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Research Article

The potential impact of intermarriage on the population decline of the Parsis of Mumbai, India

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The potential impact of intermarriage on the population decline of the Parsis of Mumbai, India¹

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Abstract

The Parsis, a community of Iranian descent, are an important ethno-religious minority group in India. Over the past few decades this group has shown a sharp numerical decline. The Parsis in India are endogamous and children of women married outside the community are traditionally not accepted within the fold. This paper appraises the potential impact of female intermarriage in Parsi population decline in Mumbai. Population projections were made under various assumptions of fertility and intermarriage scenarios. Results show that, given current fertility, acceptance of children of intermarried women would have a negligible impact on stemming the population decline, which is driven chiefly by extremely low fertility.

¹ Mumbai was known as Bombay till 1995. We have used Bombay for the period before this date.

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1. Introduction

India is a country of tremendous religious and cultural diversity. Almost every religion of the world is represented in India and the country has given birth to four important world religions, namely Hinduism, Buddhism, Jainism, and Sikhism. While the overwhelming majority of India is Hindu (80.5% of the population), the country also has one of the largest Muslim populations in the world (13.4%). Other religious groups classified as minorities include Christians (2.3%), Sikhs (1.9%), Buddhists (0.8%), Jains (0.4%), and others (0.6%). Prominent among the latter are Parsis (69,601 in number), Baha'is (11,324), and Jews (4,650) (Registrar General of India 2001).

The Parsis migrated from Iran to India sometime between the 8th and 10th centuries, with the dates of 716CE or 936CE commonly attributed to the arrival of the first migrants in coastal Gujarat, based on analysis of the traditional Parsi account of migration (Boyce 1979).

As Hinnells has stated, while this may not be historically accurate, these oral legends, written down in the text *Kisseh-e- Sanjan* or *The Tale of Sanjan* dating from AD 1600, reflect common beliefs about how a “bold few journeyed ... eastwards” (Hinnells 1981).

While, according to this account, religious persecution drove this group of Zoroastrians to India, other scholars have argued that trade, not persecution, was the primary impetus for this migration (Wink 1990). Susan Stiles Maneck observes that both factors, economic and the desire to establish a Zoroastrian community in an area free from Islamic dominance, “worked hand in hand” in the migration to Gujarat (Maneck 1997).

The Parsis are followers of the Bronze Age prophet Zarathustra (Zoroaster) of Iran, who is believed to have preached a message of the one true god, Ahura Mazda. This is detailed in the Gathas (or Songs of Wisdom), known as the core of the Avesta, the sacred Zoroastrian text (Boyce 1992). Zoroastrianism was the predominant religion of Iran until the fall of the Sasanian empire in the mid-7th century, after which Iran steadily Islamised (Boyce 1992). By the 19th century only a few impoverished Zoroastrians survived in the interior regions (Boyce 1992). In contrast, the Zoroastrians in India, who became known as the Parsis, became a prosperous and well-respected community of merchants in western India, increasingly focused in Bombay (Palsetia 2001).

The Parsis currently amount to about 70,000 people in India, mostly concentrated in the city of Mumbai (47,000).⁴ They account for less than 0.4% of the population of

⁴ In spite of recent emigration from India, Mumbai continues to be by far the largest Parsi community in the world, as confirmed by a worldwide study conducted by the Federation of Zoroastrians Associations of North America (FEZANA), in 2004. (FEZANA 2004)

the city of Mumbai, and approximately 0.007% of the Indian population (Registrar General of India 2001). This small number belies the extraordinary influence of this ethno-religious group on the economic, social, and political development of modern India, particularly of the city of Mumbai (Kulke 1974). Pioneers in fields as diverse as medicine, law, industry, and politics, the Parsis today face a unique demographic challenge rather distinct from the still rapid population growth observed in India as a whole. While the population in the country grew by close to 185% between 1951 and 2001, the Parsi population experienced a negative growth of 37.7% during the same period (Kulke 1974; Registrar General of India 2001). The decline of the Parsi population has been observed for over five decades, and has raised serious concerns amongst social scientists and the community itself of a possible extinction (Unisa et al. 2008). This would represent a tragic loss of cultural diversity for India and the world. Since the Parsis have played a major role in preserving the ancient Iranian religion of the prophet Zarathustra, the extinction of this ethno-religious group would also result in the loss of a religious tradition (Boyce 1979).

This concern was first articulated in 1948 by Desai (Desai 1948), who argued that current demographic trends of the Parsis, if unchanged, would lead to the decline of the Parsi population in India. Studies have shown several reasons for this trend. First, fertility has been declining for over a century: the total fertility rate (TFR) among the Parsis in Bombay was 4.41 in 1881 (Visaria 1974), declining to 0.94 in 1999 (Unisa et al. 2008). Deaths have exceeded births in every year since 1955 (Hinnells 2005), and 1961-70 was the first period when the TFR was found to be below replacement level (Visaria 1974). Second, socio-cultural factors, such as large numbers of women never marrying or choosing to marry late, have been identified as potential factors contributing to reduced fertility, and therefore impacting the growth of the population. The average age at marriage in 1962 was 26.5 years for women and 31.4 years for men, and has hovered at about this level ever since (Patel 2010). A survey in 1973 showed that among women aged 31-45 years, 27% had never married (Axelrod 1990). Finally, emigration to other countries, particularly Britain, the United States, Canada, and recently Australia may also have contributed to the trend. It is argued that emigration has been fuelled by a belief that prospects and lifestyle were no longer as suitable in India for the Parsis as they had been under British rule, when they enjoyed a privileged position in Indian and Bombay society (Kulke 1974; Hinnells 1981; Axelrod 1990).

An important factor, largely neglected in the literature, is the potential role of inter-marriage rules prevailing among the Parsi community. This ethno-religious group is an endogamous and non-proselytizing community, which has traditionally refused to convert people of other faiths, and that requires a Parsi father as a necessary legal condition for a newborn to be considered a Parsi (Kulke 1974; Nariman 1999). Therefore, if a Parsi woman marries a non-Parsi man her offspring will not be

considered Parsi. She will remain a member of the Parsi community by law, but not by custom, according to orthodox Parsis (Sharafi 2006)⁵. If a Parsi man marries a non-Parsi woman, his offspring will be considered Parsi; his wife, however, will not be a Parsi. Although the Parsi population has historically maintained this endogamous character, since the 1970s, and increasingly through the 1980s and 1990s, a rising trend of marriage out of the community has been observed. In 1991 marriages outside the community accounted for 19% of all Parsi marriages in Bombay, and this number had increased to 32% by 2005 and 38% by 2010 (Parsiana April 1992, March 2006 and May 2011). Yet the potential role of the increasing rate of Parsi women marrying non-Parsi men in the current demographic trend of the Parsi population has remained so far largely unknown.

This paper addresses this gap in the current literature by appraising the potential role of inter-marriage in the decline of the Parsi population. Specifically, population projections including assumptions regarding future trends in fertility and inter-marriage rates are produced, facilitating the assessment of the impact of each factor on the decline of the Parsi population.

The remainder of this article is divided into five sections. The first section provides a brief discussion of the history and recent demographic trends and characteristics of the Parsi population in India. The second section describes the data utilized in the analysis. The methods and assumptions chosen for population projection and future fertility and inter-marriage trends are described in the third section. Major findings are summarized in section four, and the paper concludes with a discussion in the final section.

2. Characteristics and historical trends of the Parsi population

2.1 Brief history of the Parsis in India

After the Parsis left Iran they settled in coastal Gujarat, and became merchants and commercial agents in prominent ports such as Khambat, Bharuch, and later Surat (Palsetia 2001). The coming of the European trading companies in the 17th century increased the fortunes of the Parsis dramatically (Hinnells 1981). Acting as mediators for the colonial powers, including the Dutch, the French, and the English, the Parsis quickly adapted themselves to Western ways (Kulke 1974). As a result they became pioneers of education and social change, both within their community and in the wider

⁵ In his famous 1908 Judgment Justice Davar made this point succinctly. "An English woman could marry a Frenchman and convert to Catholicism, but she would remain English. In the same way, a Parsi could cease to be a Zoroastrian by converting to another religion, but could not change his or her Parsi status."

Indian context, especially in Bombay where the majority of them concentrated. By the middle of the 19th century the Parsis had become a colonial elite, favoured by the ruling British, and despite their small numbers (6.04% of the population of Bombay in 1864), they dominated the economic, intellectual, and political life of the city (Kulke 1974; Palsetia 2001).

The Parsis were responsible for opening the first cotton mill and steel plant in India as well as founding the Indian Institute of Science, and became prominent in the then nascent professions of medicine and law. They pioneered the promotion of female education. A section of the community played an important role in the formation of the Indian National Congress, and many continued to play leading roles in the national struggle for independence (Kamerkar and Dhunjisha 2002). However, their position in colonial Bombay and association with the British led many Parsis to grow increasingly sceptical of the nationalist movement, and large sections of the community began to worry about the place of a minority like theirs in a future democratic polity, which would inevitably be dominated by the Hindu majority (Kamerkar and Dhunjisha 2002; Hinnells 2005). Despite their misgivings, the Parsi contribution to India continues to be significant in industry, the professions, and government (Kulke 1974).

2.2 Demographic trends among the Parsis

Official accounts of the Parsi population in India exist in the Demographic Census, taken every decade since 1881 (Table 1). The Parsi population in India observed a steady increase until 1941, and since then a sharp decline has been sustained. In Bombay the Parsi population increased until 1961, when a declining trend commenced. Kulke (1974) observed that between 1941 and 1951 the increase in the Parsi population of Bombay corresponded to the decrease of the community in other parts of India. Between 1961 and 2001 the Parsi population of the city shrank by close to 34% (from 70,065 to 46,557), while for the entire country the contraction was approximately 31% (from 100,772 to 69,601) during the same period (Registrar General of India 2001). Both these figures point to a consistent downward trend, which has potentially disastrous consequences for the survival of the Parsi community.

The earliest research on the demographic transition among the Parsis was conducted in 1948 (Chandra Sekar 1948; Desai 1948). Results indicated that a steady fall in the birth rate and death rate over a period of approximately thirty years led to a “systematic change” in the age structure of the community, very similar to that observed in England and Wales. A similar finding was reported in the same year by Desai (Desai 1948). In the absence of state support, this change would lead to an increased level of old age dependency, and therefore increased responsibility of looking

after old parents. Potential consequences could include delaying or even preventing marriage, further reducing the birth rate, and therefore contributing to population decline (Chandra Sekar 1948; Desai 1948). A projection for the Parsi population for India correctly predicted a post-1951 decline in the strength of the community (Chandra Sekar 1948). The projection assumed no migration, mortality patterns as described by the 1931 life table for the Parsis of Bombay, a fertility schedule like that observed in 1941, and number of births proportional to the number of women in the 15-45 age group. He projected a population of approximately 89,000 for the year 2001 (Chandra Sekar 1948).

The 2001 Census returned a figure closer to 70,000. However, given the level of immigration to the West, inter-marriage, and the loss of approximately 5,000 Parsis to Pakistan during the partition of India, Chandra Sekar's prediction can be considered as remarkably accurate.

Table 1: Parsi population in Bombay/Mumbai and India (including Bombay/ Mumbai), 1881-2001

Census Year	Parsis in Mumbai	Parsis in India (including Mumbai)	Total Population of India	Parsis as a % of India's Population
1881	48,597	85,397	253,891,821	0.034
1891	47,458	89,887	287,314,671	0.031
1901	46,231	93,952	294,361,056	0.032
1911	50,931	100,096	315,156,396	0.032
1921	52,234	101,778	318,942,480	0.032
1931	57,765	111,853	352,837,778	0.032
1941	59,813	114,890	388,997,955	0.030
1951	68,660	111,791*	361,088,090*	0.031
1961	70,065	100,772	439,234,771	0.023
1971	64,667	91,266	548,159,652	0.017
1981	50,053	71,630	683,329,097	0.010
1991	53,794	76,382	846,302,688	0.009
2001	46,557	69,601	1,028,737,436	0.007

Source: Kulke (1974) and Registrar General of India 2001

Note: * Population from 1951 Census onwards excludes population of areas that became Pakistan.

What were the factors responsible for the steady reduction in Parsi fertility and the subsequent decline in population? How much of this was due to biological factors? A comparison of data from 1901 through 1941 revealed that the number of women in the 15-45 age group per 1000 population remained relatively stable, suggesting no significant change in the “potential reproductive capacity” of the Parsis over this period (Chandra Sekar 1948). However, we would argue that considering the 15-45 age group as a single unit, especially in a population with a declining TFR, has the potential to mask changes in the age distribution within this group. Speculation within and outside the Parsi community suggested that sub-fecundity due to cousin marriages (a common occurrence among Parsis) could be contributing to low fertility. This hypothesis was investigated, and results showed the opposite: marriages among cousins led to a higher mean number of children, after adjusting for duration of marriage (Axelrod 1990). In addition, the mean number of years between marriage and first birth among Parsi women was not significantly different from other comparable wealthy Indian communities, and there was nothing unusual in the sex ratio of the community to explain low fertility. These findings lend credence to the primacy of social factors, such as the spread of female education and cultural Westernization, in explaining the decline in fertility (Axelrod 1990).

The first drop in Parsi fertility appears to have happened around the end of the 19th century, and was related to the rapidly increasing rate of female education in the community after 1870 (Axelrod 1990). A glance at enrolment in educational institutions in Bombay is revealing in this regard. In 1860, out of 635 girls enrolled in school and college in the city, 485 were Parsis, at a time when they accounted for less than 10% of the population of the city. By 1909, out of 73 women enrolled in college, 34 were Parsi (Kulke 1974). This was accompanied by a systematic shift in the age of marriage. In 1890 most women married between the ages of 16 and 20, while, according to the 1901 census, about half of them married at ages over 20 in the year 1901 (Axelrod 1990). By the 1940s the age group of 25-29 was the preferred marriage age (Chandra Sekar 1948).

In addition, there was an increasing trend of non-marriage. While between 1901 and 1941 the Parsi population of Bombay rose by 29%, marriages rose by only 22%. In 1881 close to 76% of all adult Parsis were married, but by 1931 only 41% were married (Kulke 1974). This is corroborated by the fact that the proportion of women never married by the end of their reproductive period rose from less than 1% in 1881 to 17% in 1971 (Visaria 1974). This trend has only got more pronounced, with a 1999 survey conducted by the Tata Institute of Social Sciences for the Bombay Parsi Panchayat (BPP- the apex and oldest association of the community) showing that 30% of Parsi women remained unmarried throughout their lives (Patel 2010). While urbanization is often blamed for the low nuptiality of the community, the Parsis in rural Gujarat had similar demographic patterns when compared to those in Bombay (Axelrod 1990).

The increased exposure to Western education by the early 20th century led to the desire to emulate a Western lifestyle and standard of living, which increased family expenditure. There was an increase in female participation in the workforce, which led to a desire to limit family size (Axelrod 1990). The Zoroastrian religion has across the centuries provided equality to men and women. In modern times this has led to a great degree of emancipation and to three quarters of Parsi women working outside the home. (Hinnells 1981).

The extent of this impact can be seen from the rapid fall in the TFR during the early 20th century: from 4.2 in the period 1891-1901 to 2.93 in the period 1921-1931 (Visaria 1974).

The late 19th and early 20th century was a period of unparalleled social and economic influence for the Parsis of Bombay, when they were disproportionately represented in the highest income groups. Data of Bombay taxpayers in 1905-06 show that the Parsis accounted for 25% of the Indians earning in the top two income brackets (Kulke 1974). Their role in the textile industry of the city was particularly influential. Out of a total of 125 directors of cotton mills, 49 were Parsis (Kulke 1974). This dominance was also found in the professions. In 1898, out of the 100 qualified Indian lawyers, 46 were Parsis, and six out of the seven Indian surgeons in the province of Bombay (of which Bombay city was the capital) belonged to the community (Kulke 1974). The early lead that the community had taken in adopting Western education had played a definite role in creating this dominance. This had led to a lifestyle that became difficult to meet in the increased competition that had arisen by the time of Independence in 1947 (Axelrod 1990).

In such a situation it seems a paradox that, in regard to Parsi males, the major reason cited for non-marriage is low income (Axelrod 1990). A study reported that out of a sample of 1,000 never married Parsi males and females each, 400 males and 150 females reported low income as the reason for not marrying (Cabinetmaker 1991). This is striking since, in absolute terms, Parsis are one of the most economically successful groups in India. Therefore the low income that the respondents are referring to is relative to their perception of the position of the Parsis in the social hierarchy of Bombay (Axelrod 1990). Another closely linked and widely cited reason for not marrying is lack of accommodation. The rapid growth of the city has led to a severe shortage of housing and consequent escalation of prices, putting apartments in the southern part of the city (where most Parsis live) beyond the reach of all but the wealthy. Unlike other Indian communities, Parsis tend to be averse to living in extended families, and a study reported that almost 90% of the Parsis believed that a couple should have a house of its own, reflecting a Western mindset on this issue (Cabinetmaker 1991). While the BPP and a large number of private Trusts do provide subsidized housing to large sections of the community, the demand for these almost

always exceeds the supply. This is evident from the extent that housing issues dominate BPP elections.

The Westernization in the community was also associated with a decrease in arranged marriage and a preference for choosing one's own marriage partner. In cohorts born before 1906, 67% of marriages were arranged, but for cohorts born between 1946 and 1950 arranged marriages had fallen to 31% (Axelrod 1990). However, the small size of the community and the limited interactions among young Parsis in the city makes it difficult to find marriage partners, further increasing the average age of marriage. The freedom of choice along with increased interaction with members of the opposite sex of other communities, largely as a result of increased female participation in the workforce, has also led to a substantial increase in intermarriage in the past few decades (Axelrod 1990). In recent years organizations such as the BPP have struggled to address this issue through increasing youth interaction and setting up youth organisations, although the ultimate effectiveness of these measures remains to be seen.

3. Data sources

Data for this study was obtained from multiple sources. Numbers for the Parsi population of Mumbai for 2001 were taken from the 2001 Census of India, the most recent Census for which detailed data is available. The age structure of the population was obtained from both the Census and from a previous publication (Unisa et al. 2008). Although the Census information exists for the entire country, we assumed that the age composition of the Parsis of Mumbai is similar to the composition of the Parsis in the whole country. This is a fair assumption, given that the community is overwhelmingly urban and that approximately 70% lives in Mumbai.

Information on deaths in the city was based on figures published in the Parsiana magazine (a publication of the community) for the years 2000 to 2002. These years were chosen to obtain average age-specific death rates for the period around the year 2001, for which we have a detailed age and sex structure for the Parsis of Mumbai. These death figures were obtained from the two sites (namely the Parsi Towers of Silence on Malabar Hill and the Chandanwadi crematorium) where the overwhelming majority of Parsis are consigned at death. Based on this data we calculated male and female life tables, by five year age groups, for the Parsis of Mumbai.

Information on Parsi births in Mumbai was obtained from the August 2006 issue of the Parsiana magazine, based on figures provided by the Municipal Corporation of Mumbai (BMC). The number of male and female births provided by the BMC over a six year period was used to determine the average sex ratio at birth and produce estimates of the number of male and female births. Using this information as reported in

the 2001 Census we calculated the distribution of Parsi births across maternal age groups. Since age-specific fertility data was not available for the Parsi population separately we obtained age-specific fertility information from the Census of India, based on the category 'other religions'. This, in our opinion, is a fair estimate, since Parsis account for over 90% of those belonging to the 'other religions' category in the Census of Mumbai.

Information on intermarriage for the period 2001-05 was based on figures published in Parsiana, which had been compiled from the Registrar of Marriages for the entire metropolis. However, no data on age of marriage existed. Since the information on age of marriage for those marrying within the community was available, a similar age pattern of marriage was assumed for those marrying outside the community. Using these data we calculated the percentage of women marrying outside the community for each age group, as well as the percentage of non-Parsi women bearing Parsi children through marriage with a Parsi man.

4. Methods

To assess the potential role of intermarriage in the future decline of the Parsi population, we conducted population projections for Parsis in five-year intervals for the period 2001-2051, using the cohort component method and assuming a closed population (no migration). Three distinct projection scenarios were considered. The first describes the status quo situation: children of Parsi women married out of the community are not accepted within the fold, while children born of Parsi men and non-Parsi women are included. This scenario is referred to as 'current trends'. The second scenario allows the acceptance of children of Parsi women married outside the community, and is referred to as 'accept all children'. Finally, the third scenario considers a stricter rule of intermarriage in which children of both men and women married outside the community are excluded. This is referred to as 'no acceptance of intermarriage'. Each of these three scenarios was also evaluated under varying schedules of fertility and intermarriage rates: (i) assuming constant rates of mortality, fertility, and intermarriage throughout the entire projection period; (ii) assuming constant rates of mortality and intermarriage, but considering that fertility would experience an immediate one-time doubling from current levels; (iii) assuming constant rates of mortality and intermarriage, but considering that fertility would experience an immediate trebling from current levels; and (iv) assuming constant rates of mortality and fertility, but considering that rates of intermarriage would double from current levels, which serve as the baseline.

5. Results

Basic demographics of the Parsi population of Mumbai from the 2001 Census of India reported that the Parsis totalled 46,557, down from the 1991 figure of 53,794. The sex composition of this population showed a preponderance of females over males, with 24,194 females compared to 22,363 males (Registrar General of India 2001). The age structure showed a distinctly ageing population, with nearly a quarter of the population over the age of 65 and less than 13% under the age of 15 (Figure 1). Life expectancy at birth was found to be 73.5 years for men and 77.7 years for women, much higher than the Indian average of 64 years (UNICEF 2009) and similar to that found in most developed countries. The observed TFR was 0.89, and the sex ratio at birth was 110. Finally, the intermarriage rate was 32.09%. Based on these results, Table 2 summarizes the assumptions utilized in each of the three projection scenarios.

Figure 1: Age and sex distribution of the Parsi population of Mumbai, 2001

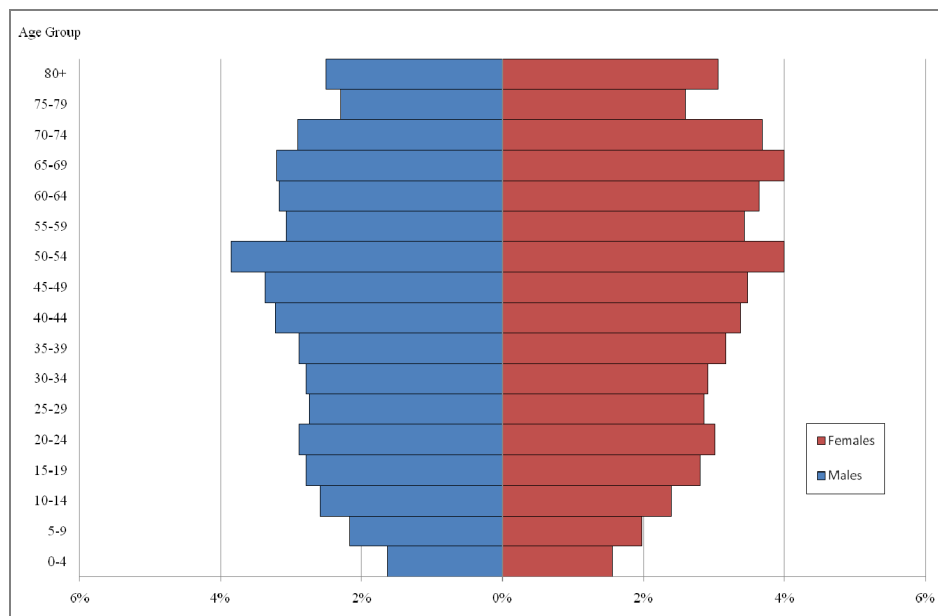


Table 2: Assumptions for each of the three population projection scenarios

Variables	Assumptions			
	(i)	(ii)	(iii)	(iv)
Mortality	Constant $e_0^{\text{Females}} = 77.7$ $e_0^{\text{Males}} = 73.5$	Constant $e_0^{\text{Females}} = 77.7$ $e_0^{\text{Males}} = 73.5$	Constant $e_0^{\text{Females}} = 77.7$ $e_0^{\text{Males}} = 73.5$	Constant $e_0^{\text{Females}} = 77.7$ $e_0^{\text{Males}} = 73.5$
Fertility	Constant TFR = 0.89	Constant TFR = 1.78	Constant TFR = 2.67	Constant TFR = 0.89
Inter-marriage (% of total marriage)	Constant Rate = 32.09	Constant Rate = 32.09	Constant Rate = 32.09	Constant Rate = 64.18

Under assumption (i) the projection exercise indicates that the Parsi population of Mumbai is expected to significantly shrink by 2051, revealing a much older age structure (Figure 2). If social acceptance of inter-marriage remains unchanged (scenario ‘current trends’), the projection predicts that the population would decrease from the 2001 figure of 46,557 to 20,122 in the year 2051. Including all children of inter-marriage (scenario ‘accept all children’) has only a marginal role in stemming this decline, resulting in a projected population of 20,535 in 2051. However, considering that no children of inter-marriage (male or female marrying outside the community) are accepted (scenario ‘no acceptance of inter-marriage’), the projected population would be reduced to 19,136 individuals in Mumbai in 2051. These findings suggest that changing social norms, on their own, have a negligible impact on slowing the population decline (Figure 3).

Under assumption (ii), which considers a TFR twice as big as the 2001 level, the projected decline of the Parsi population would be less pronounced (Figure 4). Under the assumption of no social change in the acceptance of children of inter-marriage (scenario ‘current trends’), the population would be reduced to 31,756 in 2051. Acceptance of all children of inter-married Parsis would leave the population at 32,911 in 2051, and the scenario ‘no acceptance of inter-marriage’ would result in the community shrinking to 29,036 individuals in 2051.

Figure 2: Age and sex distribution of Parsi population of Mumbai 2051

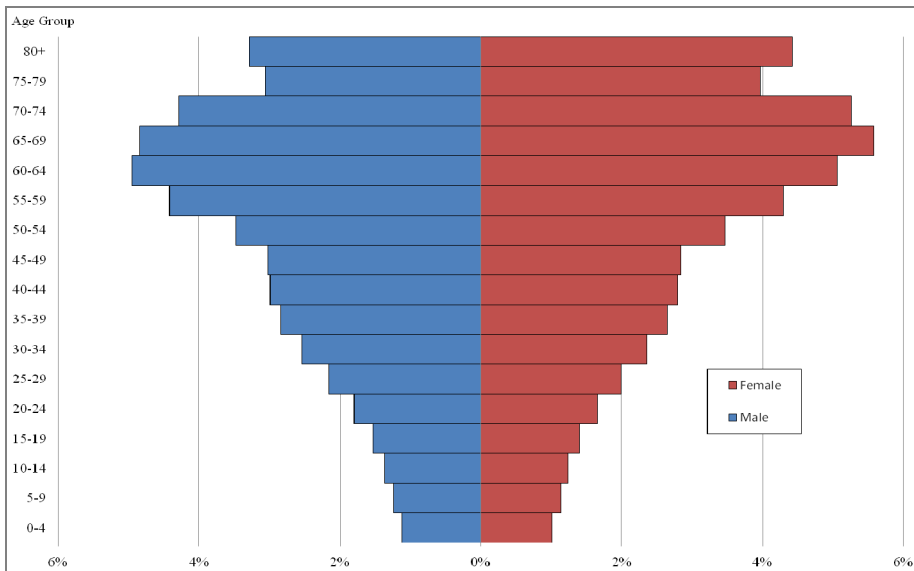


Figure 3: Projected Parsi population of Mumbai, 2001-2051 (current fertility trends)

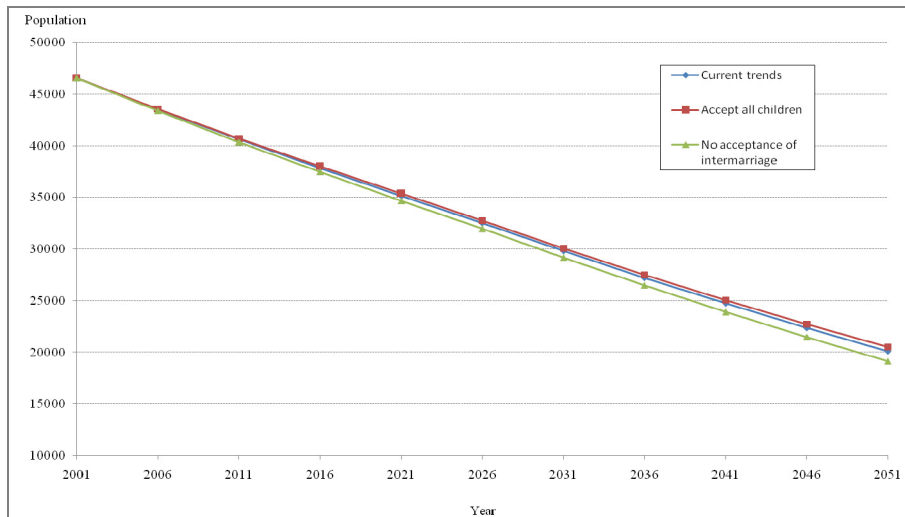
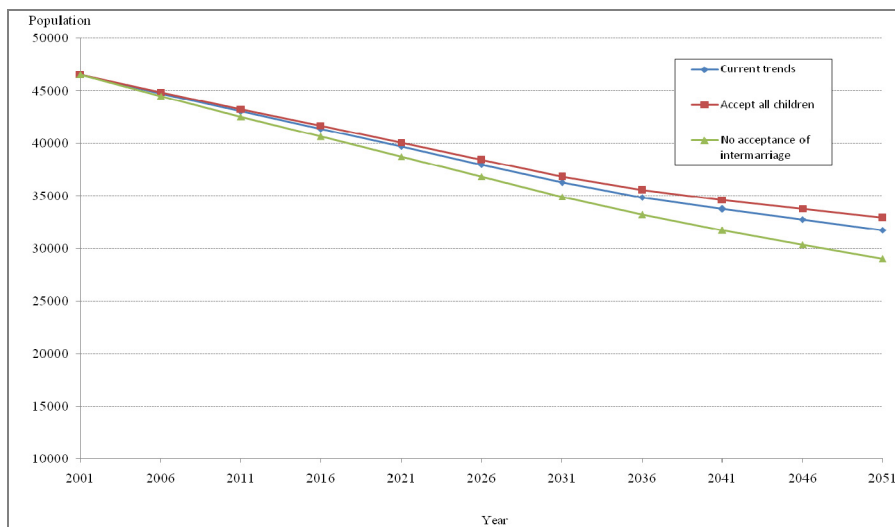


Figure 4: Projected Parsi population of Mumbai, 2001-2051 (doubling of fertility)



Considering a TFR three times as big as that observed in 2001, assumption (iii) has the potential to lead to a maintenance and possible revival of the Parsi community of Mumbai (Figure 5). Under this assumption there is a common pattern in the population projections of all three scenarios of intermarriage, which shows an initial drop followed by a distinct revival. The extent of the revival appears to be affected by the acceptance, or not, of children resulting from intermarriage. Acceptance of all children would result in a decline in population to 43,971 in 2031 and then a rise to 49,344 in 2051. Under the non-acceptance scenario the population would decline to 40,763 in 2036 and then grow to 41,913 in 2051. The scenario of no social change leads to an estimate of 47,116 in 2051.

Doubling the number of men and women marrying out of the community, assumption (iv), had little impact on the overall trend, since the number of non-Parsi women giving birth to Parsi children more than compensates for the increased out-marriage of Parsi women. Under the scenario of no social change the population would reduce to 20,215 in 2051. Acceptance of all children of intermarried Parsis would leave the population at 21,052 in 2051. The scenario of a total non-acceptance of children of intermarriage would result in the community shrinking to 18,277 individuals in 2051.

Figure 5: Projected Parsi population of Mumbai, 2001-2051 (trebling of fertility)

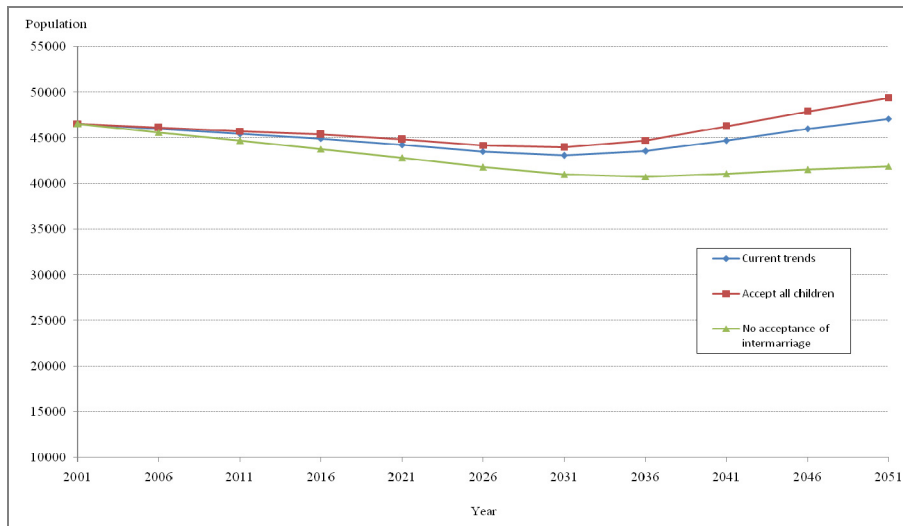
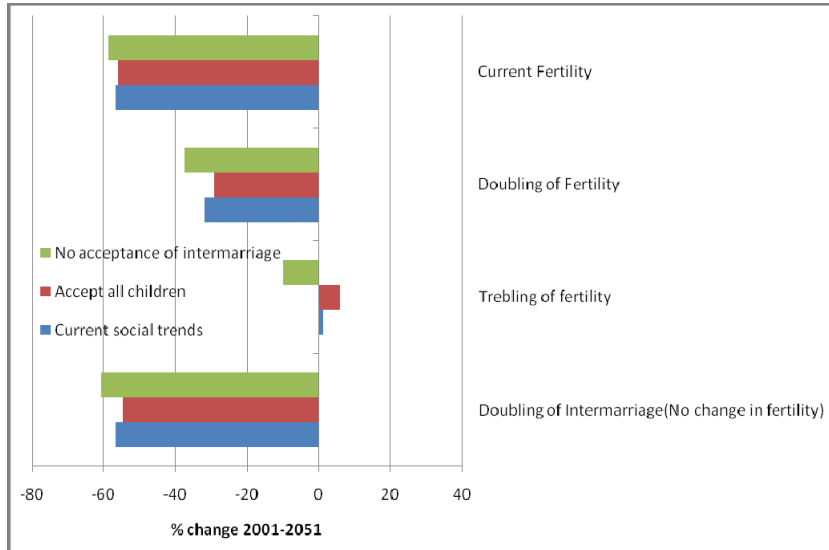


Figure 6 summarizes the impact of scenarios and assumptions considered in the projection exercise, expressed in terms of population growth during the 50-year period analyzed in this study. The growth rates make it clear that a massive change in fertility would be required to keep the Parsi population in 2051 at its 2001 strength. A doubling of fertility would lead to a 2051 population that is still 30-40% smaller than that observed in 2001. Only a fertility level three times larger than that recorded for 2001 would produce a positive population growth, or an increase in the Parsi population.

The other interesting finding is the limited role of intermarriage in the current decline. The difference in the population decline is not very sensitive to the rate of intermarriage, a direct result of the extremely low fertility of the community. At higher rates of fertility the effect of intermarriage is more pronounced. This is evident from the projection from the scenario of fertility being trebled. In this case acceptance or non-acceptance of children from intermarriage plays a far more significant role in the size of the projected population.

Figure 6: Projected population growth of the Parsi population of Mumbai between 2001-2051 under varying assumptions of social and fertility changes



6. Discussion

In this paper we assessed the potential impact of intermarriage as a contributing factor to the sharp decline of the Parsi population of Mumbai. Our results indicate that, irrespective of the acceptance of children of intermarriage, the Parsi population will decline sharply over the next few decades, assuming that current fertility trends remain unchanged. Our findings also show that the main factor behind the dramatic decline of the Parsi population is the abysmally low fertility of the community, as expressed by a TFR of only 0.89 in 2001.

Our projection exercise indicates that the effect of intermarriage is observed to a much greater degree when fertility is increased. While at current levels of fertility the acceptance of children of intermarried females, compared to non-acceptance, would lead to a population increase of 400 in the year 2051, increasing fertility would enhance this effect. Changing this social norm would lead to an increase of 1,155 individuals in 2051 under the assumption of doubled fertility, and of 2,228 individuals if fertility could be trebled. Given the extremely low fertility of the community, there are very few

children to be brought into or excluded from the fold. However, as fertility increases, children born to intermarried parents will constitute a sizeable number, resulting in a significant impact on the demographic trends of the community.

Acceptance of children of female intermarriage is a deeply controversial and divisive issue. On the one hand, conservatives bemoan the increased incidence of intermarriage and blame it for both the population decline of the community as well as the dilution of ethnic identity. On the other hand, socially liberal Parsis view intermarriage as an inevitable trend in the India of today. While acknowledging that it may have a role in the decline of the population of the community, they believe that an acceptance of children of these marriages would help stem the decline considerably. Both groups seem to have over emphasized the importance of this factor. The results of this study indicate that intermarriage is not the principal driver of this sharply declining population trend, and an acceptance of female intermarriage can play, at best, a marginal role in stemming the decline, even under the most optimistic assumptions.

Instead of focusing the discussion around intermarriage, the community should consider other strategies that could impact fertility levels. Attempts to increase fertility would have to address, among other things, the cultural and social determinants of the Parsi fertility decline (Axelrod 1990; Unisa et al. 2008). Specific measures, such as providing subsidies for rearing children and providing support for working women and housing for young couples, can be brought about through funding from within the community and from the state. In Sweden financial incentives, day care allowances, and an enabling working environment have been important explanations of an increase in fertility from 1.6 to 2.02 between 1983 and 1989 (Hoem 1990), although an economic downturn and withdrawal of benefits brought the TFR back down to 1.5 in 1999. The Swedish example is corroborated by a recent cross-country study which suggested that at extremely high levels of Human Development there is a slight increase in fertility, attributed to governments creating “institutions to facilitate work-family balance and gender equality” (Myrskylä et al. 2009:742).

It is important to note, however, that even under the most optimistic scenario these schemes have a limited ability to bring about a sustained and sufficient increase in fertility rates. A scenario with a sustained increase of 25% of TFR, as achieved by Sweden in the late 1980s, would fall far short of the quantum of fertility increase which is needed by the Parsi community to reverse its dramatic numerical decline (Hoem 2005).

This study has some limitations. First, the baseline population for the projections taken from the 2001 Census of India includes some Parsi women married outside the community. Therefore the projection will over-estimate the population, since the existing children of these women would not be counted in the community. However, since the baseline population is the same for all scenarios and assumptions, the final

comparison between projected numbers is not compromised. Second, the assumption that the age distribution of women marrying outside the community is similar to that of women marrying Parsis can bias the estimates in both directions. On the one hand, younger women may be more liberal and willing to marry out of the community; on the other hand, intermarriage could be the result of not finding a suitable Parsi partner, and therefore more likely to occur among older women. If women marrying non-Parsis are younger than those marrying Parsis, then the projections underestimate the impact of intermarriage since these women are exposed to the possibility of having children for a longer time. If they are older, the projections overestimate the number of children lost to the community, since these women would have fewer children as a result of late marriage. Data on the age of men and women marrying outside the community would need to be collected to be able to make a definitive statement about this, and is a fruitful topic for future research.

Finally, the model uses the assumption of a closed community to make projections. In the scenario of net migration out of Mumbai this would lead to our projections overestimating the future Parsi population in the city, particularly if the migration is among the younger section of the community. It is important to note here that emigration would only alter the impact of intermarriage on the population decline if rates of emigration among those marrying outside the community can be shown to be substantially different from those marrying within the community. There is no data on the number of Parsis emigrating from Mumbai each year, and even less a breakdown of this by age group. This would be needed to make an accurate assessment of the impact of emigration on the rate of Parsi population decline, by including this data in a projection model.

In conclusion, our findings confirm previous studies that identified low fertility as chiefly responsible for the dramatic decrease in the Parsi population (Unisa et al. 2008). Therefore, only a dramatic increase in fertility can arrest this trend and bring about the existence of a viable and demographically stable Parsi community in Mumbai.

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References

- Axelrod, P. (1990). Cultural and historical factors in the population decline of the Parsis of India. *Population Studies* 44(3): 401-419. doi:10.1080/0032472031000144826.
- Boyce, M. (1979). *Zoroastrians: Their Religious Beliefs and Practices*. London: Routledge and Kegan Paul Ltd.
- Boyce, M. (1992). *Zoroastrianism: Its Antiquity and Constant Vigour*. Costa Mesa: Mazda Publishers.
- Cabinetmaker, P. (1991). *Parsis and Marriage*. Pune.
- Chandra Sekar, C. (1948). Some aspects of Parsi demography. *Human Biology* 20(2): 47-89.
- Desai, S. (1948). *A Community at the Cross Road*. Bombay: New Book Co Ltd.
- Federation of Zoroastrians Associations of North America (FEZANA). (2004). Jacksdale, IL. *FEZANA Journal* 17(4).
- Hinnells, J. (1981). *Zoroastrianism and the Parsis*. Bombay: K.R. Cama Oriental Institute.
- Hinnells, J. (2005). *The Zoroastrian Diaspora: Religion and Migration*. New York: Oxford University Press Inc.
- Hoem, J. (1990). Social policy and recent fertility change in Sweden. *Population and Development Review* 16(4): 735-748. doi:10.2307/1972965.
- Hoem, J. (2005). Why does Sweden have such high fertility. *Demographic Research* 13(22): 559-572. doi:10.4054/DemRes.2005.13.22.
- Kamerkar, M. and Dhunjisha, S. (2002). *From the Iranian Plateau to the Shores of Gujarat- The Story of Parsi Settlements and Absorption in India*. Mumbai: K.R. Cama Oriental Institute.
- Kulke, E. (1974). *The Parsees in India: A Minority as Agent of Social Change*. Munich: Weltforum Verlag.
- Maneck, S. (1997). *The Death of Ahriman: Culture, Identity and Theological Change Among The Parsis of India*. Bombay: K.R. Cama Oriental Institute.
- Myrskylä, M., Kohler, H.-P., and Billari, F.C. (2009). Advances in development reverse fertility declines. *Nature* 460: 741-743.

- Nariman, F. (1999). *Zoroastrianism- the Faith of the Parsis in India*. New Delhi: Foundation for Universal Responsibility of the Dalai Lama.
- Palsetia, J. (2001). *The Parsis of India: Preservation of Identity in Bombay City*. Leiden: Brill.
- Parsiana Magazine. (2001-2003). Mumbai: Parsiana Publications. August 2006, May 2011.
- Patel, D. (2010). *Jaago Bidari. Rescuing our community from a demographic crisis*. Paper presented at the North American Zarathushti Congress. Houston, December 30, 2010.
- Registrar General of India, Census of India (2001) Tables on Other Religions, Registrar General of India, (RGI), New Delhi.
- Sharafi, M. (2006). *Bella's Case: Parsi Identity and the Law in Colonial Rangoon, Bombay and London 1887-1925* [PhD dissertation]. Princeton University, History Department
- UNICEF (2009). India Statistics [electronic resource]. http://www.unicef.org/infobycountry/india_statistics.html (February 25, 2011).
- Unisa, S., Bhagat, R.B., Roy, T.K., and Upadhyay, R.B. (2008). Demographic transition or demographic trepidation? The case of Parsis in India. *Economic and Political Weekly* 43(1): 61-65.
- Visaria, L. (1974). Demographic transition among Parsis 1881-1971. *Economic and Political Weekly* 9(43): 1828-1832.
- Wink, A. (1990). *Al Hind: The Making of the Indo Islamic World. Volume 1 Early Medieval India and the Expansion of Islam*. Leiden: Brill.