socio-economic ‘characteristics’ of different religious groups. Systematic comparison of Islam and Hinduism shows little difference in their theological positions on demographic issues, with the exception of their position on birth control. Econometric methods explore the impact on fertility of religion and other socio-economic factors, using data from a micro-demographic survey of 201 rural Hindu, Muslim and Christian households in the south Indian state of Karnataka. The econometric methods show that there are statistically significant differences in the effects of various socio-economic factors on the number of children-ever-born between Hindus, Muslims and Christians, suggesting that religious groups may need to be targeted differently by policy-makers in order to influence demographic decision-making.
Understanding Religion and the Economics of Fertility in India

The conflict between the sacred and the secular has always rested at the heart of India’s chequered history. The former defines the role for ideology and religious beliefs, the latter has influenced the content and structure of economic policy even as it has reinforced the competitive nature of India’s political process. However, where these two factors are interlinked to generate divisions along religious lines, the outcome has been manifest in the resurgence of what is termed ‘communalism’. Communalism is defined as a phenomenon which uses religion not merely as a set of beliefs or ethical values but as a means to establish the identity of a social community, to attain economic and political ends. This has involved sometimes authoritative postures which seek to impose cohesion and uniformity over diverse members of a religious community in the process of identity-formation, coupled with antagonistic attitudes towards members of rival religious groups in the quest for economic ‘rents’ (Allen, 1993; Basu, 1997). If we examine the history of communalism in India, we find that communal incidents are not unique to post-Independence years, but are evident as early as the eighteenth century and in the colonial period as well (Bayly, 1983; Pandey, 1990). The historical roots of communalism illustrate that organised caste hierarchies, the ability of religion to aid in identity-formation, the fact that economic success depended on rent-seeking vis-à-vis the colonial state, and ‘predatory commercialisation’ due to imperfect markets in land and labour which developed in the colonial period, were the four factors which initially contributed to the rise of communalism (Bagchi, 1991). Though communal conflict in India has taken place between Hindus and Sikhs, and between Hindus and Christians, it is mainly Hindu-Muslim conflict which has recurred the most over the decades (Sarkar, 1981; Pandey, 1991; Gopal, 1991; Vanaik, 1991; Balagopal, 1992; Engineer, 1994). In the 1980s and 1990s, religion has come to be used not merely as the reflection of personal ideology but also as a theological weapon to highlight the insecurity of the poor or inequality
between classes, or for ‘rent-seeking’ purposes; religious affiliation provides a unified way of reducing the transactions costs of forming rent-seeking groups (Stigler, 1993).

An issue which lies at the core of the communalism phenomenon is fertility. Many political leaders (and others) have attributed the religious differentials in fertility that exist in India today to differences in the theological content of Hinduism and Islam and its influence on conduct.¹ Demographic data currently available in all of India suggest that the total fertility rate for Muslims (5.8) is considerably higher than for Hindus (4.2), and that this difference may outweigh differences in mortality (Sharif, 1999, p.331). Age-specific fertility rates also indicate that Muslim women are bearing a larger number of children at earlier ages than are Hindu and Christian women. Much of this debate, however, at least among religious and political leaders, has masked the fact that while there may be real demographic differences between members of different religious groups in India, these may have more to do with socio-economic disparities than with the content of different religious beliefs per se.

There are four hypotheses about why one might observe fertility differentials by religion. These are briefly: the ‘particularised theology’ hypothesis or the ‘pure religion effect’, that the intellectual content of religion influences fertility irrespective of socio-economic and demographic contexts; the ‘characteristics’ hypothesis, that fertility differentials reflect socio-economic differences between members of religious groups; and the ‘minority group status’ hypothesis, that the political and social insecurity of minority religious groups increases their fertility compared to the majority group (Chamie, 1977). A fourth hypothesis that is relevant

¹ For an example of this rhetoric, ‘Muslims are by and large emotional and aggressive. Often in communal troubles they take the initiative though ultimately they are the worse sufferers. The Muslims, have not, till now, taken up the family planning programme with zeal and hence their population is growing at a higher rate than that of the Hindus. ... At this rate their population may become considerable in relation to the total population of our country. This is creating alarm in the minds of Hindus.’ This extract is taken from a book written originally in the Telugu language and now translated into English (Subbamma, 1988, p. vi).
particularly in the context of India, is ‘discrimination’ i.e. that different religious groups may have differential access to services such as health and family planning.

This paper tests various hypotheses about the ways in which religion is hypothesised to affect demography. First, it undertakes an examination of the theological implications (or the ‘pure religion effect’) of Islam and Hinduism on demographic issues. Second, the ‘characteristics’ component is dealt with by using econometric methods to explore the effect of different socio-economic ‘characteristics’ on the fertility of women of different religions. Minority group status is regarded as one more ‘characteristic’ of the population. These hypotheses are tested using detailed demographic, socio-economic and religious data based on a sample of 201 rural Hindu, Muslim and Christian households from the South Indian state of Karnataka. The discrimination hypothesis is not tested here explicitly, but has been explored elsewhere (Iyer, 2002).

I. The ‘pure religion effect’: Islam and Hinduism compared

A pure ‘religious effect’ on fertility can operate in a number of ways. Religions often adopt positions on the moral acceptability of birth control and abortion. They often have norms about ‘desired’ family size. Religious rituals often provide for distinct roles for children (as is the case with son-preference and religious roles for sons in South Asia). Religions can impose religious vows and practices of celibacy, either lifelong or outside marriage. Religions may take positions on the acceptability of contraception. And religions may encourage literacy in order to read the scriptures, which in turn may lead to indirect effects on fertility (Gellner, 1981).

A number of empirical studies have argued that Catholics show different fertility than Protestants and that this is due to differences in the content of their religious beliefs (Westoff and Ryder, 1977; Westoff, 1979; Mosher and Hendershot, 1984; Mosher, Johnson and Horn,
1986: 367-379; Miller, 1988; Sander, 1995). For example, Catholic norms on contraception and family size are widely thought to influence fertility (Janssen and Hauser, 1981). Similarly, it is often argued that the particular philosophical content of Islam affects demographic behaviour in Islamic societies (Youssef, 1978; Coulson and Hinchcliffe, 1978; Qureshi, 1980; Gellner, 1981; Gallagher and Searle, 1983; Lutz, 1983; Caldwell, 1986; Obermeyer, 1992). Empirical evidence from India also suggests that Muslim fertility may be higher than the fertility of other religious groups (United Nations, 1961; International Institute of Population Sciences, 1995; Jeffery and Jeffery, 1997; Sharif, 1999). Empirical evidence for the impact of the Hindu religion on fertility is scarce. The Mysore Population Study concluded that Hindu religious traditions in Indian society favoured having many offspring (United Nations, 1961, pp. 130-156). This study also showed that after childbirth, Hindu women spent on average, a 53-week interval away from their husbands in their parents’ home, and that this was connected with Hindu religious beliefs about women’s ‘purity and pollution’ after childbirth, while Muslim women stayed away from their husbands for an average of only 28 weeks (United Nations, 1961, 137). The study argued that this may have explained higher fertility among Muslims than Hindus in erstwhile Mysore state at that time (United Nations, 1961, pp. 119-120; Chandrasekaran, 1952).

This section compares and contrasts the theological content of Islam and Hinduism in the context of a discussion of the impact of religion on fertility. The examination concludes that contrary to a widely-held belief, there is in fact much common ground between these two religions and that these similarities extend particularly to the effects of the theological positions of Hinduism and Islam on factors that affect demographic behaviour, such as marriage and divorce, abortion and birth control, women’s autonomy, and the importance of children.

The institutional requirements of Islam are specified in the Sharia or Islamic law, which is derived from two main sources: first, the Koran, and second, the Sunnah or the Prophet
Mohammed’s interpretations of the word of God, and their application to various situations, which have considerable influence on human conduct and society (Radhakrishnan, 1939; Landau, 1958; Ragab, 1980; Gellner, 1981). In theory, the Sharia has been applicable to Muslims in India since 1937, although in practice, all religious communities fall within the purview of the common civil code.

Islam is hypothesised to affect fertility directly by its position on the moral acceptability of birth control, and by its views on marriage, polygyny and divorce (Qureshi, 1980: 564). It is popularly believed that because Islam permits a man to take multiple wives, father large numbers of children and unilaterally divorce his wife, this encourages high fertility in Islamic populations. This is also the view that has been repeatedly put forward by Hindu right-wing political parties in the Indian sub-continent.

A large number of writings and scriptures put forward Hindu beliefs. These include the Vedas, the Upanishads, the Bhagavad Gita, and the epic poems Ramayana and Mahabharata. Philosophically, the main religious experience of Hinduism is the quest for salvation of the human soul, to bridge the gap between the infinite real self and the finite or empirical body (Radhakrishnan, 1927; Radhakrishnan, 1947). The empirical self is believed to follow a cycle of births, with life in each birth determined by the actions in the past birth and in the present. In this common quest, Hinduism lays out a ‘code of conduct’ for the individual, particularly in relation to the society in which he/she lives (Radhakrishnan, 1939, p. 353). The Hindu code of conduct encapsulates the fourfold objects of life, the fourfold succession of the stages of life, and the fourfold ordering of society in terms of caste (Radhakrishnan, 1939, p. 351). The implications for fertility of this ordering of society and caste endogamy is that social mobility of the individual may be dependent on caste mobility, with fertility influenced by the norms of the caste, or by the restricted socio-economic opportunities of certain castes.
Therefore, a cursory look at the philosophical content of Islam and Hinduism suggests significant dissimilarities: a monotheistic Islam with a closed line of Prophets versus a polytheistic Hinduism that is an amalgamation of diverse beliefs and philosophies; an egalitarian view of the ordering of society versus the socially structured hierarchy of caste; the Islamic emphasis on a ‘common creed’, the Hindu experience of the ‘common quest’.

However, a more detailed look at Islam and Hinduism suggests significant similarities between the two religions. Both Hinduism and Islam view religion similarly: in Islam as a way of life, in Hinduism as an experience which prescribes a code of conduct. Second, both religions espouse a degree of fatalism and put a high value on asceticism and/or renunciation as the true path to spiritual growth. Thirdly, though in theory neither religion has a ‘church’ or a ‘priesthood’, both religions have evolved classes of people (the religious pundits of Hinduism and the ulema of Islam) who dedicate themselves to interpreting religious scriptures and applying them to real-life situations. More particularly, in India there is a caste system among Muslims with the same rigidity of endogamy as that found among Hindu castes.

In the Koran, Muslim males are encouraged to marry, and the early and universal remarriage of widowed and divorced women is highly encouraged (Youssef, 1978, p. 88). The tight control of parents and guardians over the selection of marriage partners and strict seclusion before marriage are features of some Islamic societies (Youssef, 1978, p. 78). Islamic law does not require a husband to obtain permission from a court or from current wives in order to undertake another marriage (Coulson and Hinchcliffe, 1978, pp. 37-38). Islam permits a man to divorce his wife, in some situations, unilaterally (Coulson and Hinchcliffe, 1978, p. 42), although many Muslim countries do require pronouncements of divorce to be made in a law court. The provision for unilateral divorce by the husband is an aspect of the Sharia which is

---

2 For example, the talaq al-bida or ‘divorce of innovation’ consists of the husband pronouncing three talaqs at a time, immediately dissolving the marriage. However, according to Coulson and Hinchcliffe
particularly important in India, because in the late 1980s and early 1990s an issue which was at the forefront of the ‘communalism’ phenomenon was the debate over the Muslim woman’s right to maintenance after divorce.

However, in contrast to the widely-held view of the influence of Islam on marriage and divorce, in some interpretations of Islam a man can only take a second wife with the consent of the first wife. In parts of Malaysia and Iran, the man does need to obtain permission from the courts before contracting a second marriage. In Pakistan, a polygynous marriage has to obtain sanction from an arbitration council (Coulson and Hinchcliffe, 1978). Moreover, in many Muslim countries today, some wives adopt the Hanbali interpretation which restrict the rights of husbands to contract additional marriages, and which may also give Muslim women the right to work outside the home (Youssef, 1978, p. 41). There is also evidence that polygyny is not widespread in the Arab nations taken together because supporting more than one wife is costly and that polygynous marriages are not always more fertile than monogamous unions (Obermeyer, 1992). Evidence from India also suggests that polygyny is relatively uncommon (Indian National Social Action Forum Manual, 1994). Thus, the extent to which Islam directly impacts on fertility by enforcing norms concerning marriage, polygyny and divorce, is strongly debated in the literature.

Marriage is also important in Hinduism and Hindus are encouraged to enter married life. For example, the Nitimanjari argues that ‘Home is not what is made of wood and stone; but where a wife is, there is a home’ (Radhakrishnan, 1947, p. 149). The Hindu scriptures outline eight different forms of marriage. Hindu gods are always depicted as being married (unlike in

in some Islamic countries such as Iran and South Yemen, this power of the husband to undertake such unilateral repudiation has been completely abolished. Also, some Islamic schools such as the Shiite sect Ihna ‘Ashari do not recognise this form of divorce. In other forms of divorce, where the talaq may be pronounced over several months, there is a waiting period (called the idda), in which women are entitled to some maintenance. However, all responsibilities of the husband towards the wife are completed either with the pronouncement of the talaq or the termination of the idda. See Coulson and Hinchcliffe, 1978, pp. 37-49.
Christianity and Islam), and no god in the Hindu pantheon is ever depicted in a temple without at least one consort, which in itself may provide evidence for the sanction of polygyny. However, the perfect marriage, repeatedly idealised in the Hindu scriptures, is the monogamous one, epitomised by the relationship between the gods Rama and Sita or Savitri and Satyavan, where both stand by each other through various trials. Polygyny was tolerated in the Hindu scriptures, but only in the absence of male offspring. The religious epic poem Ramayana does in fact highlight the evils of polygamy. Polygyny became illegal for Hindus in India in 1955 with the Hindu Marriage Act legislation. In scriptural Hinduism, the indissolubility of marriage is the ideal, but in certain circumstances, divorce is permitted. As Kautilya argues in the Arthasastra, ‘if the husband is of bad character, or is long gone abroad, or is guilty of high treason, or is dangerous to his wife, or has become an outcast, or has lost virility, he may be abandoned by his wife.’

It is widely held that the theological content of Islam has influence on the decision to control births and is an important reason for high fertility in Muslim societies. However, an alternative view is that the position of Islam on birth control and abortion depends very much on the interpretation of the different schools of Islamic jurisprudence (Obermeyer, 1992). According to this view, some schools of Islamic jurisprudence do permit abortion up to the time when the foetus is regarded as being ‘ensouled’, a definition which varies to include the 40th, 80th or 120th day of pregnancy, depending on the school, after which abortion is prohibited by all schools (Obermeyer, 1992; Musallam, 1983). Thus, the extent to which Islam influences the decision to control births is also strongly debated in the literature.

In contrast, Hinduism does not explicitly condone or castigate limiting births. One explanation for this may be the notions of ‘purity and pollution’, which are strictly upheld in the day-to-day practice of traditional Hinduism. For example, matters pertaining to the reproductive functions of women, such as menstruation or childbirth, are viewed as making

---

women temporarily ‘impure’. In scriptural Hinduism, the only reference to the control of births is indirect, 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, p. 189).

On the status of women relative to men, Islam traditionally awarded men a more prominent place than women within the family. Sons were given twice as large an inheritance as daughters and a man’s testimony in court was worth twice that of a woman. Regardless of ethnic origin, women in Islamic societies in the past were restricted to a lifestyle that guaranteed preservation of ‘family honour and prestige’ (Obermeyer, 1992). Moreover, the economic implications of gender discrimination observed particularly in the Arab countries is serious, because it restricts the opportunities of women (Landes, 1998, p. 412). However, women were restricted in many ways in Christian and Hindu societies in the past, and, to some extent, are restricted in Hindu societies in the present as well.

In Hinduism, the role of women in the family is considered very important. The ‘general Hindu view of woman is an exalted one - it regards the woman as the helpmate of man in all his work: sahadharmini’ (Radhakrishnan, 1927). Sayana, a commentator on the Rg Veda, said that ‘The wife and the husband are equal in every respect; both should join and take equal part in all work, religious and secular’ (emphasis added). In one form, the god Shiva is androgynously depicted as ardhanarisvara (half-man and half-woman), emphasising the importance of the masculine and the feminine in the Hindu faith.

4 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 such as weddings, from a minimum of ten to a maximum of up to forty days after the birth. This is also true of deaths, though the period of mourning extends for one whole year.
However, it is important to understand that the Hindu scriptures mainly see women in relation to men, and give them an ‘equal’, ‘exalted position’, as a ‘helpmate’ only within marriage and the family, with few independent roles assigned to them outside the domestic sphere. This is justified by the Hindu scriptures using notions of women’s supreme ‘self-sacrifice’ of which they are seen as being more capable than men. The Hindu scriptures also put forward the view that because child-rearing takes up parental time, women need not be ‘burdened’ by having to shoulder the economic responsibilities of the family, but that the latter is to be undertaken by men (Radhakrishnan, 1947). It must be noted here that this essentially religious notion of ‘women’s self-sacrificing nature’ is reflected, even today, in the unequal distribution of food and health-care allocations between men and women, sons and daughters, high birth-order and low birth-order children, which many economists and others have observed in analysing intra-household resource allocation in rural households in India and elsewhere (Chen, Huq and D’Souza, 1981; Dasgupta, 1993, pp. 343-370). It is thus easy to see that as far as the content of Hinduism is concerned, women appear to be unequally ‘equal’, and that their consequent lack of autonomy may have implications for fertility.

Another way in which religion may influence fertility is through theological prescriptions on procreation. One of the features of Muslim societies which tends to increase fertility is that Muslim women gain respect and status within their own kin group and community when they have children (Youssef, 1978). This is because children represent a form of social insurance against the threat of divorce or polygamy, since women derive status from motherhood even when divorced or rejected for a second wife. However, it is not clear whether this increase in a woman’s status with marriage and motherhood is any different to the findings of sociologists examining the status of women in Hindu societies (Srinivas, 1989).

There is also great emphasis in Hindu philosophy on children and especially the role for surviving sons. For example, the Hindu scriptures speak of the three debts we have to pay: to the sages by Vedic study, to the gods by sacrifices, and to the ancestors by offspring.
(Radhakrishnan, 1947, pp. 150-151). The Mysore Population Study described one of the traditional Vedic blessings for married women popularly used in Karnataka ‘May she bear ten sons, and make of her husband an eleventh!’ (United Nations, 1961, p. 130) which is a good example of how the ‘pure religion effect’ could easily operate to encourage high fertility in Hindu societies. Thus, philosophically, the emphasis of Hinduism on having children (especially sons), may provide a purely religious motive for high fertility.

Thus, the literature seems agreed that Islam involves low female autonomy compared with men, and that there are a number of ways in which this may encourage high fertility in Muslim societies. The arguments do not appear to provide unambiguous support for the ‘traditional’ view of Islam and fertility (according to which Islam fosters high fertility because of polygamy and unilateral divorce). However, there seems to be some persuasive evidence that the content of the Islamic religion encourages high fertility because of low autonomy for women and son-preference. However, it is not clear whether this is any different to the effect on fertility of the content of certain other religions, particularly Hinduism. This is an important argument and bears emphasis, particularly because it has been shown in state-level evidence from India, there is little difference between Hindus and Muslims with respect to child mortality (Drèze and Sen, 1995). The most pronounced difference in all of India is not between Hindus on the one hand and Muslims on the other. Rather, it is between Hindus and Muslims in the North Indian states compared with their counterparts in the South. This suggests that region may matter more than religion in explaining fertility differentials in India (Sopher, 1980; Drèze and Sen, 1995).

Scripturally, the position of women in Hinduism and in Islam is similar. In the case of Islam, though women are assigned a lower status than men, they are expected to ‘uphold family honour and prestige’. In some of the Hindu scriptures, women have an ‘exalted and equal’ position, but only in the domestic sphere. Moreover, neither religion assigns an independent role to women outside the family. Both religions emphasise the importance of marriage and
actively encourage it. Both religions set great store by children as a way of glorifying the family ideal, especially emphasising the role of sons in continuing the lineage. Perhaps where the two religions do differ most is in terms of their attitude to birth control and abortion. Hinduism does not explicitly express any religious opinion (at least scripturally) for or against birth control or abortion. Indeed, Hindu concepts of ‘impurity’ may reduce fertility if they lead to longer sexual abstinence during menstruation and after childbirth. In contrast, various schools of Islamic thought have argued that birth control is permissible but only in restricted situations. However, this is subject to wide variation, leaving considerable room for alternative interpretations of what Islam does say on these matters at a practical level. Finally, in countries such as India, there is a ‘meeting of religions’, and a pruning of Islam’s more dogmatic aspects, where the Shia Muslim sect is closer to Hinduism than the Sunni sect, and Muslim sects such as the Khojas have tenets which are a mixture of Vaishnava and Shia doctrines.\footnote{For example, the Khojas believe that one of their Prophets is the tenth incarnation of Vishnu.}

Thus, in terms of content alone, both Islam and Hinduism would appear to foster high fertility, with little practical difference between the two. This is not meant to imply that the content of these two religions does not or cannot affect demographic outcomes. Rather, this suggests that any differences between Hindu fertility and Muslim fertility is more likely to be the result of different interpretations and differing degrees of adherence to religious precepts by individual Hindus or Muslims in real-life situations. It must be noted also that this is influenced by the institutions through which these religions operate: for example, in matters relating to birth control or abortion, the ulama 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. For example, one explanation for the observed religious differentials in fertility found in India is the ‘discrimination’ hypothesis. The emphasis of the Indian family planning programme has been on female sterilisation
overwhelmingly as the primary means of birth control. If Muslim priests based locally exhibit greater opposition to female sterilisation as a method of birth control than their Hindu or Christian counterparts, then this may result in higher fertility among Muslims than among other religious groups. Thus, discrimination in access to different methods of family planning or health services may also explain observed religious differences in fertility. This illustrates the way in which the effect of religion is heavily dependent on its being supported (or opposed or counteracted) by other institutions such as the clergy and the state and its ability to interact with social arrangements and other institutions in society over time (Amin, Diamond and Steele, 1996).

II. The ‘characteristics’ hypothesis: Testing for the influence of religion on fertility in India

A second, and distinct, view that attempts to explain religious differentials in fertility is the ‘characteristics hypothesis’. This hypothesis argues that fertility differentials between populations reflect socio-economic differences between members of different religious groups, such as differences in income, educational levels (Riccio, 1979) or minority group status (Van Heek, 1966; Stinner and Mader, 1975; Srinivas, 1989; Bagchi, 1991). Empirical evidence for the ‘characteristics’ hypothesis is widespread, and this literature mainly focuses on differences in fertility between Catholics and others (Golde, 1975; Miller, 1988; Galloway, Hammel and Lee, 1994), and between Muslims and others (Chamie, 1977). There are also a number of empirical studies on Christian, Muslim and Buddhist populations, which support the hypothesis that the characteristic of minority group status affects fertility (Van Heek, 1966; Day, 1968; Stinner and Mader, 1975; Heer and Youssef, 1977; Thornton, 1979; Ling, 1980).

The ‘theology’ and the ‘characteristics’ mechanisms may also work in combination. For example, religion may act to discourage investment in ‘child quality’ if it translates into low
autonomy or status for women. A second example is that there may be differential access to education or types of educational system for those belonging to different religions.

This section will address two key questions. First, should the observed higher fertility of minority communities (mainly Muslim) in India be attributed to socio-economic characteristics or to theological beliefs? (Mandelbaum, 1974, p. 46). Secondly, might ‘convergence’ take place among all religious groups, (as between Catholics and non-Catholics in the USA during the 1970s, and as between religiously diverse populations in Indonesia and Malaysia in the 1990s), but most particularly between Hindus and Muslims in India? An attempt is made to answer these questions by examining attitudes towards religion and its effect on fertility among a sample of Hindu, Muslim and Christian women in the South Indian state of Karnataka.

Demographic differentials by religion in India show that in 1991 Hindus made up 82% of the total population, Muslims 12%, and Christians 2.4% (Census of India, 1991). The proportion of the population belonging to different religions remained almost unchanged between 1981 and 1991. The total fertility rate for Hindus in all of India is 4.2 and for Muslims is 5.8 (Sharif, 1999, p. 331). The Christians have a total fertility rate of 2.1. Age-specific fertility rates also indicate that Muslim women are bearing larger numbers of children at earlier ages than are Hindu and Christian women (Sharif, 1999, p. 331).

In Karnataka state, Hindus are the majority religious community to an even greater extent than in India as a whole, in that they form 86% of the total population in 1991 (Census of India, 1991). Muslims form 12% of the population and Christians form 2% (Census of India, 1991). The National Family Health Survey calculated that the mean number of children ever born to women aged 40-49 years in all of Karnataka was 4.57 for Hindus, 5.82 for Muslims, 3.50 for Christians and 4.65 for all religions taken together (International Institute of Population Sciences, 1995, pp. 62-63). The total fertility rate was 2.73 for Hindus and 3.91
for Muslims in all of Karnataka. The differences in fertility by religion are very large. In terms both of current fertility and of cohort fertility, Muslims appear to have the highest fertility of any religious group, followed by the Hindus. The difference is one child per woman, on average. The available demographic indices for India as a whole and Karnataka in particular therefore suggest considerable differences between religious groups, especially between Hindus and Muslims. These data also suggest that the differences in fertility between Muslims and Hindus might outweigh differences in mortality and that such differences will persist, mainly because the process of demographic transition has started earlier for Hindus than for Muslims.

However, these data on fertility rates are raw averages and do not control for the influence of other variables. Therefore, the present econometric study attempts to test whether religion has an impact on fertility even after controlling for the influence of other socio-economic factors, and whether these socio-economic characteristics act in different ways on the demographic behaviour of Hindus, Muslims and Christians in South India.

The data for the present analysis were obtained from a micro-demographic study of Ramanagaram taluk6 in the South Indian state of Karnataka. Ramanagaram is a good test case because it is inhabited by a large population that belongs to different religions - Hindus form 84% of the population in the taluk, and 53% of the population in Ramanagaram town; Muslims form 16% of the population in the taluk, and 46% of the population in the town. Christians form 0.4% of the population in the taluk and about 1.2% of the population in the town. All religious communities are involved with one industry (silk) that dominates the area, either performing cocoon-rearing, silkworm-breeding, or silk-reeling activities, providing a common reference point for the whole sample. Ramanagaram is also a good test case from the

6 A taluk is a revenue sub-division and consists of about 100-300 villages. It is served by a number of revenue inspectors. The latter is usually in charge of a hobli, comprising a group of 20-30 villages within a taluk.
perspective of a study of fertility because it experienced the inception of coordinated thinking and official policy on family planning in India - the first Family Planning Health Centre in Karnataka was set up in Ramanagaram in 1952, when India started its government-sponsored National Family Planning Movement and was the first country in the world to do so. Hence, Ramanagaram has been exposed to information about family planning for nearly half a decade. It is also useful to study Ramanagaram because it was one of the ‘towns’ of 10,000-25,000 population covered by the Mysore Population Study in 1961 undertaken by the United Nations (United Nations, 1961, p. 12), which covered a sample of 10,744 households, and which also examined religious differences in fertility. Hence, it seemed worthwhile to examine whether there has been significant changes in fertility behaviour in this part of South India after almost half a century.

The sampling procedure adopted was a two-stage quota sampling technique. A detailed questionnaire was administered to 201 women who belonged to five villages in the taluk and Ramanagaram town. A total of 187 adult married women and 14 adult single women were interviewed; 111 Hindus, 75 Muslims and 15 Christians.

To what extent does the Ramanagaram sample also reveal demographic differences between religious groups? A majority of the women in the sample had either 2 or 3 children, although there were 15 who had between 7 and 9 children. The modal value for the Muslims, at 4, was much higher than that for the Hindus and the Christians, at 2. The mean number of children ever born was 3.0 for all women, 2.7 for Hindus, 3.7 for Muslims and 2.3 for Christians. The means appeared to differ greatly, with Muslim women having 1.07 children more on average than the Hindus and 1.41 more on average than the Christians. While the difference between Hindus and Christians was not found to be significant at the 95% level, the differences in means between Hindus and Muslims and between Muslims and Christians were statistically significant. In the Ramanagaram sample, the Muslims have higher fertility than the Hindus and the Christians and this difference is nearly one child on average. This is consistent with
the finding reported for Karnataka as a whole by the National Family Health Survey (International Institute of Population Sciences, 1995, pp. 60-62) and for India as a whole by the Human Development Report (Sharif, 1999, p. 331).

The econometric analysis of fertility determinants which is conducted on the Ramanagaram sample attempts to evaluate whether religion exercises a ‘pure religion effect’ on fertility even after controlling for the influence of socio-economic and other factors. The factors considered are: the education of the woman; the education of her husband; various measures of income; the occupation of the woman; that of her husband; marital consanguinity; the presence of extended family in the household; son-preference; provisions of water and fuel infrastructure; differences in religion; and the age of the woman. It must be qualified that this list of factors is not exhaustive. It is possible however to capture with these factors some of the underlying causes that affect the demographic decision-making of the three religious groups. Keeping this caveat in mind therefore, it may be possible to suggest that the residual after we have controlled for the effect of socio-economic factors, is a measure of the ‘pure religion effect’ on fertility.

Female education was included in the econometric models of fertility below, in two alternative measures: first, in terms of the total number of years of education; and second, the number of years of primary, secondary and university education separately. Husband’s education was also included and was measured in two ways: in terms of husband’s total number of years of education, and in terms of the number of years of husband’s primary education, secondary education and university education.

Employment for women was measured in three different ways. The first was by a dummy variable that took the value 1 if the woman said she had a primary occupation and 0 otherwise. The second was by a dummy variable that took the value 1 if the woman was employed in a silk-related occupation, and 0 otherwise. The latter was tested for two reasons:
first, because in Ramanagaram taluk the silk industry is the main source of livelihood for a large part of the population; and second, because some stages in the silk process are dominated by women workers and child labour. There is a large literature on proto-industry (market-oriented rural domestic industry) which postulates that it creates incentives for higher fertility (Kriedte, Medick and Schlumbohm, 1981, pp. 58-9). Therefore, it seemed important to analyse if employment in this industry was related to fertility behaviour in the taluk. Finally, a third dummy variable was defined which took a value of 1 if the woman was employed in a skilled occupation (such as a teacher) and 0 otherwise.

Husband’s primary occupation was measured in three ways. The first was a dummy variable which took the value 1 if the husband had a farming occupation and 0 otherwise; the second was a dummy variable which took the value 1 if the husband had a skilled occupation and 0 otherwise; the third was a dummy variable that took the value 1 if the husband was employed in domestic industry and 0 otherwise.

In order to evaluate whether there was an ‘income effect’ on fertility, the regression models estimated use total monthly expenditure, total monthly food expenditure and an index of consumer equipment ownership as measures of income.7

In poor countries, a lack of infrastructure means households must undertake water and fuel collection tasks by hand (Dasgupta, 1993, p.359). This may result in high fertility because children typically carry out these tasks. The present study investigated whether water and fuel infrastructure variables influenced fertility significantly in Ramanagaram by creating two dummy variables, the first measured whether the household collected water in pots by hand, the second whether it collected firewood by hand.

---

7 The questionnaire posed questions concerning ownership of certain consumer durable assets. The index of ownership of consumer equipment is an average value of whether the household possessed eight items of consumer equipment: a transistor, a bicycle, a fan, a cot, a moped/scooter, a watch, a television and a chair/bench.
The strength of parents’ preferences for sons may increase fertility because a larger total number of children must be born in order to obtain the desired quantity of sons (Irudaya Rajan, Mishra and Vimala, 1996; Chen, Huq and D’Souza, 1981; Cain, 1984; Mason, 1993; Dyson and Moore, 1983). From the Ramanagaram data a variable was calculated in order to see whether the delay in succeeding in giving birth to a son had any impact on fertility. This was done by calculating an index which measured the location of sons in the birth-order. A number was assigned to each family, which took the value of the birth order of the first-born son. For example, if a woman gave birth to a son followed by a daughter followed by another son, the variable took the value ‘1’. If the woman had two daughters followed by a son, the variable took the value ‘3’. In the multivariate models presented later, it was attempted to examine whether this demographic ‘accident’ affected total fertility.

Two measures of family composition were used in the econometric models. The first measure is the presence of extended family which was used for two reasons. First, it acts as a proxy for total household size with which it is highly correlated. This was done so as to control for those households which had higher total expenditure not because they are richer, but because they have more members. Second, it is often hypothesised that the presence of extended family significantly reduces the costs of childrearing for parents, increasing fertility because parents only bear a portion of the costs of childbearing (Hajnal, 1982; Oppong, 1983). Alternatively, extended family may reduce fertility if there is a lack of privacy, and if traditional taboos on sexual intercourse are observed at certain times due to strict monitoring by the extended family. Most households in Ramanagaram had extra persons beyond the nuclear family living in the household, such as elderly parents or parents-in-law and distant

---

8 The correlation coefficient is 0.87. In order to facilitate interpretation of the coefficient on the total-expenditure variable, it was necessary to control for the fact that some families had higher expenditure not because they were richer but because they had more members living in the household. As total household size could not be used in the model because it is endogenously determined with total fertility, the female-extended-family variable was used instead, because it was highly correlated with total household size.
relatives. This variable is measured as the number of female extended family members resident in the household.

The second measure of family composition used is marital consanguinity which is also postulated as affecting fertility, although there are two effects of consanguinity which work in opposite directions (Bittles, 1994). First, there is the possibility of greater autonomy for the woman by marrying into the natal family, and thereby residing matrilocally; this would tend to reduce fertility. Second, there is the larger number of years of childbearing potential within marriage which may occur due to the woman’s low age at marriage if she marries a relation who is much older than herself, such as a maternal uncle; this would tend to increase fertility. Consanguineous marriage is incorporated into the regression models estimated below in two ways. Firstly, a dummy variable is defined for whether or not a woman had married a relation. Secondly, a statistical measure of consanguinity, the ‘coefficient of inbreeding’\(^9\) is used (Bodmer and Cavalli-Sforza, 1976, pp. 361-379; Bittles, Coble and Appaji Rao, 1993).

The effect of religion on fertility was measured by two dummy variables; the first represented whether the respondent was Muslim; the second, whether she was Hindu. The Christians were the base category. Another measure, a qualitative ‘index of piety’ was created, which was calculated as each woman’s mean response to five questions in the questionnaire on women’s personal evaluation of their religiosity. This measure was not used in the econometric models because it turned out to be a proxy for ‘religion’, but the responses to the questions used to calculate the index are interesting, because they provide valuable qualitative evidence (Iyer, 2002).\(^{10}\) Their responses indicate that women in Ramanagaram are religious, the Muslims and

---

\(^9\) 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 (double first cousin or uncle-niece marriages, where partners have 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.

\(^{10}\) Women were asked how faithfully they practised their religion. They were then asked two questions about the role of their local priest in their lives. The women were also asked about how frequently they
Christians more so than the Hindus. The opinions of the priests are important, but more so to Muslims and Christians, who would ask for advice pertaining to their lives, than for Hindus, who would not. All communities worshipped either at home or at places designated for worship, and interactions between those of different religions appears to be limited, though there are pockets where there are exceptions (Iyer, 2002).¹¹

In addition to the socio-economic determinants of fertility, the present study attempts also to incorporate a measure of what demographers call ‘ideational change’ in the econometric analysis (Cleland and Wilson, 1987; Egerö and Hammarksjöld, 1994; Knodel and van de Walle, 1986). Ideational changes in social norms and attitudes towards birth control may determine the timing of the fertility transition (Cleland and Wilson, 1987, p. 25) as observed in parts of South India such as in Tamil Nadu and Andhra Pradesh (Kishor, 1994; Retherford and Ramesh, 1996). Such ‘ideational changes’ are similar to what economists describe as ‘Marshallian atmospheric externalities’ where an individual’s level of activity (and consequent behaviour) may be dependent on the average level of activity undertaken by all other members of a society (Dasgupta, 1993; Dasgupta, 2000). The influence of such externalities or ‘ideational change’ may be propagated through language or through social interactions within small communities (Bongaarts and Watkins, 1996). The age of the woman was used as a control variable in order to take into account the fact that some women who had been interviewed had not completed their fertility. However, this variable may also quite possibly reflect the fact that older women may have grown up in a cohort which experienced different aspirations or norms concerning fertility over time.

¹¹ The women were also asked two questions about the religiosity of their offspring, although their responses are not reported here. These questions were ‘Are your children religious too and do they go to the temple/mosque/church/worship at home?’ and ‘Do they practise religion to your satisfaction?’
The dependent variable is female fertility, measured as the total number of children ever born (CEB) to the woman. First, fourteen preliminary models (not reported here) were estimated which experimented with different measures of certain variables, in order to determine the specification of the model that best explained the greatest variation in children ever born.

The best specification of the preliminary model of fertility estimated showed that the factors which affected fertility were female university education, husband’s primary and secondary education, position of first-born sons in the birth-order, the Muslim dummy variable, the Hindu dummy variable, whether or not the woman’s husband was employed in domestic industry, the woman’s age, and the number of female extended family members resident in the household, as shown in Table 1.
Table 1: OLS estimates of the determinants of children ever born, all religions (Ramanagaram, 1996)

Dependent variable is CEB: the total number of children ever born to the woman

Sample: 187 ever-married Hindu, Muslim and Christian women

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Coefficient</th>
<th>T Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (CONST)</td>
<td>-1.43</td>
<td>***</td>
</tr>
<tr>
<td><strong>Woman’s education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University education of woman (UEDU)</td>
<td>-0.20</td>
<td>***</td>
</tr>
<tr>
<td><strong>Husband’s education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary education of husband (PEDUSP)</td>
<td>0.15</td>
<td>***</td>
</tr>
<tr>
<td>Secondary education of husband (SEDUSP)</td>
<td>-0.23</td>
<td>***</td>
</tr>
<tr>
<td><strong>Husband’s occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Husband employed in domestic industry (DOMINDU)</td>
<td>-0.86</td>
<td>***</td>
</tr>
<tr>
<td><strong>Son preference</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position of first-born son in the birth-order (SONPRF)</td>
<td>0.47</td>
<td>***</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman is Muslim (MUSLIM)</td>
<td>1.31</td>
<td>***</td>
</tr>
<tr>
<td>Woman is Hindu (HINDU)</td>
<td>0.95</td>
<td>***</td>
</tr>
<tr>
<td><strong>Female extended family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of female extended family (FEXFAM)</td>
<td>-0.19</td>
<td>***</td>
</tr>
<tr>
<td><strong>Woman’s age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman’s age (AGE)</td>
<td>0.09</td>
<td>***</td>
</tr>
<tr>
<td><strong>R-Bar-Squared</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.57</td>
<td></td>
</tr>
</tbody>
</table>

*** = Significant at the 0.01 level; ** = Significant at the 0.05 level; * = Significant at the 0.10 level
This model had several interesting features. First, though husband’s primary and secondary education were significant, the signs on the two coefficients were opposite. An additional year of primary education for the husband increased fertility by 0.15 children, while an additional year of secondary education decreased fertility by 0.23 children. The position of sons in the birth-order was also highly significant: controlling for other factors, if a woman had a son who was one position later in the birth-order she had 0.47 more children on average. If the husband was employed in domestic industry, he had 0.86 fewer children than if he was employed in other occupations. A woman’s age had a significant positive influence on her fertility (although this may simply result from her having had a larger fertile lifespan in which to have children). The key finding in this table, however, is that both Hindu and Muslim dummies were significant and positive, indicating that both Hindus and Muslims had more children than the base category of the Christians. If a woman was Muslim she had 1.31 children more than if she were Christian. If a woman was Hindu, she had 0.95 children more than if she were Christian. However, a Wald test established that the difference between Hindus and Muslims was not statistically significant. This is a very important finding because it has not been shown hitherto in the research on fertility behaviour in India, that there is, in fact, little difference between Hindu and Muslim fertility after controlling for socio-economic status. The model explained 57% of the variation in children ever born.12

The next step in the analysis was to estimate this specification on sub-samples of Hindus and Muslims, and to compare these regressions with a ‘pooled’ model estimated for Hindus and Muslims, and to compare these regressions with a ‘pooled’ model estimated for Hindus and

---

12 In most of the preliminary models estimated, the Muslim and the Hindu dummy variables were both significant and positive, with large coefficients, indicating that if the woman was Muslim (or Hindu), she was likely, on average, to have just over one child (or just about one child) more than if she were Christian. There were however two exceptions: in one specification the impact of religion was tested using an index of piety rather than religious affiliation. In another specification, a dummy variable was used which distinguished between Hindus and Muslims only, excluding the Christians from the sample. The interesting feature of both of these models is that neither alternative measure of the religion variable was significant, when other socio-economic characteristics were controlled for. This may be because the piety index acts as a proxy for Muslims and Christians (who on average rated themselves as more pious) versus the Hindus (who rated themselves as comparatively less pious). Piety does not affect fertility, apparently, even if the religion in which you are pious (or not) does so. Moreover, the insignificance of the Hindu/Muslim religion dummy in the specification that excludes
Muslims combined, using an F-test. The F-test rejects the null hypothesis that the coefficients on the explanatory variables are equal for Hindus and Muslims. This established that at least one socio-economic factor affects the number of children ever born differently for Hindus than it does for Muslims. Therefore, the next stage of the analysis introduced interaction factors (multiplicative dummy variables) into the fertility model. The interactive variables were created using those variable specifications in the fertility model reported in Table 1 and interacting each explanatory variable with the Hindu and Muslim religion dummies. The resulting model is reported in Table 2.

the Christians, also indicates that there was no significant difference in the fertility level between Hindus and Muslims, after controlling for other socio-economic factors.
Table 2: OLS estimates of the determinants of children ever born, all religions
(Ramanagaram, 1996)

Dependent variable is CEB: the total number of children ever born to the woman
Sample: 187 ever-married Hindu, Muslim and Christian women
Base category: Christians

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>T Ratio(Prob.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercepts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant (CONST)</td>
<td>0.999</td>
<td>1.023</td>
<td>0.975 (.331)</td>
</tr>
<tr>
<td>Muslim religion dummy (MUSLIM)</td>
<td>-0.798</td>
<td>1.128</td>
<td>-0.707 (.481)</td>
</tr>
<tr>
<td>Hindu religion dummy (HINDU)</td>
<td>-1.762</td>
<td>1.122</td>
<td>-1.570 (.118)</td>
</tr>
<tr>
<td><strong>Woman’s education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University education of woman (UEDU)</td>
<td>-0.002</td>
<td>0.039</td>
<td>-0.047 (.962)</td>
</tr>
<tr>
<td>University education of Muslim woman (MUEDU)</td>
<td>-0.402 ***</td>
<td>0.084</td>
<td>-4.763 (.000)</td>
</tr>
<tr>
<td>University education of Hindu woman (HUEDU)</td>
<td>-0.109</td>
<td>0.104</td>
<td>-1.049 (.296)</td>
</tr>
<tr>
<td><strong>Husband’s education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Husband’s primary education (PEDUSP)</td>
<td>-0.161</td>
<td>0.168</td>
<td>-0.957 (.340)</td>
</tr>
<tr>
<td>Primary education of Muslim husbands (MPEDUSP)</td>
<td>0.488 **</td>
<td>0.198</td>
<td>2.467 (.015)</td>
</tr>
<tr>
<td>Primary education of Hindu husbands (HPEDUSP)</td>
<td>0.264</td>
<td>0.185</td>
<td>1.429 (.155)</td>
</tr>
<tr>
<td>Husband’s secondary education (SEDUSP)</td>
<td>-0.003</td>
<td>0.084</td>
<td>-0.304 (.973)</td>
</tr>
<tr>
<td>Secondary education of Muslim husbands (MSEDUSP)</td>
<td>-0.285 ***</td>
<td>0.108</td>
<td>-2.638 (.009)</td>
</tr>
<tr>
<td>Secondary education of Hindu husbands (HSEDUSP)</td>
<td>-0.150</td>
<td>0.104</td>
<td>-1.439 (.152)</td>
</tr>
<tr>
<td><strong>Husband employed in domestic industry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Husband in domestic industry (DOMIND)</td>
<td>-0.781</td>
<td>0.479</td>
<td>-1.631 (.105)</td>
</tr>
<tr>
<td>Muslim husband in domestic industry (MDOMIND)</td>
<td>-0.310</td>
<td>0.693</td>
<td>-0.447 (.655)</td>
</tr>
<tr>
<td>Hindu husband in domestic industry (HDOMIND)</td>
<td>0.121</td>
<td>0.559</td>
<td>0.217 (.828)</td>
</tr>
<tr>
<td><strong>Son-preference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position of first-born son in the birth order (SONPRF)</td>
<td>1.130 ***</td>
<td>0.156</td>
<td>7.254 (.000)</td>
</tr>
<tr>
<td>Position of first-born son for Muslims (MSONPRF)</td>
<td>-0.809 ***</td>
<td>0.213</td>
<td>-3.795 (.000)</td>
</tr>
<tr>
<td>Position of first-born son for Hindus (HSONPRF)</td>
<td>-0.590 ***</td>
<td>0.204</td>
<td>-2.892 (.004)</td>
</tr>
<tr>
<td><strong>Fuel infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household uses gas/kerosene (GASKERO)</td>
<td>0.086</td>
<td>0.326</td>
<td>0.264 (.792)</td>
</tr>
<tr>
<td>Muslim household uses gas/kerosene (MGASKERO)</td>
<td>-0.746 *</td>
<td>0.422</td>
<td>-1.767 (.079)</td>
</tr>
<tr>
<td>Hindu household uses gas/kerosene (HGASKERO)</td>
<td>-0.307</td>
<td>0.443</td>
<td>-0.694 (.489)</td>
</tr>
<tr>
<td><strong>Female extended family</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female extended family resident (FEXFAM)</td>
<td>-0.014</td>
<td>0.087</td>
<td>-0.165 (.869)</td>
</tr>
<tr>
<td>Muslim female extended family resident (MFEXFAM)</td>
<td>-0.677 ***</td>
<td>0.149</td>
<td>-4.560 (.000)</td>
</tr>
<tr>
<td>Hindu female extended family resident (HFEXFAM)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Woman’s age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman’s age (AGE)</td>
<td>0.013</td>
<td>0.025</td>
<td>0.521 (.603)</td>
</tr>
<tr>
<td>Muslim woman’s age (MAGE)</td>
<td>0.085 ***</td>
<td>0.029</td>
<td>2.949 (.004)</td>
</tr>
<tr>
<td>Hindu woman’s age (HAGE)</td>
<td>0.082 ***</td>
<td>0.029</td>
<td>2.840 (.005)</td>
</tr>
<tr>
<td><strong>R-Bar-Squared</strong></td>
<td>0.606</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** = Significant at the 0.01 level; ** = Significant at the 0.05 level; * = Significant at the 0.10 level
One significant variable was women’s university education. Its importance suggests that in Ramanagaram education affects women’s abilities to make decisions about fertility because higher education significantly influences women’s status in the household, relative to other family members, by enabling women to make independent decisions, such as decisions about contraception. Or it may be the case that the aspirations and values which education can convey, which are incompatible with high fertility, are only transmitted in high school and university. University education was significant at the 0.01 level for Muslims, but not at all significant for Hindus and Christians. Neither secondary nor primary education was significant for any religious group. According to the model, a one-year increase in university education decreased Muslim women’s fertility by 0.40 children. Wald tests illustrated that the effect of university education on fertility was significantly different for Muslims than for Hindus and for Christians than for Muslims, but that the effect of university education on fertility for Christians was similar to that for Hindus. One reason why Muslims in Ramanagaram may be so much more susceptible to university education than the Hindus and the Christians may be that Muslim women were the least likely of all the three religious groups to go on to university. Hence, at the margin, an additional year of university education may affect them more. Another reason may be that there was only one Arts College in Ramanagaram town which women of all religions attended. However at the level of school, while Muslim girls mainly attended the Urdu schools, Christian and Hindu girls attended the Anganwadi (courtyard classrooms) and other state schools, where information about family planning, at least at the secondary school level, was regularly imparted. Hence, perhaps Muslim girls were more affected by an additional year of university education because the interaction with women of all religions at university had a larger impact on their own views about fertility and small family norms. It should also be remarked that no measure of women’s education appears to affect the fertility of Hindus and Christians, which is a very surprising finding, especially given the importance of this variable in so many studies of fertility in other societies.
If a Muslim man had an additional year of primary education this increased his wife’s fertility by 0.33 children. Husband’s primary education was not significant for Hindus and Christians. Moreover, Wald tests showed that while there is no significant difference in the effect of husband’s education on the fertility of Muslims and Hindus; and between Christians and Hindus, the effect of husband’s primary education on fertility differed significantly between Christians and Muslims. The fact that for Muslims, husband’s primary education exercises a positive role on fertility implies that at least for this religious community, a few years of education alone do not reduce men’s demand for children, nor does it necessarily mean that Muslim men marry ‘likes’ in the marriage market (Becker, 1981). Nor, perhaps, does education influence Muslim men’s ideas about using contraception or make Muslim men want to favour child-quality over child-quantity. However, if a Muslim man is educated beyond this level (as explored below), his education does exercise the expected negative effect on fertility, as it does for Hindu and Christian men likewise.

Husband’s secondary education decreased fertility significantly for Muslims, but had no effect for Hindus and Christians. This may be because Muslim men who have attended secondary school prefer wives who are more educated, or they too prefer better ‘quality’ children to a higher ‘quantity’. Wald tests showed that the effect of husband’s secondary education on Hindu fertility was not significantly different from its effect on Muslim fertility; the effect of husband’s secondary education on Christian fertility is not significantly different from its effect on Hindu fertility. However, husband’s secondary education affects fertility significantly more for Muslims than for Christians. Perhaps one reason for this finding is that Christian women in Ramanagaram had greater autonomy than Muslim women. Hence, the influence of Christian men on couples’ decisions is not as great as in Muslim households, where the men’s decisions about fertility may be very important and even override those of the women.
Whether the husband was employed in domestic industry was not significant for Hindus, Muslims or Christians individually, but was very significant collectively. Hypothesis-testing with these three variables also showed that their effects on fertility were not significantly different from each other.

Son-preference, measured through the position of the first-born son in the birth-order was significant for Hindus, Muslims and Christians at the 0.01 level, implying that son-preference may be captured in a ‘pure demographic accident’ variable affecting fertility. If a Hindu woman had a son who was one place later in the birth-order, this raised her fertility by 0.32 children; if a Muslim woman had a son who was one place later in the birth-order this raised her fertility by 0.54 children; and if she was Christian this raised her fertility by 1.13 children. We can conclude, therefore, that how soon the couple succeeds in having a son strongly influences total children ever born in Ramanagaram, after controlling for the influence of other possible determinants. This is consistent with other evidence, both from the Ramanagaram questionnaire and from India more generally, that parents expect to derive considerable benefits from sons in the form of old age care, for cultural considerations, and possibly also in the form of contributions to family income earlier in life. Moreover, Wald tests showed that son-preference had similar effects on Hindu and Muslim fertility. Analogous tests established that the position of the first-born son affected fertility among Christians significantly differently from its effect among Hindus and Muslims. The value of the coefficient on the son-preference variable was much higher for Christians than for Muslims and Hindus. Though it is not possible to make generalisations because the sample size of Christians is small, greater son-preference among the Christians may be because the Christian community in Ramanagaram are originally migrants from the neighbouring state of Tamil Nadu, and their minority status in Karnataka relative to both Hindus and Muslims (since they make up only 2% of the population in Ramanagaram taluk) may make them depend more on sons for insurance cover.
The women’s age was significant for both Hindus and Muslims at the 0.01 level, but not significant for the Christians. Wald tests showed that the effect of woman’s age on children ever born was not significantly different for Hindus than for Muslims. Analogous tests established that the effect of woman’s age on fertility was significantly different for Christians from its effect for either Hindus or Muslims. The effect of woman’s age on fertility was very significant and positive probably because the older women in the sample had had more time to have more children. However, it may also be reflecting changes over time in norms and ideas about fertility. Perhaps one reason why this variable did not affect the Christians as much as it did Hindus and Muslims may be because older Christian women in Ramanagaram have greater autonomy and have experienced a change in norms about lower fertility within their community earlier than women of the other two religious groups, whether through the influence of radio and television or through the influence of the meetings on women’s issues that took place regularly at their local church (Iyer, 2002).

One of the key findings of the analysis is that the presence in the household of resident female extended family has no significant influence on the fertility of Hindus and Christians, but if a Muslim woman has one additional female family member, this decreased her fertility by 0.69 children. This runs totally counter to existing theories about the effects of the extended family system increasing fertility. Instead, among Ramanagaram Muslims, resident family seems to reduce fertility. There are several possible reasons for this. First, the presence of extended family may lead to residential crowding, reducing living space for new offspring. Second, the direction of causation may in fact be the opposite: exogenous reproductive problems may have resulted in reduced fertility, creating more living space and labour demand, thereby encouraging coresident extended family. Third, the presence of the extended family may result in surveillance of the couple’s sex lives, particularly in the case of post-partum taboos leading to reduced fertility. Fourth, exogenous availability of extended family may have increased household labour supply, substituting for children and contributing to lower fertility. Fifth, it may be that because the concept of a child-centred nuclear family is
replacing the notion of the extended family, this results in lower fertility. Finally, female extended family may be directly encouraging lower fertility because qualitative information from the Ramanagaram interviews and from other studies conducted in South India show that women consult with female extended family members on issues which relate to contraception, and mothers-in-law positively encourage daughters-in-law to have sterilisation operations after a certain number of children have been born (Säävälä, 1999; Iyer, 2002). Moreover, Wald tests showed that the effect of female extended family on the fertility of Muslim households was significantly different from their effect on the fertility of Hindu and Christian households. 13 Perhaps one reason why female extended family resident was more important for Muslim households was because of purdah restrictions, which limited Muslim women’s mobility, resulting in their greater dependence on female extended family and consequently, greater monitoring of Muslim women’s fertility behaviour.

The availability of fuel infrastructure was not significant for Hindus and Christians, but a Muslim household had 0.66 fewer children if it used gas or kerosene rather than firewood as a primary source for fuel. One reason for this finding may be that Muslim households did not use daughters at all for collecting fuel because of purdah restrictions, but did use sons (Iyer, 2002). This may have increased the demand for sons, and hence fertility, for those Muslim households which were dependent on firewood for fuel, and consequently decreased fertility for those Muslim households which used alternative sources of fuel such as gas or kerosene. This is consistent with the results of a detailed analysis of water and fuel provision in the Ramanagaram sample of households, which found that children were indeed among the primary collectors of water and fuel, and that these tasks were immensely time-consuming (Iyer, 2002). However, Wald tests showed that the effect on fertility of using gas or kerosene

13 The model of fertility outlined here does not use contraceptive use as an independent determinant of fertility because it is a ‘proximate’ determinant and hence determined endogenously with fertility. However, differences in contraceptive adoption among Hindus and Muslims in Ramanagaram and a qualitative analysis of women’s attitudes towards birth control by religion is explored in detail elsewhere (Iyer, 2002, pp. 168-230).
for fuel was not significantly different between Hindus and Muslims, between Christians and Hindus, and between Christians and Muslims. This illustrates the fact that all households are simultaneously making decisions about a number of issues including fertility and that in this model we can only observe the outcome.

Finally, none of the intercept terms was significant. Wald tests also showed that religious affiliation alone does not exert a separate effect on the fertility of the three religious groups.

The findings from the interaction model support the conclusion that differences in fertility among religious groups are not due to religion alone. Rather, they are caused by differences in socio-economic and other characteristics of individual members of different religions, and by differences in the way members of different religions respond demographically to certain socio-economic and other influences such as ‘ideational change’ over time. However, the key finding from the Ramanagaram data is that the different socio-economic factors appear to affect the three religious groups in different ways, and this has immediate and important implications for state-level population policies in India.

### III. Conclusion

In Ramanagaram, both Hindus and Muslims have high fertility when compared with the Christians. However, the difference of one child in the mean level of fertility between Hindus and Muslims, disappears once we have controlled for the influence of socio-economic and other factors. The results from an interaction econometric analysis suggest that rather than religion, demographic divergence was actually related to other socio-economic characteristics such as education, age, infrastructure, son-preference, female extended family, the change in social norms over time, and differences in how members of different religions respond demographically to these influences. This finding is consistent with the more general theoretical observation that there is little theological difference between Hinduism and Islam.
with regard to matters relating to demographic behaviour, except in their positions on birth control. The findings from Ramanagaram also suggest that perhaps it is not religious affiliation or religious observance that affects fertility, but rather the manner in which religion is interpreted to individuals.

The implications of these findings for Indian politics and policy-makers are simple but important. First, they provide no empirical support for views which ascribe demographic differentials to differences in theology, or which indulge in stereotyping the behaviour of one religious group relative to another. Rather, they suggest that it is necessary to focus on how the content of a religion is interpreted to individual members of that religion and the corresponding impact on their lives. Therefore, community and religious leaders may need to be targeted because of the influence they may wield.

Second, the findings for Ramanagaram show that different religious groups may need to be targeted in different ways if it is thought desirable to try to influence people’s fertility behaviour. For example, in Ramanagaram, Muslims husbands’ education needs more targeting in order to affect women’s fertility; while for Hindus, women’s own education and changing attitudes toward son-preference may be the key to lower fertility.

The Ramanagaram women appeared overwhelmingly to believe that the population in their town and villages was growing too fast. Of the women in the sample, 86% believed that population growth was too fast, and the percentage was high among all religions, at 81% of Hindus, 89% of Muslims, and 100% of Christians. However, individual fertility is still quite high, either because of demographic ‘free-riding’, or because of socio-economic and other factors which will need to change before the collective demographic aspirations of these South Indian women can be realised. For lowering fertility, these factors include targeting women’s education, husband’s education, ideas about (and the economic pressures underlying) son-preference, the provision of fuel infrastructure, influence of female extended
family and changes in social norms. Other policy measures which could have a direct impact on reducing religious differentials in fertility in India more widely, are further research on the quality of schooling provided by schools of differing religious orientation, what it is in education (provided by schools of religious or secular orientation), be it the acquisition of skills or the learning of values, that reduces fertility, further education about family planning for women of all religions, instituting systems of social security to reduce the dependence on children for insurance reasons, and further action on enforcing the property rights of women. The policy measures which would specifically affect Hindu and Christian fertility are those which relate to changing perceptions about the importance of sons as a means of insurance cover, and using the media to further influence changes in social norms about fertility. For Muslims, possible policy measures include increased state support for education for both Muslim women and their husbands; and finally, encouraging the influence of female extended family who appear to have a positive effect on Muslim women’s fertility. It is only by recognising that socio-economic and other factors influence different religious groups differently that we may be able to devise policy measures which can address the patterns of demographic response found in Ramanagaram and elsewhere in India.

Finally, the last question on which it is important to reflect is whether convergence in Hindu, Muslim and Christian fertility in India is possible. The analysis suggests that convergence is possible if government policy were to target different religious groups in different ways that affect their fertility, but in a sensitive manner which works in tandem with religious leaders. However, the most important conclusion of the present study is that religious differentials in fertility are the observed outcome of a complex set of factors derived from differences across religious groups in their socio-economic characteristics over time, and the effect of these characteristics on demographic decision-making. This has far-reaching implications for both policy and politics in a religiously pluralistic society such as India.
REFERENCES


