

**GENDER BIAS IN A MARGINALISED COMMUNITY:  
A STUDY OF FISHERFOLK IN COASTAL KERALA**

**K. Pushpangadan  
G. Murugan**

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## **ABSTRACT**

Empirical analysis of female-male ratio in Kerala reveals that two communities, Fisherfolk and Scheduled Tribes, have gender bias in their population unlike rest of Kerala. An in-depth study on fishing households from two coastal hamlets in the state not only validates the lower proportion of females in the community statistically but also provides justification of Sen's alternative version of "cooperative conflict" model as an explanation for the lower well-being of females. All four basic functionings - morbidity, longevity, education, nutrition- estimated from survey data using capability approach show female deprivation. Further, it provides evidence to argue that lower bargaining power of females in the intra household distribution of resources emanates from their worse breakdown position, their valuation of family interest above self-interest and their lower perceived contribution to household opulence.

**JEL Classification** : J16, C70

**Key Words** : deprivation, capabilities, well-being, co-operative conflict

## Introduction

Comparative analysis of development experience suggests the following relationship between economic growth and sex ratio, the ratio of females to males in the population. At the expense of excluding borderline cases, one could broadly classify all countries into four groups based on per capita income and sex ratio. The first group is the industrialised countries where sex ratio is greater than one except for Iceland<sup>1</sup>. The second group is the developing countries where the ratio is less than one in most cases. Third and fourth are mostly exceptions. In the third group, we include regions with higher levels of development but with lower levels of gender equality reflected in sex ratio unfavourable to females. Indian states of Punjab and Haryana and a few of the oil rich countries of the Middle East are cases in point. Final group, the fourth, includes Myanmar, Indian state of Kerala and sub-Saharan Africa where sex ratio is greater than one reflexing lower gender inequality at lower levels of economic development. The fourth case, especially that of Kerala, has been studied extensively in the development literature in order to project it as an alternative and cost effective model of social development<sup>2</sup>. The internationally acclaimed social development model

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1 The only country in the northern hemisphere with an 'unfavourable sex ratio' is Iceland. But a comparison of age-specific sex ratio with that of Japan seems to suggest it is due to lower mortality rates of males in this society. Hence the lower ratio is due to lower mortality of males in this ice-covered land.

2 See Dreze and Sen (1995,1996) and Sen (1992,1998) among others.

has an equity problem in the sense that benefits, opportunities and well being are not uniformly distributed across regions, communities and individuals. For example, it is found that female proportions among fisherfolk and scheduled tribe households in Kerala are lower than that for the state as a whole indicating female deprivation in such communities<sup>3</sup>. Spatial unfavourable sex ratio seems to be valid for the district of Idukki in Kerala according to 1991 census. However there is skepticism about the validity of this 'missing females' problem in Kerala even among marginalised communities. The paper has two objectives in this context. First is to test the statistical validity of the unfavourable sex ratio among fishing households, a marginalised coastal community in Kerala. Second is to put forth an explanation and its verification for the gender bias in this community by a case study of two coastal hamlets in Thiruvananthapuram district of Kerala.

The paper is organised as follows. Section II states the law of gender proportions and its behavior at different levels of economic development. It also reviews major studies among fishing community for additional evidence on sex bias and tests the statistical validity of the hypothesis. Section III deals with the methodology of the case study and estimates well-being using capability approach. Section IV explains gender discrimination as an outcome of Sen's alternative version of co-operative conflict model belonging to the class of bargaining models. It also examines the relationship between resource base of households and gender proportions. The final section summarises the major findings.

## II

### Biological Law of Gender Proportions

It is a biological phenomenon that mortality rate is higher among males than females in human species if life saving societal resources are distributed without any gender bias<sup>4</sup>. Lower levels of miscarriage of female foetuses are sometimes cited as evidence to the biological superiority of females. It is commonly observed that sex ratio at birth is slightly favourable to males, about 103 to 106 for every 100 female births<sup>5</sup>. The slight increase in male proportion at birth is explained as the precautionary step by nature for maintaining gender balance in human population arising from higher male mortality rates. Higher male mortality rates in almost all age groups would make females outnumber males particularly in cross-sections of population<sup>6</sup>. Accordingly, sex ratio would be less than one in early childhood and gradually exceeds unity towards the end of life cycle. This pattern of gender proportions favourable to females is generally observed in all industrially advanced countries where very little bias exists in the allocation of resources within the households. The behaviour of age-specific sex ratio for the four-group classification has not been examined in the literature, which is taken up in the Indian context. Obviously, the case of industrially advanced economy cannot be taken from India. For this group, we have taken Japan for illustration, the most industrially advanced country in Asia. The other three are from Indian states: (1) Punjab is taken for the case of higher income and lower sex ratio; (2) Kerala for lower income

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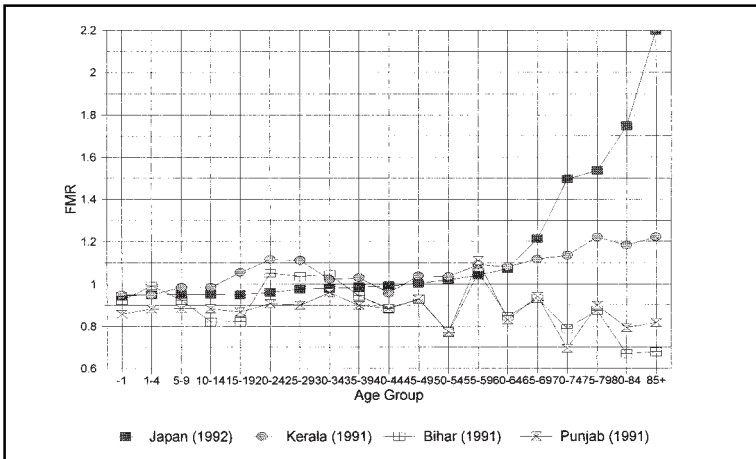
4 See for a survey of literature, Kynch and Sen (1983), Sen (1998) among others.

5 See Sen (1990a, 1990b, 1998) and Sudha and Rajan (1999).

6 Strictly speaking, this is possible only if the percentage of children is very small relative to adult population. Otherwise, the surplus males at birth would be large enough to outweigh surplus females in the adult population making the sex ratio less than one.

and higher sex ratio; and (3) Bihar for lower sex ratio and lower income. The age-specific ratios of the four groups are given in Figure.1.

**Fig. 1. Age - specific female-male ratio by levels of economic development**



Source: UN (1993) and GOI (1993)

Sex ratios at birth seem to be the same for Kerala, Bihar and Japan but not for Punjab<sup>7</sup>. The figure also shows that the initial surplus of males in Japan continues until the age group, 40-49 and thereafter declines. Further the ratio moves very closely with Kerala except for the age group 15-35. The female advantage as shown for Kerala and Bihar in the age group, 15-35, above Japan can be attributed to male migration<sup>8</sup>. The decline in Kerala's ratio after 64 is mainly due to a lower life expectancy in Kerala compared with Japan. It is interesting to note that female deprivation exists during the entire life cycle in Punjab. Female disadvantage in the age group 5-15 is found to be highest for

7 Historically this is the case for Punjab as evident from the studies of Visaria (1961).

8 For evidence on migration effects in Kerala, Zacharia, et.al.(1999).



Bihar even though ratio at birth is more less the same like that of Kerala. This seems to suggest that the problem of 'missing females' in Bihar mostly takes place during the age group, 5-15. It is evident from the disaggregate, state level, analysis of the sex ratio in India that gender bias can occur at different levels of development. The variation can also be observed within a region itself. Take the case of Kerala.

The benefits of the internationally acclaimed model of high social progress at very low levels of income have not been percolated, as noted earlier, to marginalised communities like the tribal and fishing community in Kerala<sup>9</sup>. This finding is sometimes dismissed as a small sample problem. In order to demonstrate that it is indeed not the case, we review most of the studies during the last two and half decades for additional evidence on gender bias in Table 1.

It can be seen that all studies without exception show an unfavourable sex ratio among fishing households. It may not be an exaggeration even to conclude that the gender bias is not reducing but getting aggravated as years pass by. Statistical validity of the female disadvantage as reflected in the lower female proportion is tested in the following way:

Let the proportion of females from the sample be 'p' and for rest of Kerala be P. If P is taken as true value of the population proportion, then random variable, p - P, will be approximately normally distributed with mean zero and variance nPQ; where n stands for the sample size<sup>10</sup>. For our sample p = 0.483 and for the State, P = 0.509 from the Census of 1991. The calculated value of the standard normal variable,

$$\frac{p-P}{\sqrt{PQ/n}} = 2.0$$

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9 See Agnihotri (1995) and Kurien (1995).

10 See Bulmer (1979:p.144).

**Table 1: Survey of Female - Male Ratio of Fishing Households**

Study	Source	Region	Female - male ratio
1. Gulati (1984)	Census, 1971	Trivandrum district	979
2. Government of Kerala (1983)	Facts and figures, 1979	Trivandrum district	980
3. Vimala Kumari (1992)	Census, 1981	Vizhinjam panchayat, Trivandrum district	954
4. PCO (1999)	Survey, 1997	Vizhinjam panchayat, Trivandrum district	907
		Trivandrum district	924
5. Government of Kerala (1990)	Techno-socio-economic survey, 1985	Coastal Kerala	940
		Trivandrum district	927
6. Government of Kerala (1991)	Socio-economic survey of fishermen, 1985	Coastal Kerala	946
		Trivandrum district	902
7. Kurien (1995)	Census, 1981	Coastal Kerala	972
8. Pushpangadan & Murugan, (1999)	Sample survey, 1998	Karimkulam panchayat and Kottukal panchayat, Trivandrum district	917

which is significant at 5 % level. A serious limitation of the estimated population proportion,  $P$ , is that it is an overestimate since it excludes the migrants, majority of them males, from the state. There is no way of adjusting for the bias since no reliable data exist on migration. But a recent study in Kerala conducted in 1998 provides some information on migration for the first time<sup>11</sup>. The migration adjusted female-male ratio,

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11 See Zachariah, et. al. (1999)

according to this report, is given as 958 indicating no 'surplus females' in the population. Does this mean that female surplus observed historically in Kerala is getting reversed? The reversal hypothesis on sex ratio has no precedent in history. Further, Figure 1 provides evidence to show that the gender bias, if exists, is not valid at least among the population below the age of 15 since the age specific ratio of Kerala is comparable with that of Japan. In other words, the gender discrimination is applicable to the population born before and not after 1976 since the estimates related to 1991 Census. It can be concluded that gender bias exists among fishing community in Kerala.

Now our main task is to identify an analytical framework that explains the adverse gender ratio prevailing in the community. After reviewing the theoretical literature, Sen (1984, 1990b) argues that bargaining models have an advantage over the standard theoretical constructs such as "household production function" and "family allocation models" in capturing the co-operation in production and conflict in allocation of resources within households. But the simplistic bargaining approach has serious limitations of not including the informational base of gender issues, as noted by Sen (1985, 1990b), especially that of their well-being at breakdown position, their perceived interests and contributions in deciding the bargaining strength of individuals. Empirical relevance of the model is being examined by a case study of two coastal hamlets in the state of Kerala.

### III

#### **Data**

Sample households from two coastal hamlets - Adimalathura in Kottukal Panchayat and Pulluvila in Karumkulam Panchayat, from Thiruvananthapuram district of Kerala state - inhabited predominantly

by fishing community were selected for the case study<sup>12</sup>. A census of all households in the hamlets were conducted for generating the sample frame with information on housing conditions and demographic characteristics. Two hundred households have been selected at random from a total of 1892 listed households using circular systematic sampling technique. The spatial distribution of the sample according to probability proportionate to the population in the respective hamlets is as follows: 84 from Pulluvila and 116 from Adimalathura. The survey period was from February 1998 to February 1999. On a careful scrutiny, data from seven households in the sample were found to be either incomplete or of poor quality. Therefore, only 193 households were considered for the present analysis.

From the survey data, we examine empirical validity of Sen's alternative approach to co-operative conflict' in explaining the gender bias. First part of the model is the measurement of well-being arising from personal interests of the household members. Second part consists of the informational base related to well-being of individuals if the bargaining process breaks down. It also examines the "directional responses of the outcome" in the cooperative conflict model to player's perceived interests and contributions. Let us take up estimation of well-being first.

Since well-being in the traditional bargaining model is usually evaluated in utility space, which is highly subjective and ambiguous, Sen suggests an objective approach based on capabilities. Here, we consider only four basic capabilities-, escapable morbidity, avoidable mortality, educational attainments and nutrition status- among the fishing households. The issues in the estimation are discussed below starting with morbidity.

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12 Panchayats are the smallest units of self-governing institutions in Kerala.

## Escapable Morbidity and Gender

Morbidity, an important aspect of health status related to well-being, has been taken as the capability to lead a disease free life. A lower morbidity would indicate, better health status and thereby higher well-being and vice versa. However, its measurement from the survey data is subject to a high degree of error due to: (i) the perception bias of the informant and (ii) the inability of the investigator to infer illness accurately. Latter problem may be reduced considerably if the information is being collected by qualified medical practitioners, a very costly affair. In this survey, an alternative cost effective method has been employed whereby only symptoms of major illnesses were collected<sup>13</sup>. This information is then converted to incidences of diseases with advice from medical practitioners to arrive at the morbidity rates unlike in National Sample Surveys and National Family Health Surveys. The morbidity arising from this methodology is given in Table 2.

**Table 2. Morbidity and Gender.**

Sex	Morbidity rate	
	Sample	Kerala
Male	7.0	2.6
Female	15.8	3.0

Source : i. Same as above.

ii. Kannan, et. al. (1991; p. 80), Table 5.12.

The table shows that morbidity rates of females are more than double that of males for the coastal region. The difference is only marginal

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13 Difficulties in collecting information on long term diseases made us to restrict illness to those occurred during last two weeks preceding the date of survey and that too mostly water and sanitation related illness. Therefore the morbidity reported here could be an underestimation.

for Kerala. This would mean that females have a higher chances of getting sick from water-borne and sanitation related diseases and more prone to health risk in the sample region compared with rest of Kerala. Now let us look into the second functioning, avoidable mortality.

### **Avoidable Mortality and Gender**

Life expectancy, indicator of avoidable mortality, can be estimated if birth and death rates of the community are available. Neither of them is available from a dependable source. The survey gives only the age-specific distributions of the population. From this ratio, one could draw comparative chances of survival as shown in Table 3.

**Table 3: Age-specific Female-male Ratio, Kerala and Sample Region**

Age group	Female male ratio		Sample ratio to state ratio
	Rural Kerala	Sample village	
	(1)	(2)	(2)/(1)(%)
0-1	0.944	0.793	84
2-5	0.945	0.818	86.5
6-18	0.99	0.947	95.7
19-35	1.082	1.005	92.9
36-50	1.016	1.105	108.7
51-60	1.059	0.733	69.2
>60	1.103	0.708	64.2
All groups	1.036	0.917	89.1

Source: Pushpangadan and Murugan (1999);  
GOI (1993)

The table clearly points out that relative social deprivation of females, as reflected in the unfavourable sex ratio, is uniformly higher in all age groups except 36-50. For example, if the state ratio is taken as the standard, then one could argue that sixteen female children<sup>14</sup> are 'missing' in the age group 0-1 and fourteen in the age-group 2-5. This deprivation is very severe towards the end of the life cycle, greater than 60 years. This seems to suggest that very few females reach old age, which is contrary to the existing pattern in Kerala and is more or less akin to that of Punjab or Bihar. It is worth noting that there are only 917 females per thousand males in the sample region while it is 1036 females for the state of Kerala. This overall ratio is about 10.9 % less than the state average. The only age group in which the females have a better survival rate is in the latter half of the reproductive age (35-50). The advantage reflected in this age group can be valid only if death rates are lower among females in this age group; the verification of which depends on the availability of regional sex - specific mortality rates. This is extremely difficult to obtain; if at all available, it is highly unreliable. However, there exists an alternate source - death records maintained by the Church- from which reliable death ratios could be obtained since almost the entire hamlets are inhabited by Christians<sup>15</sup>. Age-specific death ratios obtained from the Parish Records for the period, 1970 - 98, are given in Table 4.

From Table 4, the sex ratio of infant's death is 0.73. In numbers, this would mean that 73 female deaths occur for every 100 male deaths. Even if under reporting of deaths occur in this age group (0-1) due to

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14 See Sen (1990a) for the methodology

15 The distribution of population according to religion is; 1% Hindus, 1.5 % Muslims and the remaining 97.5 % are Christians

**Table 4: Female-male Death Ratio by Age, 1970-98**

Age	Female- male Ratio
0-1	0.73
2-5	1.29
6-18	1.02
19-35	0.68
36-50	0.92
51-60	1.17
> 60	0.64

Source: Church records (Adimalathura and Pulluvila)

religious reasons, it is consistent with the demographic law of more male deaths during infancy<sup>16</sup>. Higher death rates among females in the age groups, 2-5 and 6-18, might be due to the inequitable distribution of life sustainable resources for avoidable mortality. The apparent female advantage reflected in the favourable sex ratio in the age-group, 19-35 and 35-50 in Table 3, is not real because of the higher death rates of males in these groups arising from their occupational hazards, food habits and style of living<sup>17</sup>. It can be concluded that female deprivation and well-being are more or less the same during their life cycle in the community. Let us examine the third functioning aspect, level of education, among the households.

### **Illiteracy and Gender**

Illiteracy and gender aspects are examined in Table 5. Illiteracy in the sample area is almost 39 % at a time when the state is nearing full

16 Death won't be recorded if the infant dies before baptism, a religious ceremony to become Christian.

17 See Charles (1997) for a documentation of the food habits and style of living that affect health conditions in Pulluvila. The situation in the other region, Adimalathura, cannot be different.



literacy. Illiteracy rates when compared at district level are abominably high. It is almost five times higher than the district average for males, whereas it is only two and half times for females.

**Table 5: Illiteracy by Sex and by Age**

Age	Male illiteracy (%)		Female illiteracy (%)	
	Percentage to total	Percentage to group total	Percentage to total	Percentage to group total
0-5	--	--	--	--
5-15	1.3	19.3	0.7	3.1
15-18	1.3	16.3	1.5	15.7
>18	36.1	54.6	37.2	56.1
Total	38.7	-	39.4	-
Trivandrum District *	8.0	-	15.8	-

Source:- Sample survey

Census 1991.

\* Children up to six are excluded from the rate.

It is observed that overall female illiteracy is marginally higher than that of males for the sample households. The same conclusion is valid for age - specific illiteracy except for the age group, 5-15. This may be due to male children dropping out from school for the traditional occupation of fishing in order to supplement households' income <sup>18</sup>. This perhaps explains the high percentage of males (60 %) in the drop

18 This is partly due to the training needed for learning the traditional occupation at an early age. See Kurien (1992; p.16) for evidence on this point.

-outs from school. Further examination of illiteracy and income levels of households taking per capita floor area<sup>19</sup> as a proxy for income is shown in Table 6.

**Table 6: Correlation between Per Capita Floor Area and Illiteracy by Sex**

	Number of illiterates per household		
	Total	Male	Female
Per capita floor area	- 0.252	- 0.18	- 0.247
Significant level	0.01 %	-	0.001 %
	n=174	n=143	n=134

Correlation analysis clearly brings out the gender discrimination in resource allocation for education. Statistically significant inverse relationship between per capita floor area and illiteracy is observed in the case of females but not for the males. This finding along with higher drop-outs among male children seems to suggest that only targeted educational policy can make the community fully literate.

### **Nutrition and Gender**

Nutrition levels of members in a household depend on (1) availability of food and (2) its intra household distribution. The latter is extremely difficult to measure since it is the quantity of food that goes from 'hand to mouth' which is purely a private affair and is quite often very difficult to observe<sup>20</sup>. As a result, indirect methods, such as nutrition deficiency and anthropometric analysis, have been employed to bring this inequality<sup>21</sup>. Indirect methods could not be attempted since no

19 Attempts to estimate income of fishermen households indicate that it is highly unreliable due to the seasonality and volatility of fish catch. See Abraham (1985).

20 See Sen (1984) for a detailed account of this measurement problem.

21 See Sen and Sengupta (1983) for nutrition based analysis and Sen (1987) for anthropometric evidence.

information was collected in the survey for such an analysis. Only information that is available to infer the nutritional status of the members of the households is the expenditure on food. We provide the following method to bring out the inequality in food distribution which affects the nutritional status of household members from expenditure data. One way, perhaps the simplest, is to infer the food intake from expenditure survey using incremental method on household size and consumption. In this method, for example, an adult male food intake is taken as the difference in the food intakes of two households which differ in size only by an adult male. Similarly, one could obtain estimates for adult female and children. Application of the incremental method did not yield any consistent result on the inequality in the allocation of food. This may be due to the influence of socio- economic variables on food consumption other than family composition. An alternative method is, therefore, used to bring out the gender discrimination in food allocation. For achieving this purpose, we have classified all the households into three groups based on percentage of females in the households as follows: (1) less than or equal to 25 percent; (2) between 25 and 75 percent; and (3) greater than or equal to 75 percent. In order to bring out the disparity in food intake more sharply, we have considered only the first and the last categories. The per capita expenditure by category is given in Table 7.

**Table 7: Per Capita Expenditure by Proportion of Females in the Household**

Proportion of females In the households (%)	per capita expenditure per day (Rupees)
≤ 25	18.5
> 75	14.4

Source: Same as above

Table 7 provides evidence to support gender inequality in per capita expenditure on food since households with higher proportion of

females have lower per capita expenditure. But the estimates are subject to several limitations. One could argue that the observed inequality may be attributed to income effect because of its positive effect on the demand for food. In other words, the observed lower per capita food expenditure may be attributed to lower income levels of households. Gender bias is valid only if per capita income of the households with higher proportion of females is also higher. Studies on the economic status of fishing households have suggested that measuring income is extremely difficult due to its unstable and seasonal nature<sup>22</sup>. Therefore, we have taken per capita floor area as a proxy for income. The per capita floor is 4.7 square meters for the first group and 11.3 for the last group. Hence one could plausibly conclude that lower per capita expenditure is not due to lower income levels. The second argument that can be put forth is that the observed disparity in per capita expenditure is due to lower physiological requirement of nutrients for females. For example, energy requirement of a normal adult male doing moderate work is 2800 Kilo calories per day while for the females<sup>23</sup> it is only 2200 Kilo calories. The above difference in requirements would mean that the expenditure figure needs to be expressed as adult equivalent scales. The per capita expenditure adjusted for equivalent scales still shows the disparity in the per capita expenditure per female.

The inequity will be much higher if we further incorporate the widely practiced custom of gender bias in serving food among the members of the household. Anthropological studies among fisherfolk indicate that females take food only after serving males<sup>24</sup>. Under this

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22 Abraham (1985).

23 See Park and Park ( 1991: Table 19; p. 347).

24 See Gulati (1984; p.71) for anthropological evidence.

customary practice, food availability for females would be lower than the average reported in Table 7, if there is not enough food, which is likely the case in most of the times. This is to ensure that males, the main bread-winners, get enough food for their strenuous work of fishing. Since average family size is about 6.3 for households in the first group and 4.3 in the second category, any quantity discount for bulk purchasing would only widen the disparity of food availability.

This gender inequality in the allocation of food and its impact on nutrition can only worsen by the postponement of taking meals during day time by females without in-house latrine facilities. The survey results show that 18.9 % of adult females are forced to abstain from taking food during daytime. The combined effect of insufficient food supply and of forced postponement of taking food late in the evening would further reduce the nutritional status of females. This would increase the chances of females getting sick leading to lower life expectancy and longevity.

All the basic capability measures of well-being clearly show females at a disadvantageous position in any bargaining outcome. The limitation of the model, as pointed out by Sen, is that it confines only to individual interest without examining the effects of "other variables such as conceptions of desert and legitimacy .." and "the nature of social technology" on gender divisions in a society. In the next part, we take up these issues for detailed analysis. We also examine the relationship between the endowments of households and the achieved basic capabilities.

#### IV

Sen concentrates mainly on three directional features that influence the bargaining solution. They are: (i) breakdown well-being position;

(ii) perceived interest; and (iii) perceived contribution. Let us examine the implications in our study.

### **Breakdown Well-being Position**

Our estimation clearly shows that well-being measured through capability approach is unfavourable to females. This point in the well-being space can be placed either in the break down or in the collusive point in the bargaining outcome. Obviously, if his/her initial position is at a break down point any further collusive effort would end up in lower well-being due to a lower 'bargaining' power and in worse social arrangement<sup>25</sup>. If it is collusive point, then females would end up in 'more of a mess' in the break down position weakening their bargaining power substantially in sharing the resources for survival. Introduction of 'threat' as part of the analysis would only make the solution much worse to the threatened<sup>26</sup>. Case study materials provided by Gulati (1984) on the profiles of fisherwomen in Kerala seem to support this. For example, in one of the case studies narrated, the house wife in a fisherman household expressed her inability even to take decisions on family planning without the consent of her husband<sup>27</sup>. Now let us have a look at the perceptions and its qualitative responses.

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25 Strictly speaking, this solution can be characterised as Nash solution to a bargaining problem with an outside payment for males in the well-being space. See Gardner (1995) chapter 12 for details.

26 See Sen (1990b) for an elaboration of this point.

27 See Gulati (1984; P.77). To quote "Every time I (house wife) there in a pregnant condition, they (medical personnel) would ask me if I would like my pregnancy to be terminated in view of my poor health. But who was I to say 'yes'? Valerian (husband) too would be asked whenever he was with me. He always said "no". Religious conviction may have played a role in this case. Still it shows her weak bargaining power in any negotiations including her health status.

### **Perceived Interest Response**

Observed lower female well-being can also be the outcome of a bargaining process where female's self-interest perception assigns lower value to her own well-being. This is the case if the females have an agency role so that welfare of the family outweighs her own personal interest. This explanation is sometimes provided for gender inequality in Indian rural households<sup>28</sup>. Evidence through case studies support the agency role of females among fishermen households as reflected in the priority shown for males in the distribution of food and the preference for male children in the family<sup>29</sup>. However Aggarwal (1994) argues against this hypothesis. She argues that the preference shown by females would be for her own self-interest of getting protection in the old age and sustaining her present level of consumption. Sen recognises the problem as an investment issue<sup>30</sup>. The task would be to incorporate the short and long run positions in the bargaining process, a problem beyond the scope of the present paper.

### **Perceived Contribution Response**

Perceived contribution of an individual in the household production process depends largely on the nature and skill of work. The relevance of this notion requires an analysis of gender specific activities in the region. This is examined in Table 8.

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28 See Kynch and Sen (1983) and Sen (1984; 1990b)

29 Preference for males including boys is so deep rooted in the culture as can be seen from the case study by Gulati (1984; p. 111): "Francis (husband) and I (housewife) did discuss the matter... So I underwent the operation after my third delivery. Still both of us badly wanted a son. Maybe we fishermen are so conditioned since men go out to sea, never a woman... We adopted a deserted infant (boy) through the hospital... Thus now we have four children, three girls and a boy."

30 See Sen (1984, P.377) for evidence.

**Table 8 : Occupation by Literacy and Gender**

Occupation	Illiterate		Literate	
	Male	Female	Male	Female
House wife	0	116 (55.0)	0	123 (38.0)
Fishing Labour & own fishing/coolie	165 (76.4)	5 (2.3)	85 (24.7)	0
Service/trade/fish vending	2 (0.9)	67 (31.8)	8 (2.3)	16 (4.9)
Unemployed	5 (2.3)	1 (0.5)	55 (16.0)	15 (4.6)
Student	0	0	134 (39.0)	115 (35.5)
Self employed/employed abroad and salaried	1 (0.5)	4 (1.9)	19 (5.5)	25 (7.7)
Others	43 (19.9)	18 (8.5)	43 (12.5)	30 (9.3)
Total	216 (100)	211 (100)	344 (100)	324 (100)

Source: Same as above

- Figures in parenthesis are percentages.

Among literates, 22 % of women and 45 % of men are gainfully occupied. In the case of illiterates, gainful employment is 97.7 percent for males and 44.5 percent for females. It may be noted that 31.9 percent of female illiterates are fish venders, the most important activity of females. Only 2.3 percent of male literates and 4.9 percent of female literates engage themselves in fish vending, which reveal the lower preference for such jobs. Fish vending is only an ancillary activity of



the main occupation of fishing and is considered only as a spare time activity. Moreover, fish vendors are mostly married women who consider the jobs as socially not befitting. Hence the perceived contribution of females in the production process is not considered to be very high in the community<sup>31</sup>. The pressure on the family to get them married at the age of eighteen and the widespread prevalence of dowry system contributes further to the lower valuation of females. Above all, male children are valued more since the parents would prefer to spend their old age with sons rather than with daughters due to cultural reasons. All these considerations, reinforcing one another, would make the households underinvest in females for avoidable mortality leading to unfavourable sex ratio.

The analysis has not examined the relationship between endowments of the households and achieved basic capabilities. A single best overall indicator of well-being is the sex ratio itself, as pointed out by Sen (1998), since it reflects how the resources are equitably distributed within the households. The task would be to link it with the endowments of the sample households which requires an appropriate measure of endowment. Most important indicator of the endowments of a household is the income earned by the household members. As noted earlier, the estimate of income is highly unreliable in this community. Hence, we have taken per capita floor area as a proxy for per capita income. The relationship is examined by estimating per capita floor area of households with favourable and unfavourable sex ratio. The former is defined as female-male ratio  $> 1$  and the latter as female-male ratio  $< 1$ . The results of the two by two classification are given in Table 9.

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31 See for a similar example of female lace makers of Narsapur cited in Sen (1990 b; p. 144).

**Table 9 : Female - Male Ratio and Per Capita Floor Area**

Female - male ratio	Average per capita floor area (m <sup>2</sup> )
> 1	10.1 (0.94)
≤ 1	9.7 (0.25)

Source: Same as above

-Numbers in parenthesis are standard deviations.

It suggests that sex ratios depend on the resource base of the households. More specifically, gender bias unfavourable to females takes place mostly in lower income households.

## V

### Summary and Conclusions

The much acclaimed social progress in Kerala, indicated by surplus females, has found to be lacking among fishing and scheduled tribes communities. An in-depth analysis of gender bias has been undertaken among fishing households selected from two hamlets in coastal Kerala. Statistical test shows that female proportion in the sample is significantly different from and lower than that of Kerala. There is no evidence to support the hypothesis that gender bias is slowly emerging in Kerala since age specific sex ratio from 1991 census is comparable with that of Japan at least among the population below the age of fifteen. Causes of the gender bias have been examined within the framework of bargaining models. Pure bargaining models are based only on personal interest reflected in utilities which are very difficult to measure; if measured are very subjective and ambiguous. Therefore, objective measures based on Sen's capability approach have been estimated. All four estimated capabilities - morbidity, longevity, nutrition and education- show that

females have lower well-being. The unequal well-being is then examined in the light of certain variables relating to conceptions of desert and legitimacy in the informational base of household arrangements. Analysis clearly shows that all the three responses -breakdown well-being position, perceived interest and perceived contribution - act in the same direction lowering the bargaining power of females in the existing social arrangement. Household endowments seem to affect the gender inequality since higher income households do have a better female- male ratio.

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