# Demographic Change and Women’s Status in India

Senri Ethnological Studies 96: 63–78 ©2017
*Structural Transformation in Globalizing South Asia*
Edited by Minoru Mio, Koichi Fujita, Kazuo Tomozawa and Toshie Awaya

# Demographic Change and Women's Status in India

**Kazuya Wada**
*University of Nagasaki*

## 1. Introduction

With a population of 1.3 billion in 2014, India is the world's second most populous country, behind only China. In addition to its large population, India is also well known for its peculiar demographic composition. In developed countries, men usually die earlier, so the population of women is generally larger. This is the pattern typically observed when women and men have equal access to nutrition and health care. In contrast, India has excessive mortality among women. According to the Census of India, the sex ratio (expressed as the number of females per 1,000 males) was 971 in 1901, but it continually declined thereafter. In recent decades, it has been hovering around 930.

This figure offers profound insights into long-term discrimination against women. In terms of survival opportunity, women in India are oppressed: women tend to die earlier because they are often denied appropriate nutrition and health care, to which men have access, thus leading to the skewed sex ratio. Furthermore, women's capabilities are severely limited: unlike men, they lack equal opportunities for education, they do not engage in work outside the household, and their intentions are not reflected in household decision-making. As the sex ratio shows, the problem of women's low status is persistent.

Numerous earlier studies have examined factors contributing to alleviating this situation. Bardhan (1974) highlights that constraints on women's labor force participation outside households lowered their economic potential, leading to excessive mortality. Using district level data from the Census of India, Rosenzweig and Schultz (1982) and Murthi, Guio, and Dreze (1995) demonstrated that women's labor force participation and education contributed to alleviating gender bias in child mortality.[1)] More recently, empirical studies examining how women's improved bargaining power affects household welfare have been accumulated by the increase in and sophistication of micro-datasets of developing countries. Using microeconomic data for Bangladesh, Anderson and Eswaran (2009) show that women's access to liquidity contributed to improvement in their bargaining power. Using the 1998/99 National Family Health Surveys to examine the relation between women's bargaining power within households and child welfare, Wada (2011) observes that facilitating women's bargaining power promoted child welfare. Some other studies demonstrate that improvement in women's status positively affected household welfare.

This paper outlines recent demographic conditions prevailing in India. Factors outlined in this paper include women's education, economic surroundings, and marriage practices. Women's bargaining power, which has received much attention in recent decades, is also explored empirically.

## 2. India's Demography

As described above, the male population exceeds the female population in India, inconsistent with the data for developed countries. Also noteworthy, however, is the significant demographic variation among India's different regions. This section outlines the demographic conditions (sex ratio, child mortality rate, and total fertility rate) using district-level data from the Census of India 1981, 1991, and 2001.

Figure 1 presents the sex ratio transitions at district level. The transitions are not salient due to the slow transformation of demographic characteristics. Sex ratios are low in the center of Madhya Pradesh, the west of Uttar Pradesh, Haryana, and Punjab. Conversely, they are high in one part of Tamil Nadu and the south of Kerala. At state level, only Kerala has a sex ratio greater than unity.

Child mortality rate is presented in Figure 2. In 1981, the situation was severe: the child mortality rate in some districts was higher than 250‰. The situation has improved steadily since then. By 2001, no district was found to have child mortality higher than 250‰. Despite the amelioration, large room for improvement remains, as some districts' child mortality still exceeded 100‰ in Tikamgarh in Madhya Pradesh. At state level, Madhya Pradesh consistently showed the highest child mortality rate for the decades.

Gender bias in child mortality is said to strongly affect India's skewed sex ratio (Figures 3-A – 3-C). This bias is conspicuous in Uttar Pradesh, Madhya Pradesh, and Rajasthan. For instance, in Etah District, Uttar Pradesh, the male child mortality rate was 180‰ in 1981, whereas the female equivalent was 255‰. This striking difference implies

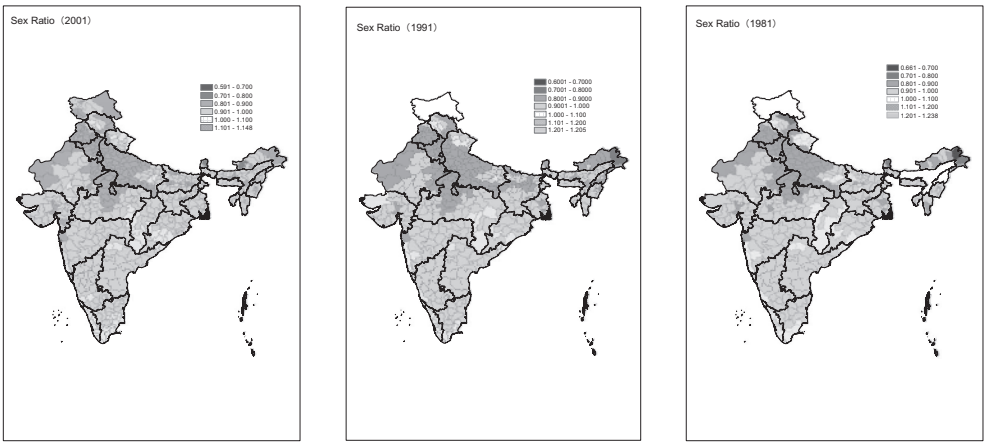



**Figure 1** Sex Ratio (1981–2001)
Source: Made by the author

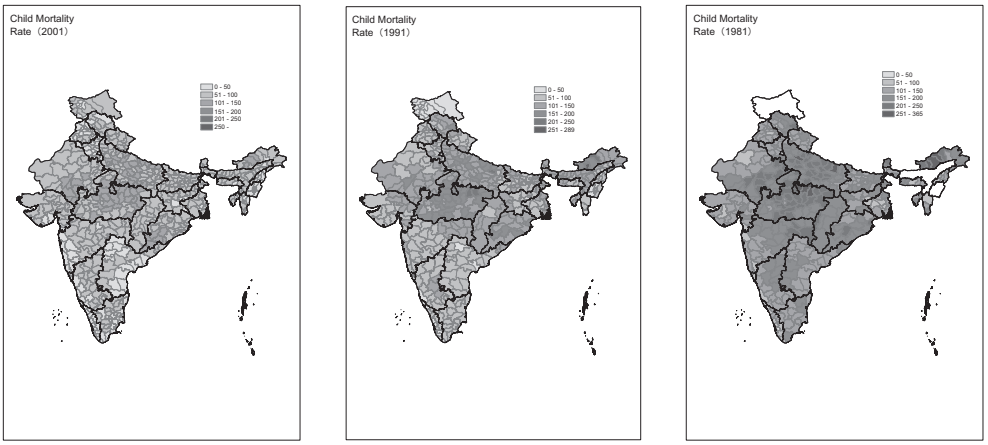



**Figure 2** Child Mortality Rate (1981–2001)
Source: Made by the author

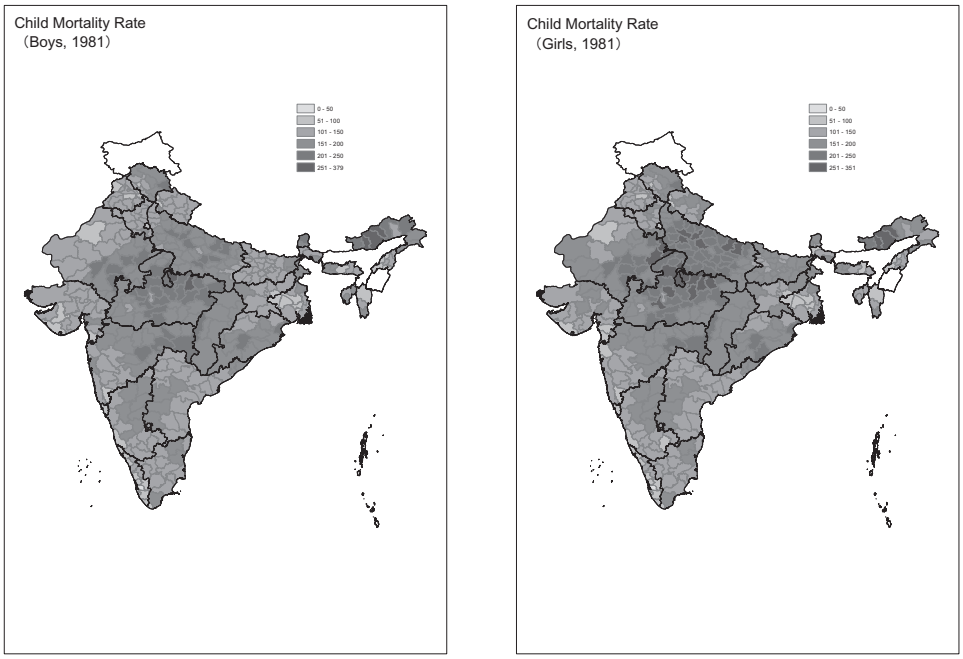
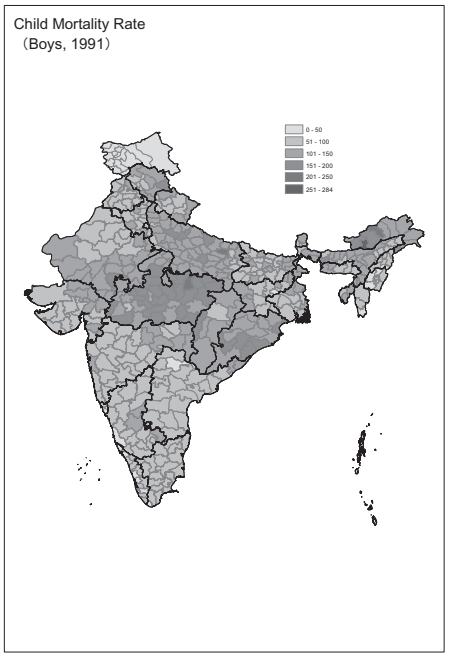



**Figure 3-A** Child Mortality Rate (1981)
Source: Made by the author



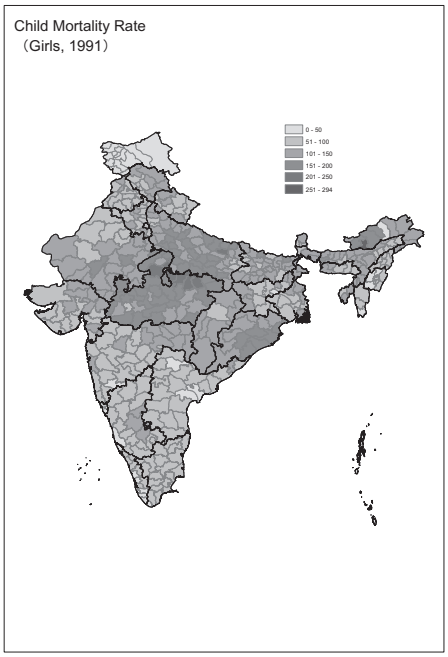
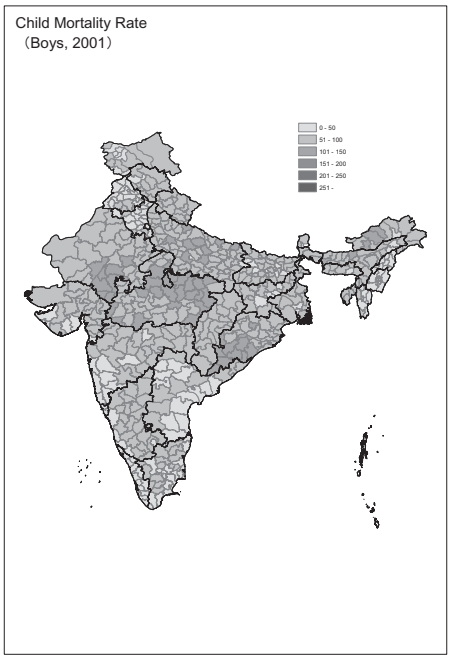




**Figure 3-B** Child Mortality Rate (1991)
Source: Made by the author



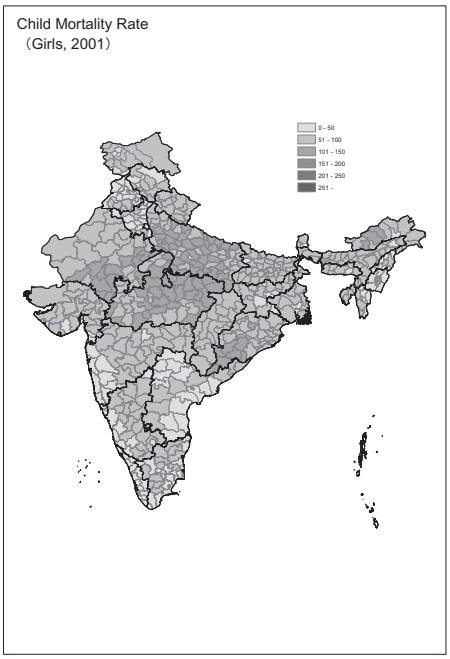




**Figure 3-C** Child Mortality Rate (2001)
Source: Made by the author

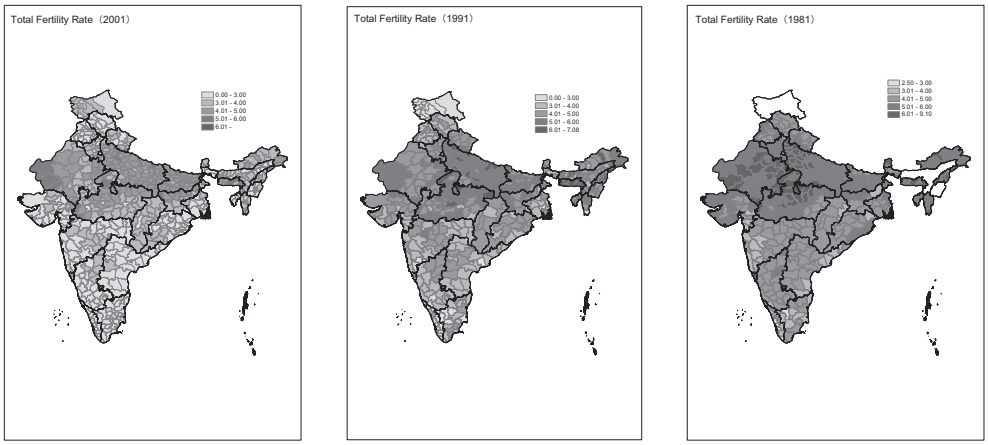



**Figure 4** Total Fertility Rate
Source: Made by the author

that the girls' survival condition was unfairly depressed. Despite the severe situation, Etah's child mortality rates in 2001 had dropped to 101‰ for boys and 124‰ for girls, suggesting that both the level and bias had been partly redressed, although girls remained disadvantaged. Although the situation of the female child mortality rate exceeding the male rate evidently persisted, even in 2001, both rates have vastly improved and the bias has also been ameliorated.

Figure 4 presents the trend of total fertility rate at district level, suggesting that the rate was high in the northern states: Madhya Pradesh, Uttar Pradesh, Rajasthan, Bihar, and Gujarat. In 1981, Rajasthan showed the highest rate: 6.1. In contrast, the rates were low in the southern states: Kerala reported 3.3 in 1981. India's national rate was 4.9 in 1981, then subsequently declined rapidly to 4.3 in 1991 and 3.2 in 2001. At district level, for example, the total fertility rate in both Bharatpur District, Rajasthan, and Tikamgarh District, Uttar Pradesh, was 7.0 in 1981, before quickly dropping to 4.9 in 1991 and 4.5 in 2001. Over the same period, in the southern district of Thiruvananthapuram, Kerala, for example, the rate dropped from 2.5 in 1981 to 1.6 in 2001. At state level, Kerala had the lowest total fertility rate in 2001, while the figure for Tamil Nadu was 1.9, indicating that India's population growth has slowed radically in recent decades. The following sections examine some factors that would affect women's status.

## 3. Trend in female labor force participation

The Census of India defines as female "main workers" those women who engage in economically productive work for at least 183 days a year. Its female labor force participation rate is presented as a percentage of the number of female main workers to the total female population. The national rate has apparently remained at a low level: 14.0% in 1981, 15.8% in 1991, and 14.7% in 2001. However, India's total population has greatly increased in recent decades, so it is noteworthy that the absolute number of

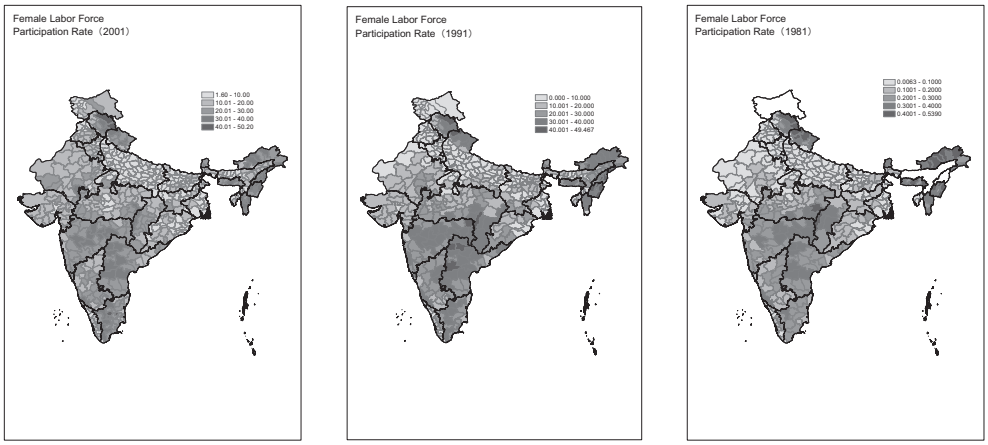



**Figure 5** Female Labor Force Participation Rate (1981–2001)
Source: Made by the author

female main workers has also increased.

Figure 5 shows the trend of female labor force participation rates at district level. Though the national rate remained mostly unchanged over the studied decades, great regional diversity can be observed: there seem to be regional differences between the first decade (1981–1991) and the second decade (1991–2001). In the first decade, increases in the female labor force participation rates are visible in Maharashtra, Andhra Pradesh, and Tamil Nadu. Conversely, in the second decade, these states' rates decrease, but increases can be observed in the rates of Rajasthan, Haryana, and Punjab. Thus, changes in the two periods were not mutually linked, indicating that the characteristics of and factors underlying the changes are quite heterogeneous.[2)]

At state level, the female labor force participation rate in Punjab was mostly unchanged from 1981 (3.1%) to 1991 (2.8%), but then increased to 11.9% in 2001. A similar trend can be observed in Haryana: 4.8%, 6.0%, and 13.4%, respectively. Female opportunities for labor force participation, as well as opportunities for education, are likely related with the number of childbirths. It is expected that increases in the female labor force participation rate, i.e., increases in female opportunity costs, will engender decreases in total fertility rates. As shown in Punjab and Haryana, the two rates are apparently closely linked.[3)]

## 4. Trend in female age at first marriage

As described in the previous section, India's total fertility rate has declined rapidly. Previous reports have described some factors underlying the change. This section outlines the trend in female age at first marriage based on the *National Family Health Survey* (NFHS), which is provided by Demographic and Health Survey.[4)]

At the time of writing, the NFHS had collected household data on three occasions: 1992/93 (NFHS-1), 1998/99 (NFHS-2), and 2005/06 (NFHS-3).[5)] All three surveys were

based on interviews with ever-married women.[6] The questionnaires mainly cover health conditions of women and children, including various information related to household characteristics. NFHS-1 covered 24 states and the National Capital Territory of Delhi (the erstwhile Union Territory of Delhi, which recently attained statehood), comprising 99 percent of India's total population. In total, 89,777 ever-married women aged 13–49 and 88,562 households were surveyed, using uniform questionnaires, sample designs, and field procedures (International Institute for Population Sciences 1995). The NFHS-2 survey, conducted in 26 states, covered a representative sample of 89,199 ever-married women aged 15–49 and 91,196 households (International Institute for Population Sciences 2000). Subsequently, NFHS-3 collected information from a nationally representative sample of 109,041 households and 124,385 women aged 15–49 (International Institute for Population Sciences 2007). Districts cannot be identified in the NFHS data. Therefore, this section outlines the state-level findings.

Table 1 presents the female age at first marriage,[7] the national average of which

**Table 1** Female age at first marriage

| | NFHS–1 1992/93 | NFHS–2 1998/99 | NFHS–3 2005/06 |
|---|---|---|---|
| Andhra Pradesh | 15.29 | 15.29 | 15.70 |
| Arunachal Pradesh | — | — | 18.20 |
| Assam | 17.18 | 18.14 | 18.79 |
| Bihar | 16.06 | 16.29 | 15.90 |
| Chhattisgarh | — | — | 16.46 |
| Delhi | 18.59 | 19.07 | 18.97 |
| Goa | 20.69 | 21.70 | 22.78 |
| Gujarat | 18.09 | 17.88 | 18.02 |
| Haryana | 17.30 | 17.80 | 17.37 |
| Himachal Pradesh | 17.20 | 18.40 | 18.68 |
| Jammu and Kashmir | — | — | 18.92 |
| Jharkhand | — | — | 16.64 |
| Karnataka | 16.72 | 17.14 | 17.90 |
| Kerala | 19.77 | 19.92 | 20.47 |
| Madhya Pradesh | 15.88 | 15.99 | 16.30 |
| Maharashtra | 16.38 | 16.75 | 17.46 |
| Manipur | 20.54 | 20.90 | 21.45 |
| Meghalaya | 19.68 | 19.20 | 19.79 |
| Mizoram | 21.43 | 21.28 | 20.85 |
| Nagaland | 19.82 | 19.98 | 19.91 |
| Orissa | 16.45 | 17.17 | 17.45 |
| Punjab | 18.95 | 19.71 | 18.93 |
| Rajasthan | 16.25 | 16.26 | 16.33 |
| Sikkim | — | 19.25 | 19.57 |
| Tamil Nadu | 17.84 | 18.29 | 18.71 |
| Tripura | 17.42 | 18.25 | 18.23 |
| Uttar Pradesh | 16.57 | 16.13 | 16.67 |
| Uttaranchal | — | — | 17.64 |
| West Bengal | 15.88 | 16.88 | 17.10 |
| India | 17.39 | 17.56 | 17.99 |

Source: Made by the author

was 17.4 in 1992/93, 17.6 in 1998/99, and 18.0 in 2005/06, indicating a gradually increasing trend. The state of Andhra Pradesh consistently records the lowest age at first marriage, though it has gradually increased, from 15.3 in 1992/93 and 1998/99, to 15.7 in 2005/06. Northeastern states,[8] Goa, and Kerala show that the age at first marriage was high in NFHS-1 and gradually increased in the next two surveys: for example, in Kerala, age at first marriage was 19.8 in 1992/93, 19.9 in 1998/99, and 20.5 in 2005/06.

An increasing trend cannot be observed in all states; in fact, a decreasing trend is apparent in some. For example, while an increasing trend is apparent for Tamil Nadu (17.8 in 1992/93, 18.3 in 1998/99, and 18.7 in 2005/06) and Maharashtra (16.4, 16.8, and 17.5, respectively), other states showed an initial increase, followed by a decline to the early 1990s level or below: Punjab (19.0, 19.7, and 18.9) and Haryana (17.3, 17.8, and 17.4). Female age at first marriage is expected to be closely related with the number of children to whom women gave birth. However, changes in the total fertility rates were not consistent with expectations. For example in Punjab, the total fertility rate dropped rapidly from 4.9 in 1981 to 3.8 in 1991 and 2.4 in 2001. Even if the female age at first marriage gradually increased, it did not always engender demographic change in the short-term.

In addition, the trend in female age at first marriage seems inconsistent with expectations for educational improvement. For example, the Census of India shows that the national female literacy rate was 34.1% in 1981, 42.7% in 1991, and 56.0% in 2001. This coincides with NFHS Punjab, by way of example, in which the mean of female schooling years was 3.2 in 1992/93, 4.2 in 1998/99, and 4.4 in 2005/06. Both sets of findings imply that steady improvements occurred. Such improvements in female education are expected to be negatively correlated with the female age at first marriage. In practice, however, the expected effects were not found.

## 5. Marriage practices

Some previous reports have partly attributed women's low status to the "dowry." This section outlines current marriage customs using a micro dataset, the *India Human Development Survey* (IHDS), collected by the University of Maryland and the National Council of Applied Economic Research.[9]

The IHDS questionnaire includes questions concerning marriage practices for ever-married women: for example, "Generally in your community for a family like yours, what are the kind of things that are given as gifts at the time of the daughter's marriage?" It is noteworthy that this is not always related with their own experiences. In total, 18 different kinds of gifts were recorded, but this section only outlines gold and cash due to space limitations.[10]

Figure 6-1 shows regional tendencies in treating gold as a marriage gift ("usually," "sometimes," or "rarely/never"). In many states, gold was usually treated as a marriage gift, suggesting its high value nationally. Particularly in northern states (e.g., Uttarakhand and Himachal Pradesh) and southern states (Tamil Nadu, Karnataka, and Kerala), gold is more likely to be treated as a usual gift for marriage. In contrast, this tendency is weak

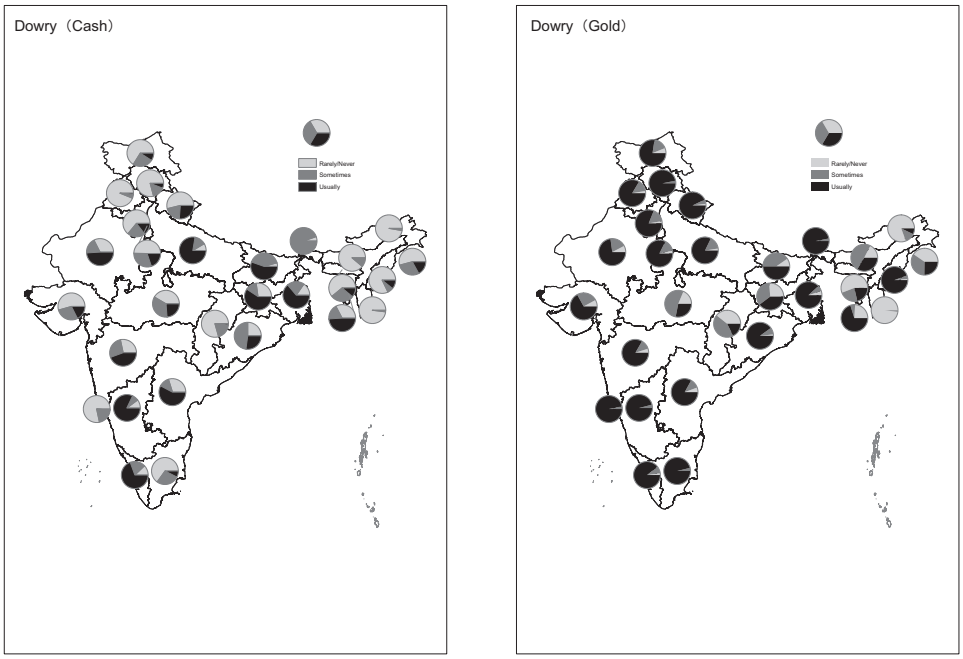



**Figure 6-1** Marriage Practice (Dowry)
Source: Made by the author

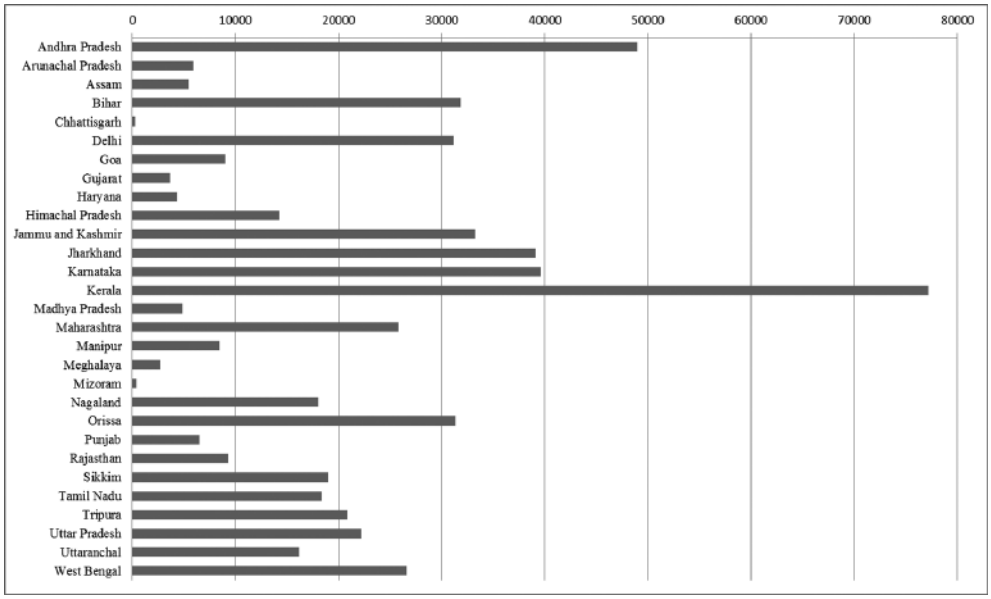



**Figure 6-2** Average amount of cash as dowry (Rs.)
Source: Made by the author

in Madhya Pradesh, Chattisgarh, Jharkhand, and northeastern states.

The tendency to treat cash as a marriage gift is also presented in Figure 6-1. Unlike gold, regional diversity regarding cash is remarkable. Among the northern states, while cash was often treated as a usual gift in Uttar Pradesh, Bihar, Jharkhand, and West Bengal, neighboring states show a different tendency. Among the southern states, cash was most likely to be treated as a usual marriage gift in Karnataka, followed by Kerala and Andhra Pradesh.

Figure 6-2 presents the average amount of cash given as a marriage gift. Kerala shows the largest amount, Rs 80,000, followed by Andhra Pradesh, Karnataka, and Jharkhand. As might be expected, the amount was large in states where cash was often treated as a usual gift. It is important to recall that a large amount of cash does not necessarily mean the total dowry value is large, as marriage gifts vary considerably.

Next, marriage practices are outlined based on IHDS data. Women's high status in the southern states is sometimes attributed to blood relations with their spouses. Figure 7 shows the relations between wives and husbands. As noted in some previous studies,[11] there are many couples with some level of blood relationship in Maharashtra, Andhra Pradesh, Karnataka, and Tamil Nadu. In Kerala, often recognized as a state in which women's status is high due to kinship structures, the proportion is not so large in practice compared to these states.

Figure 7 also presents the period between the couple's first meeting and the day of their marriage. In the southern and the northeastern states, this period is long, showing

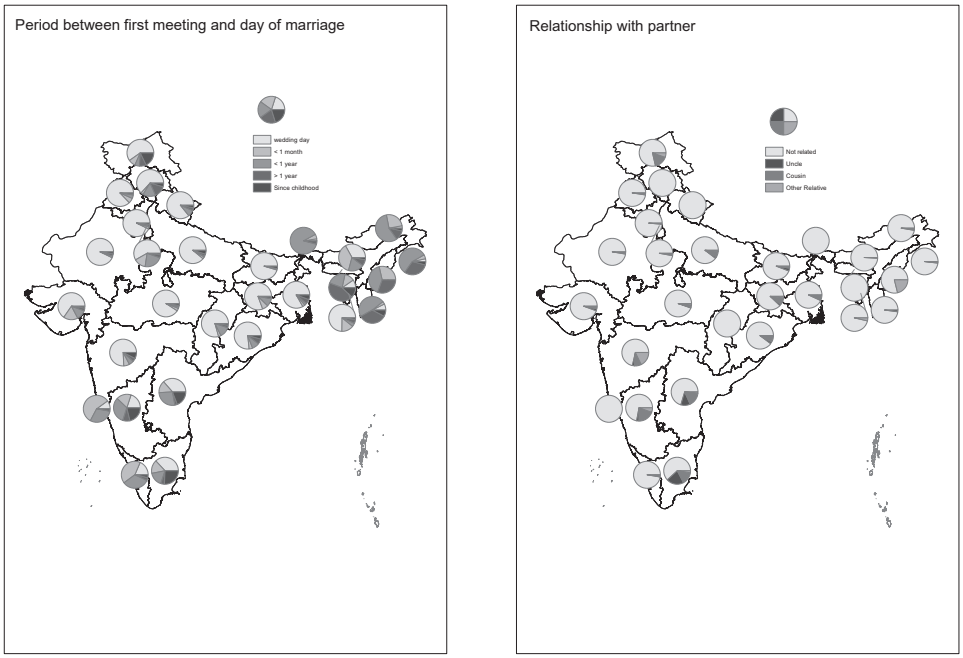



**Figure 7** Marriage Practice (Other)
Source: Made by the author

remarkable difference from the other states. To illustrate, the proportion of couples reporting that they met each other for the first on their wedding day was lowest in Kerala: less than 20%.

As described above, demographic characteristics are extremely diverse among India's regions. The indices, which are often assumed as factors affecting demography, are also quite various. Citing Dyson and Moore (1983), regional difference between the north and the south are often argued, but in practice, as shown in the above figures and tables, the characteristics are complex, unlike what Dyson and Moore (1983) pointed out.

## 6. Effects of "objective" participation in household decision-making processes

Since the Beijing Women's Conference in 1995, empowerment of women has been an important policy goal for all nations (Anderson and Eswaran 2009). The third of the eight Millennium Development Goals (MDGs) also specifies "Promote gender equality and empower women." Enhancing the decision-making power of women in developing countries is regarded as one of the most important components of female empowerment.

From an economic viewpoint, decision-making power corresponds to bargaining power. Within a household, bargaining power represents the extent to which a woman can participate in household decision-making and behave according to their own thoughts and ideas. In this context, women can enhance their household bargaining power by accessing economic resources outside the household. This may involve engaging in work, obtaining credit, and possessing their own assets. Some earlier studies have revealed that women's empowerment engenders other salutary effects on household welfare (Thomas 1990; Lundberg, Pollak, and Wales 1997).

Using microdata for Bangladesh, Anderson and Eswaran (2009) show that women's bargaining power increased when they earn-income and obtain other resources. Based on NFHS-2, Wada (2011), suggests that promoting women's bargaining power favorably affected child health. Most of the earlier studies indicate a positive relation between women's bargaining power and household welfare.[12] They also suggest that promoting women's bargaining power strongly affects demography, as shown in Muthi, Guio, and Dreze (1995).

However, it remains to be seen whether those earlier studies accurately captured women's bargaining power. The microdata for Bangladesh that Anderson and Eswaran (2009) used included seven questions concerning women's bargaining power: decision to purchase cooking oil, decision to purchase children's clothes, and whether to cover head outside of bari in the presence of men, etc. They examined one question for one of women's bargaining power, as their answers were sometimes inconsistent with each other. In addition, where more than one question is used, it is not easy to capture the extent of each question's importance; therefore, it is also difficult to determine their weights.[13]

Besides the problem of capturing bargaining power, another complication should be noted: Is it true bargaining power? All previous studies implicitly assume that

respondents' answers are "objective." Questions related to household assets, for instance ownership of TV or vehicle, are straightforward because they can be easily observed. However, for questions related to household decision-making, respondents' answers might be highly problematic. A typical question in the NFHS field surveys asked respondents, "Who decides it?"; the available answers are "me," "spouse," "both," or "other." That is, these data are based heavily on respondents' answers. In this case, the answer should be regarded as highly "subjective." Even if their bargaining power is estimated as high based on such answers, it might be objectively quite low. Sen (1999: 63) also points out the following issue:[14)]

> The deprived people tend to come to terms with their deprivation because of the sheer necessity of survival, and they may, as a result, lack the courage to demand any radical change, and may even adjust their desires and expectations to what they unambitiously see as feasible.

Using the data from NFHS-3, this section examines the effects of "subjective" and "objective" participation on household welfare. The NFHSs have collected various information concerning women's bargaining power in relation to their partners: for example, household decision-making on purchasing durable goods, how to spend earned money, and childbearing. Some previous studies have used the NFHS data to examine women's bargaining power within households.[15)]

NFHS-3 collected information from 124,385 women aged 15–49 and 74,369 men aged 15–54, using separate questionnaires for women and men. Many questions are the on both questionnaires. The surveyed women and men are in couples in principle. Therefore, the two datasets can be merged. Emphasis is assigned to discrepancies in who is the perceived decision-maker on disposition of the husband's earnings. For women, the question is "Who decides how your husband's earnings will be used?"; for men, "Who decides how your earnings will be used?" The available answers for the question are "respondent," "husband (wife)," "respondent and husband (wife) jointly," or "other."

As Table 2 shows, there are 16 possible combinations of their answers. Regarding who decides how to spend the husband's earnings, the proportion of category (B), the couples that both perceive joint decisions, is the largest: 52%. The couples in categories (A), (C), and (D) have the same perceptions, but the summation of (A), (C), and (D) is less than 10%: approximately two-fifths of couples have different perceptions. Women's participation in household decision-making is, therefore, regarded as "objective" in category (B).[16)] The study then composes an index that takes 1 in the case of (B), and 0 otherwise.

In addition, as a proxy for household welfare, children's school attendance is analyzed (Table 3). The study presents an index that takes 0 if a child has never attended, repeated a class, dropped out, or left for more than two years, and 1 otherwise. This index is used as a dependent variable. The effect of "subjective" and "objective" participation on children's school attendance is examined. Summary statistics are presented in Table 4.

**Table 2** Couples' perception: Who makes decisions on how to spend a husband's earnings?

| | Wife's perception | Husband's perception | Freq. | Percent |
|---|---|---|---|---|
| (A) | wife | wife | 57 | 0.54 |
| (B) | together | together | 5,514 | 52.02 |
| (C) | husband | husband | 845 | 7.97 |
| (D) | other | other | 23 | 0.22 |
| (E) | wife | husband | 163 | 1.54 |
| (F) | husband | wife | 48 | 0.45 |
| (G) | wife | together | 449 | 4.24 |
| (H) | together | husband | 1,653 | 15.59 |
| (I) | together | wife | 202 | 1.91 |
| (J) | husband | together | 1,437 | 13.56 |
| (K) | wife | other | 2 | 0.02 |
| (L) | together | other | 37 | 0.35 |
| (M) | husband | other | 15 | 0.14 |
| (N) | other | husband | 38 | 0.36 |
| (O) | other | together | 115 | 1.08 |
| (P) | other | wife | 2 | 0.02 |
| | Total | | 10,600 | 100.00 |

Source: Made by the author

**Table 3** School attendance of children aged 6–14

| School attendance status | Freq. | Percent |
|---|---|---|
| Never attended | 3,751 | 12.50 |
| Entered school | 2,400 | 8.00 |
| Advanced | 22,107 | 73.65 |
| Repeating | 477 | 1.59 |
| Dropout | 326 | 1.09 |
| Left school 2+ years ago | 957 | 3.19 |
| Total | 30,018 | 100.00 |

Source: Made by the author

**Table 4** Summary statistics

| | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| School attendance (entered or advanced =1) | 30,018 | 0.8164 | | 0 | 1 |
| Wife's schooling years | 10,600 | 4.7748 | 5.1991 | 0 | 23 |
| Husband's schooling years | 10,600 | 7.2224 | 7.4530 | 0 | 24 |
| Wife's age | 10,600 | 33.7155 | 5.5047 | 19 | 49 |
| Husband's age | 10,600 | 39.1412 | 5.9890 | 20 | 60 |
| Rural dummy (rural = 1) | 10,600 | 0.4909 | 0.4999 | 0 | 1 |
| Girl dummy (girl = 1) | 30,018 | 0.4743 | | 0 | 1 |
| Perception dummy (same perception, "jointly" = 1) | 10,600 | 0.5202 | | 0 | 1 |
| Household assets | 10,600 | 568.3025 | 100,289.3 | –172,704 | 228,918 |

Note: Results of other variables are omitted to save space.
Source: Made by the author

**Table 5** Estimation results: Subjective participation

| | dy/dx | z-value |
|---|---|---|
| Wife's schooling years | 0.0069 | (6.76)*** |
| Husband's schooling years | 0.0104 | (13.25)*** |
| Wife's age | 0.0021 | (2.74)*** |
| Husband's age | –0.0013 | (–2.05)** |
| Rural dummy (rural = 1) | 0.0639 | (9.08)*** |
| Girl dummy (girl = 1) | –0.0304 | (–5.62)*** |
| Perception dummy ("sujective" participation) | 0.0109 | (1.42) |
| Household assets (*10^3) | 0.0008 | (13.78)*** |
| Log likelihood = –9864.2122 | | |

Note: * Significant at 10%; ** significant at 5%; *** significant at 1%. To save space, estimates for other variables are not reported.
Source: Made by the author

**Table 6** Estimation results: Objective participation

| | dy/dx | z–value |
|---|---|---|
| Wife's schooling years | 0.0040 | (5.52)*** |
| Husband's schooling years | 0.0106 | (19.04)*** |
| Wife's age | 0.0024 | (3.69)*** |
| Husband's age | 0.0009 | (1.53) |
| Rural dummy (rural = 1) | 0.0679 | (12.52)*** |
| Girl dummy (girl = 1) Same perception dummy | –0.0265 | (–6.3)*** |
| (objective participation: "jointly" = 1) | 0.0100 | (2.28)** |
| Household assets (*10^3) | 0.0006 | (15.13)*** |
| Log likelihood = –12628.88 | | |

Note: * Significant at 10%; ** significant at 5%; *** significant at 1%. To save space, estimates for other variables are not reported.
Source: Made by the author

Probit estimation results are shown in Table 5 for "subjective" participation and Table 6 for "objective" participation. The results are summarized as follows. "Subjective" participation is not particularly meaningful because the coefficient is positive but not significant. However, "objective" participation strongly affects household welfare. These results suggest that "objective" participation should be emphasized for development, which is consistent with Sen (1999).

However, it is noteworthy that this study's conception of "objective" participation might only imply good relations between wives and husbands. It must also be noted that, in some cases, even "subjective" participation is evaluated as valuable.

## 7. Concluding remarks

This paper aimed to present recent trends in India's demographic characteristics and examine the effects of female autonomy on child welfare, regarded as one of the most

important components in women's empowerment. The demographic characteristics vary among regions, which is inconsistent with Dyson and Moore's (1983) interpretation. In recent decades, significant improvements can be observed in many states, though to varying extents. Therefore, there is still considerable scope for future development.

In the empirical analysis using NFHS-3 data, the effects of female autonomy were examined to pay attention to whether female participation in household decision-making was "subjective" or "objective," and which is effective for child welfare. The results of the regression analysis indicated that it is not female "subjective," but "objective" participation that affects child welfare strongly. However, it does not always mean that "subjective" participation is not useful at all.

Finally, several limitations of this paper should be mentioned. One problem is that the respondents' perceptions may be affected by other factors. In other words, the analysis might have endogeneity problems. In addition, space limitations prevented detailed examination of other questions related to their participation in household decision-making. These issues are left for future studies.

## Notes

1) See also Kishor (1993).
2) Wada (2013) also showed that changes in the 1980s and 1990s had entirely different characteristics in terms of both quality and quantity.
3) A similar link can be found for the relation between enrollment and labor force participation.
4) NFHS materials and findings can be obtained for free from the website of the Demographic and Health Survey (http://www.measuredhs.com).
5) NFHS-4 was scheduled to be conducted in 2015/16.
6) For NFHS-3, men were also interviewed using a separate "men's questionnaire."
7) To avoid problems attributable to the lack of information on younger generations, the figures were calculated for women aged 30–49.
8) The northeastern states are the following: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, are Sikkim.
9) IHDS was a sample survey of 41,554 households conducted in 2005/06. Data can be accessed for free at the IHDS website (http://www.ihds.umd.edu/).
10) Choice of these two goods for analysis does not mean they are particularly important.
11) For example, see Dyson and Moore (1983).
12) See also Qian (2008).
13) For example, Eswaran and Malhotra (2011) and Wada (2011) used equal weights for all questions.
14) However, like that of Deaton (2008), some studies emphasize "subjective" happiness.
15) For example, see Eswaran and Malhotra (2011).
16) Case (A) should also be regarded as "objective," but is omitted to save space. This should be examined in future studies.

## References

Anderson, S. and M. Eswaran

2009 What Determines Female Autonomy? Evidence from Bangladesh. *Journal of Development Economics* 90(2): 179–91.

Bardhan, P.

1974 On Life and Death Questions. *Economic and Political Weekly* 9(32–34): 1293–304.

Deaton, A.

2008 Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll. *Journal of Economic Perspectives* 22(2): 53–72.

Dyson, T. and M. Moore

1983 On Kinship Structure, Female Autonomy, and Demographic Behavior in India. *Population and Development Review* 9(1): 35–60.

Eswaran, M. and N. Malhotra

2011 Domestic Violence and Women's autonomy in Developing Countries: Theory and Evidence. *Canadian Journal of Economics* 44(4): 1222–1263.

Kishor, S.

1993 'May God Give Sons to All': Gender and Child Mortality in India. *American Sociological Review* 58(2): 247–265.

Lundberg, S., R. A. Pollak, and T. J. Wales

1997 Do Husband and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit. *Journal of Human Resources* 32(3): 463–480.

Murthi, M., A. C. Guio and J. Dreze

1995 Mortality, Fertility, and Gender Bias in India: A District-Level Analysis. *Population and Development Review* 21(4): 745–782.

Qian, N.

2008 Missing Women and the Price of Tea in China: The Effect of Sex-specific Earnings on Sex Imbalance. *Quarterly Journal of Economics* 123(3): 1251–1285.

Rosenzweig, M. R. and T. P. Schultz

1982 Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India. *American Economic Review* 72(4): 803–815.

Sen, A.

1999 *Development as Freedom*. Oxford: Oxford University Press.

Thomas, D.

1990 Intra-Household Resource Allocation: An Inferential Approach. *Journal of Human Resources* 25(4): 635–664.

Wada, K.

2011 What Effect Does Female Autonomy Have on Child Health? Microeconometric Evidence from Rural India. *Hitotsubashi University GCOE Hi-Stat Discussion Paper Series* 202.

2013 Changes in Employment Structures and Investments in Children's Education: Evidence from Rural India. *Hitotsubashi University PRIMCED Discussion Paper Series* 36.