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GENDER DIFFERENTIALS IN TIME ALLOCATION: A STUDY OF HILL REGION OF RURAL WEST BENGAL

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Abstract

Women form an integral part of rural households through their active participation in paid and unpaid activities. However, their contribution to subsistence agriculture, domestic activities and other unpaid activities is either unaccounted for or is undervalued in conventional national income surveys. Women's predominance in unpaid activities has serious implications for their status in society and opportunities in the labour market. Time use surveys are emerging as a very useful tool in capturing and valuing women's unpaid work and their contributions to the rural economy. For an in depth understanding of women's daily life, their work and their contribution in the rural hill economy, the present study has been undertaken in the only two hill districts of the state of West Bengal. Taking a sample of 150 households from three villages, the study reveals significant differences between men and women in time devoted to household activities and the total time with women working for longer hours than men, although no significant differences were observed in the time devoted to crop production and livestock rearing. Significant differences were also observed in the time spent by women according to the size of holdings in certain activities.

Key Words: Hill, rural, time use, unpaid work, women.

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1. Introduction: In developing countries a sizeable portion of household production is for self consumption and little is offered for sale in the market. Further, domestic activities predominantly performed by women which include cooking, cleaning, care of household members etc. are also unpaid. Though contributing significantly to the welfare of the family and hence the economy, these activities escape enumeration in labour force and national income surveys which include only those activities which are offered in exchange for a price/wage. This aspect of women's work is perhaps best captured in household surveys concentrating on time allocation patterns of men and women [1]. In this context time use survey is emerging as a very useful tool as this survey provides detailed information on how individuals spend their time, on a daily or weekly basis, and reveal the details of an individual's daily life with a combination of specificity and comprehensiveness not achieved in any other type of social survey [2].

It has been estimated that the value of goods and services produced for self consumption within the household can be very high- up to 50 percent to 60 percent of the national GDP (Ironmonger 1998, Luisella Goldschmidt – Clermont 1995) [3], and exclusion of the value of these unpaid goods and services according to the conventional GDP data leads to considerable underestimation of the total income of a nation (Boserup, 1970; Beneria, 1992) [3]. It is therefore necessary to estimate the time spent on unpaid domestic activities through a well designed time use survey and compute its value at least in a satellite account to start with (Hirway, 2003) [3]. Further, conventional labour statistics also give only a partial view of the total labour use in a society since women's unpaid work is invisible in such data. Since the division of the total labour force in a household into paid and unpaid work generates the hierarchy within the household that is reflected in the lower status of women in the household as well as in the labour market, it is important to collect data on paid as well as unpaid work in the society to address the problem of gender inequality. Further, the burden of carrying out unpaid work "limits women's ability to participate in market activities and contribute to the economy of the households, and this, in turn, reinforces their low status" [4,]. Time use surveys can make the invisible work of women visible and thereby help in designing policies for gender equality [2]. Time use data therefore provide deep insights into women's daily life, the nature of their work, their leisure time, their say in decision making at household level, and the risks associated with collection of fuel, fodder, and water (Pandey, 1999) [5]. Unlike the traditional methods of data collection, a

time use survey collects information about productive activities in the household and thus captures unstructured work patterns (UN, 1991) [6].

Unlike many other resources time, as a resource is equally accessible to all- rich, poor, men, and women. As such, time poverty "is not about adding or taking away hours from a person but about the choices made in how this finite resource is used each day". The choice of time allocation to different activities among the different members of the household is often made according to the demands and composition of the household as a unit and is determined by a number of factors such as demographic, social and economic [4].

Rural women are an integral part of hill and mountain regions since they actively participate in all activities which are essential for sustaining their families such as crop production, livestock rearing, collection of fuel wood, fodder etc. in addition to cooking, cleaning, washing, caring for children, elderly etc. However, little information exists regarding the work patterns of women in the hill areas of the state of West Bengal. For a proper understanding of rural women's work, their roles and their contribution in the mountain families and the gender division in different activities the present study has been undertaken in the hill region of the state of West Bengal comprising the Darjeeling and Kalimpong districts.

2. Review of Literature: The advent of time use analysis may be traced to the early 1900s when they were used for the first time in social surveys for analysing the working time and leisure time available for the working class people in England and France during the process of industrialization [7]. Beginning in the 1920s, time use studies were carried out in UK, the centrally planned economies and in and USA for various purposes like development and community planning in the centrally planned economies, understanding the effect of new technology on the time use of farm homemakers in the USA, getting new insights in to human behaviour and life style of people in UK [8]. "Time use surveys were conducted in many other European countries during the 1930s to 1960s with a variety of objectives, such as understanding problems of commuting and length of commuting time, use of mass media by population, leisure time and its use by different socio- economic groups, etc." [9]. Stimulated by the field of "new household economics" which recognized the productive elements of unpaid household activities

developing countries also started conducting time-use studies in the 1970s for development planning purposes (Asia Society 1978) [8]. Most of these studies have investigated two main interrelated sets of concerns: the utilization of human resources in the household, particularly by women and children (with the new home-economics as framework of analysis), and the improvement in the measurement of employment, unemployment and underemployment (United Nations 1990) [8]. Time use surveys are now more or less well established in industrialized countries [9].

Time use data from industrialised as well as developing economies suggest that women spend more time in unpaid non-SNA activities vis-a-vis men who expend more time on paid SNA activities. The Human Development Report, 1995 and 2000 data for industrialised economies reveal that women's share in non-SNA activities ranges from 61 per cent of total work time in Canada to 81 per cent in the Netherlands; while male's share in non-SNA activity ranges from 21 per cent in Denmark to 48 per cent in the Netherlands. The proportion of total time spent on non-SNA work by women in developing countries ranges from 76 per cent in urban Columbia to 52 per cent in the mountainous region of Nepal. The proportion of time spent by men in non-SNA activities is as little as 13 per cent in urban Venezuela and 14 per cent in urban Indonesia [10]. A study conducted in Indonesia in 2004 shows that women spent about 6 hours working for business, 3 hours cooking food two times a day, 2 hours cleaning the house and yard, and about 1 hour for washing clothes, collecting water and firewood, going to the market, animal caring, and community gatherings respectively [11]. The 2011 OECD report found that total time worked (paid and unpaid, market and nonmarket) varied across the region, with the highest in Mongolia (10 hours for men and 11 hours for women) and lowest in Cambodia (6 hours for men and 7 hours for women). Women worked consistently longer hours in total work than men with men spending consistently more time in market work and women in non-market activities [4]. As reported in the ILO's Global Employment Trends, 2012 taking a sample of 35 countries, Berniell and Sanchez-Paramo (2011) find that the differences in time spent on housework varies from 30 per cent more time spent by women than men in Cambodia to 6 times more in Guinea. Nevertheless, although there are important regional variations, women around the world spend more time on housework than men. Making time-use more equal between the sexes is therefore

one of the factors that can help in promoting gender equality in the labour market and elsewhere (ILO, 2009) [12].

In India one of the earliest time use survey was carried out by Devaki Jain and Malini Chand in three villages each in Rajasthan and West Bengal during 1976-77. In 1983, the National Council of Applied Economic Research (NCAER) conducted a time-allocation study on a sub-sample of Employment and Unemployment Survey conducted in the 38th Round (1983) of the National Sample Survey Organisation (NSSO). A pilot survey on time-use was also conducted by the Directorate of Economics & Statistics, Government of Tamil Nadu during 1996. India conducted its first national time use survey on a pilot basis in 1998-99. The survey covered six major states in India from six major regions: Haryana from North India, Madhya Pradesh from Central India, Tamil Nadu from South India, Gujarat from West India, Orissa from East India, and Meghalaya from North-East India [9]. Time use surveys have been carried out at the micro level for proper evaluation of women's work.

A review of literature has shown that most of the time use studies were undertaken with the objectives of (a) measurement and analysis of quality of life or general well-being by emphasizing the importance of leisure time, (b) measurement and valuation of unpaid work (domestic and volunteer work), (c) improving estimates of paid and unpaid work, and (d) analysis of policy implications of development planning issues [8].Bhatia's (2002) study using the time use survey data conducted by Central Statistical Organisation (CSO) for 1998-99 shows that the while an average man spends nearly 45 hours on an average in a week doing work an average woman is engaged in work for over 53 hours a week on an average. Although women are found to spend a large portion of their time (20.61 percent) on extended SNA activities as compared to men whose contribution is much less (2.17 percent), their contribution in SNA activities is also quite significant (11.14 percent) albeit lower than that of men who spend a larger percentage of their time on SNA activities (24.98 percent) [6].

In 2011-12 time use survey was conducted on a sample of 200 households in rural Punjab. The results reveal that women spend only 4.9 percent of their time on SNA activities as opposed to men who spend 22.6 percent. However, they spend 56.6 percent of their time on non-SNA

activities and 38.5 percent on extended SNA activities due to greater family responsibilities. Women spend in a week about 17.4 hours for cooking, 9.3 hours for taking care of guests and visitors and 7 hours for cleaning, washing clothes, and caring of children respectively. The results of the time use surveys in India clearly show that women are predominant in subsistence production and informal employment in both rural and urban areas. Their work is often scattered, sporadic, and poorly diversified, and they spend long hours in unpaid SNA and non-SNA work. Therefore some policy changes are needed in the framework of the gender equality objectives promoted by the international community [11].

3. Objectives: The objectives of the present study are:

1. To highlight the gender differences in time devoted by men and women to different activities in the study villages.
2. To test for any significant differences in the time devoted to different activities by gender in the study villages.
3. To highlight the gender differences in time devoted by men and women to different activities in the study villages for different size class of holdings.
4. To test for any significant differences in the time devoted by women in the study villages on the basis of size class.

4. Study Area: The only two hill districts in the state of West Bengal i.e. Darjeeling and Kalimpong (a former sub-division of Darjeeling district up to 14th February 2017) were chosen for the present study to have a proper understanding of women's work in the hill regions. Located between 27˚13′ and 26˚ 31′ North latitudes and 88˚ 53′ and 87˚59′ East longitudes [13], the former district of Darjeeling (which includes Kalimpong district) forms a part of the north-eastern Himalayas of the Indian Himalayan range which stretches from Jammu & Kashmir in the west to Arunachal Pradesh in the east and extends up to 2,500 km in length and 250-400km in breadth. The district accounted for 3.55% of the total area and 2.02% of the total population of the state according to the Census 2011. A little less than half the population of the district (47 percent) reside in the hill areas among whom 67 percent reside in the rural areas as per Census 2011 [14].

5. Methodology: The method of purposive and random sampling has been followed for selection of the villages. Among the three hill sub-divisions of Darjeeling district only Darjeeling Sadar, and Kurseong have been selected as Mirik was included in Kurseong sub-division prior to its formation on 30th march 2017. Among the three Community Development blocks in Darjeeling Sadar sub-division, Darjeeling-Pulbazar was purposively chosen as it has a higher proportion of agricultural workers (44.2 percent). In Kurseong sub-division Kurseong block was chosen over Mirik due to proximity from the town. In Kalimpong district among the three Community Development Blocks Kalimpong II was selected due to higher proportion of agricultural workers (61.9 percent). One village each was then selected randomly from each block with a relatively high proportion of agricultural workers. The villages selected were Samalbong village in Darjeeling-Pulbazar block, Git Dubling Khasmahal village in Kalimpong II block and Sitong Khasmahal village in Kurseong block. Since most of the people in rural areas are involved in agriculture, blocks and villages with higher proportion of agricultural workers were chosen.

To have a proper understanding of how women and men in the sampled villages spend their time, the time allocated to different activities by the men and women were collected and tabulated. Taking 50 households from each of the three sampled villages a total of 150 households were selected. In each household the information was collected through in-depth interview of the female respondents as well as the male members, if present regarding the time spent by members of the households aged 15-65 years in various activities. The recall method was used to record the time spent in the different activities in the past one week which was averaged per day. For agricultural activities the total time spent per year was recorded and average for one day was calculated. Those attending educational institutions were excluded from the present analysis. The sample therefore consisted of: Samalbong village 74 men and 68 women, Git Dubling Khasmahal village 77 men and 74 women and Sitong Khasmahal village 80 men and 93 women.

A total of nine activities were selected. These included crop production; livestock rearing; household work which included cooking, washing and cleaning, looking after children and the elderly and purchasing of household articles; forage and fuel wood collection; fetching water; participation in social activities; participation in other income generating activities and personal

time which included washing and bathing, eating, recreation, taking rest between work, religious activities etc. Since the size of the land holding has an important effect on the labour inputs in rural areas, the differentials in time allocation to different activities on the basis of the farm size which has been grouped into three categories has also been studied. To maintain uniformity in categorisation of land holdings in the sampled villages, all the farms were divided in to three categories-less than 1 acre (small), between 1 and 2 acres (medium) and more than 1 acre (large). While Samalbong village had predominance of small holdings i.e. less than 1 acre (40 percent), Git Dubling Khasmahal village had predominance of large holdings i.e. more than 2 acres (48 percent). On the other hand Sitong Khasmahal village has more of medium holdings i.e. 1-2 acres (38 percent).

One-way analysis of variance (ANOVA) was used to test for significant differences in the time spent on various activities in the three sampled villages on the basis of gender and different size classes (only for women) in the three study villages. The data was analysed using the Statistical Package for Social Sciences (SPSS) version 23. ANOVA models are reasonably robust against certain types of departures from the model, such as the data not being exactly normally distributed (Kutner et al, 2005) [15]. In terms of violations of the assumption of homogeneity of variance, ANOVA is fairly robust in terms of the error rate when sample sizes are equal [16]. Equal sample sizes may be defined as the larger group size not being more than 1.5 times the size of the smaller group. In the present study the group sizes i.e. the number of males and females aged 15-65 years in each of the sampled villages are almost equal (i.e. the ratio is less than 1.5). Therefore, assuming normality and homogeneity of variances the ANOVA technique has been used in the present analysis to determine whether any statistically significant differences exist between the time spent by men and women in the different activities in each of the three sampled villages. The results of the ANOVA have been presented in the table.

While using the ANOVA for testing for differences in time spent by women in different activities according to size class, a *post hoc* test was conducted where the ANOVA shows a significant *F*-statistic (or *Brown-Forsythe* statistic where heterogeneity of variance is observed) to find out which of the size classes show statistically significant differences. Thereafter Games

Howell post hoc test was conducted due to difference in sample size and heterogeneity of variances to see which of the groups were statistically significantly different.

6. Results

6.1 Socio-demographic characteristics of the Study Villages

The socio-demographic characteristics of the study villages are shown in Table 1. Taking the primary activity of the household head, it can be seen that only 38 percent of the households in Samalbong village derive their income from agriculture, whereas in Git Dubling Khasmahal village 70 percent and in Sitong Khasmahal village 44 percent of households are dependent on agriculture. The three villages also differ according to the average size of land holdings and the average monthly household income. The primary farm activities in the sampled villages are crop production and animal husbandry. Rearing of silk worms, fish farming and horticulture are some of the allied activities that are undertaken by a few households to supplement their income. Besides these, the people are also engaged in non-farm activities like services, petty trade, casual labour in construction or rural works programme like MGNREGA etc.

Table 1. Socio-Economic and Demographic Characteristics of Sampled Villages

Village	**Samalbong**	**Git Dubling Khasmahal**	**Sitong Khasmahal**
No. Of Households	50	50	50
(A)Demographic Factors			
1.Population			
Males	117	127	128
Females	113	108	136
Person	230	235	264
2. Age			
Mean age of men	30.7	32.6	34.1
Mean age of women	30.7	37.0	33.8
(B) Social			
1. Family Structure			

Unitary Family(Percentage)	68.0	54.0	32.0
Joint Family (Percentage)	32.0	46.0	68.0
Average Family Size	4.6	4.7	5.28
Average no of adults	3.7	3.7	4.56
Average no of children (0-6)	0.9	1.0	0.66
2.Literacy			
Male Literacy	88.3	94.1	95.0
Female Literacy	83.0	86.7	85.2
3. Marital Status			
Married (Males)	59.1	70.7	54.7
Others (Males)	40.9	29.3	45.3
Married(Females)	62.6	71.7	52.9
Others (Females)	37.4	28.3	47.1
(C)Economic factors			
1.Primary Activity of Household Head (Percentage)			
Agriculture	38.0	70.0	44.0
Non-agriculture	62.0	30.0	56.0
2.Land Holding of Households (Percentage)			
Less than 1 acre	40.0	8.0	34.0
1-2 acres	32.0	44.0	38.0
More than 2 acres	28.0	48.0	28.0
Average land holding (acres)	1.4	2.8	1.7
3. Monthly Income of Households (Rs)			
less than 10000	54.0	6.0	22.0
10001-20000	38.0	40.0	54.0
20001-30000	4.0	38.0	16.0
30001-40000	4.0	14.0	6.0
40001-50000	0.0	2.0	2.0
Average monthly Income	11347.94	22814.83	15860.72

Source: Field Survey

6.2 Gender Differentials in Time Allocation

Table 2 shows the differences in the time allocated to different activities per day by men and women in the sampled villages along with the percentage of time devoted to each activity. It should however be mentioned here that all the activities are not carried out simultaneously by the men and women. Crop production is a seasonal activity so also is participation in other income generating activities for subsidiary status workers.

Table 2. Gender Differential in Time Allocation in the Sampled Villages

Village	**Samalbong**				**Git Dubling Khasmahal**				Sitong Khasmahal			
Activity	Time spent in hours (Average)		Percentage of time spent		Time spent in hours (Average)		Percentage of time spent		Time spent in hours (Average)		Percentage of time spent	
	M N=74	F N=68	M	F	M N=77	F N=74	M	F	M N=80	F N=93	M	F
Crop Production	2.49	3.00	19.34	19.98	3.75	3.49	28.15	22.60	3.17	3.25	24.27	22.19
Livestock Rearing	1.16	1.23	9.04	8.20	1.34	1.30	10.03	8.41	1.19	1.42	9.13	9.68
Forage Collection	0.94	0.99	7.30	6.59	1.23	1.45	9.20	9.40	0.76	1.02	5.79	6.93
Household Work	0.65	4.43	5.03	29.57	0.94	4.91	7.06	31.77	0.65	3.74	4.96	25.56
Fetching Water	0.02	0.24	0.15	1.58	0.01	0.21	0.06	1.35	0.11	0.11	0.82	0.76
Fuel Collection	0.16	0.26	1.23	1.75	0.16	0.24	1.22	1.57	0.21	0.20	1.59	1.33
Social Participation	0.07	0.04	0.54	0.28	0.08	0.05	0.63	0.32	0.05	0.03	0.42	0.23
Other	3.06	1.03	23.77	6.85	1.76	0.62	13.18	4.00	2.50	0.70	19.15	4.76

Income Generating Activities												
Personal Time	4.32	3.78	33.59	25.20	4.06	3.18	30.47	20.60	4.42	4.18	33.85	28.56
Total	12.87	14.99	100.00	100.00	13.34	15.46	100.00	100.00	13.05	14.68	100.00	100.00

Source: Field Survey

While women on an average devote 14.99 hours in a day while performing different activities, both productive and non-productive in Samalbong village, men devote only 12.87 hours for the same activities (F (1,140)= 22.471, p =0.000). In Git Dubling Khasmahal village while women expend 15.46 hours, the time expended by men is 13.34 hours every day (F (1,149) = 24.354, p=0.000). The corresponding figures in Sitong Khasmahal village are 14.65 hours and 13.05 hours respectively for women and men (F (1, 171) = 10.396, p =0.002). The ANOVA tests as shown in Table 3 reveal significant differences in average total time spent by men and women in all the three sampled villages. This clearly shows that women bear a greater burden than men in carrying out day to day activities.

In terms of hours spent per day women were observed to expend more time than men in livestock rearing, collection of forage, fuel wood and water; and more in household work in Samalbong and Git Dubling Khasmahal villages. Statistically significant differences in the time spent between men and women were found only in collection of fuel wood and water and household work in both the villages as can be seen from the results of the ANOVA (Table 3). In Sitong Khasmahal village the time devoted to fetching water was equivalent for men and women and the time devoted to collection of fuel wood was slightly lower for women, while the time devoted to livestock rearing, forage collection and housework were found to be greater for women wherein statistically significant differences were observed for the latter two categories.
In Samalbong and Sitong Khasmahal villages women expend more time in crop production also whereas in Git Dubling Khasmahal village the opposite is true. Git Dubling Khasmahal Khasmahal village being primarily agricultural with 70 percent of the households being

dependent on agriculture primarily, male involvement in agriculture in terms of time spent is marginally higher. In livestock rearing too the time allocated by women is higher than that by men in Samalbong and Sitong Khasmahal villages, whereas in Git Dubling Khasmahal village the time spent by men is slightly higher than time spent by women. However, the time spent by men and women in crop production and livestock rearing was not found to be statistically significantly different for all three villages. In other activities i.e. social participation, other income generating activities and personal time the time devoted by men is higher than the time devoted by women in all the villages and found to be statistically significant except for personal time in Sitong Khasmahal village which was not statistically significant. However no significant differences were observed in the total average time devoted by women to various activities in a day (F (2, 232) = 1.514, p-0.222) in the three study villages implying a similar pattern of work load of women across all three villages.

Table 3. Results of Analysis of Variance for Time Spent by Men and Women in the Sampled Villages

Activity	**Samalbong**		**Git Dubling Khasmahal**		**Sitong Khasmahal**	
	F-statistic	**sig.**	**F-statistic**	**sig.**	**F-statistic**	**sig.**
Crop Production	1.890	0.171	1.023	0.313	0.077	0.782
Livestock Rearing	0.198	0.657	0.161	0.689	2.611	0.108
Forage Collection	0.142	0.707	3.621	0.059	5.548	0.020
Household Work	394.396	0.000	650.344	0.000	328.472	0.000
Fetching Water	52.264	0.000	45.683	0.000	0.029	0.866
Fuel Collection	11.512	0.001	8.280	0.005	0.192	0.662
Social Participation	20.830	0.000	39.305	0.000	20.896	0.000
Other Income Generating Activities	44.400	0.000	22.538	0.000	59.748	0.000
Personal Time	14.091	0.000	26.220	0.000	2.441	0.120
Total Time	22.471	0.000	24.354	0.000	10.396	0.002

Source: Computed from Field Survey

The distribution of total time devoted to different activities each day reveals that maximum time i.e. 29.57 percent in Samalbong village and 31.77 percent in Git Dubling Khasmahal village were spent by women in household activities, followed by personal time. In Sitong Khasmahal village women were found to be devoting maximum time to personal activities (28.56 percent) followed by household work (25.56 percent). Crop production and livestock raising were the other two activities in which women spent a considerable proportion of their time. In Samalbong village crop production accounted for 19.98 percent while livestock rearing accounted for 8.20 percent of women's time. In Git Dubling Khasmahal village crop production and livestock rearing accounted for 22.60 percent and 8.41 percent respectively of women's time. In Sitong Khasmahal village women devoted 22.19 and 9.68 percent of their daily time to crop production and livestock rearing respectively. While 6.85 percent of women's time in Samalbong village was devoted to other income generating activities, only 4 percent in Git Dubling Khasmahal village and 4.76 percent in Sitong Khasmahal village of women's time was devoted to such activities. Smaller landholdings in Samalbong village may have caused women to look for options outside agriculture to supplement family income during the lean season. In Git Dubling Khasmahal and Sitong Khasmahal villages however, larger landholdings mean that women find some work or the other on the family farm itself reducing women's involvement in paid work outside agriculture. It may be recalled that the average land holding in Samalbong is 1.4acres as compared to 2.8 acres in Git Dubling village and 1.7 acres in Sitong Khasmahal village.

For the men on the other hand, the table reveals maximum time expended on personal activities. In Samalbong 33.59 percent of total time is devoted to personal and leisure activities, followed by 23.77 percent in other income generating activities, 19.34 percent in crop production, and 9.04 in livestock rearing. In Git Dubling Khasmahal 30.47 percent of men's total time is spent in personal and leisure activities followed by 28.15 percent in crop production, 13.18 percent in other income generating activities and 10.03 percent in livestock rearing. Similarly in Sitong Khasmahal men spend the maximum time in personal and leisure activities i.e. 33.85 percent followed by 24.27 percent in crop production, 19.15 percent in other income generating activities and 9.13 percent in livestock rearing. Participation in household activities constitutes a relatively smaller proportion on men's daily time allocation. Men in Samalbong village spend relatively greater proportion of their time in remunerative jobs outside agriculture in comparison to the

men in Git Dubling Khasmahal and Sitong Khasmahal villages who spend more time in agricultural activities. Size of the land holding which restricts opportunities for employment in agriculture could again be cited as a possible cause of this phenomenon.

It can be seen that although men and women both shoulder almost identical responsibilities in the different spheres related to crop production and livestock rearing including collection of fodder, they nevertheless bear a disproportionate burden of domestic activities along with collection of water and fuel wood. The time commitments of women to tasks such as those mentioned above leave little time for them to participate in other income generating activities or fulfil social commitments. It also means that women have little time for leisure activities.

Among the different activities however, there are certain activities which are carried out independently by men and women irrespective of whether they are shared by their counterparts. These may be termed as autonomous activities. Women's autonomous activities primarily include domestic activities which include cooking, cleaning, collection of fuel wood, water etc and looking after children along with taking care of livestock, collection of fodder, maintaining kitchen garden and backyard poultry. Men's autonomous activities on the other hand are primarily related to crop production and participation in paid activities. The range of women's autonomous activities is more diversified as compared to men's autonomous activities. However, given the fact that men's activities are principally income generating activities men are placed in a superior or dominant position in relation to women. Women's autonomous activities though largely invisible and unpaid are indispensable for sustenance of the rural households. This is attributable to the socially constructed gender ideologies which create a polarization and heirarchization of men's and women's roles with men operating in the public domain, more specifically the market, and women being confined to the private i.e. the household and relegates women to a subordinate status.

6.3 Gender Differentials in Time Allocation by Size Class

In agricultural families in rural areas land is an important asset and an important determinant of the socio-economic status of the households. "Land defines social status and political power in the village, and it structures relationships both within and outside the household" [17]. The size

of the land holding is also an important determinant of women's labour force participation in the rural areas. There are several micro studies that have established a negative correlation between landlessness and female participation rates [18]. Nayyar (1987) argues that since landlessness in rural India is often synonymous with poverty, women belonging to the category of landless agricultural labourers and marginal and small farms are forced to seek employment, as a response to their family needs. The landless class depends to a significant extent on non-agriculture activities while the share considerably declines in higher land sizes [19].

Within the agricultural sector, there are several studies which point to a positive correlation between women's participation in agriculture and size of the holdings. Usharani's et.al. (1993) study in semi-arid regions of Rajasthan shows that women's work participation in various operations of crop and livestock enterprises was minimum on marginal farms (86.24%) and maximum on large farms (99.12%) indicating positive relationship with the size of the holdings [20]. In technologically most advanced and considered the 'richest regions' of Haryana, there is an increasing involvement of family females with agriculture as the operated holding increases in size with the females from 5-10 acre holdings putting in a lower percentage of work than those from 10 to 15 acres or 15 acres and above. In the lowest acreage group 0 – 2.5, the agricultural wages being far more remunerative in the richest region of Haryana and their labour being surplus in their own uneconomic holding, the contribution of family females remains nil [21]. Bhati and Singh's (1987) [22] study of women's contributions in agriculture in hill regions of north-west India and Thakur's (1991) [23] study of female farm workers in Himachal Pradesh corroborate the positive relation between the size of the holdings and the work load of the farm women. The argument put forward for this is that on larger size of holdings the female workers have to spend more time in crop production activities and at the same time due to larger size of holdings can afford to keep more cattle which further pushes up the utilization of their time in livestock activities [23].

In the present study an increase in time spent on agricultural activities with increase in size of the holdings has been observed in the sampled villages. An analysis of variance and a *post hoc* test (where the ANOVA test revealed a statistically significant *F*-statistic) was carried out to test for significant differences in the time spent by women in the different activities in the sampled

villages according to the size of holdings. Statistically significant differences in crop production on the basis of size class of land holding was observed in Samalbong village (*Brown-Forsythe-statistic* = 42.555 , p = 0.051 at α = 0.10) and Git Dubling Khasmahal village (*Brown-Forsythe-statistic* = 58.927 , p = 0.001). Games Howell post hoc test was conducted due to difference in sample size and heterogeneity of variances to see which of the groups were statistically significantly different. The test revealed statistically significant difference between small and large holdings (Games Howell p=0.068 at α=0.10) in Samalbong village; whereas in Git Dubling village statistically significant differences were observed between all three pairs of holdings: small and marginal holding (Games Howell p = 0.010); small and large (Games Howell p = 0.000) and marginal and large (Games Howell p = 0.047). In Sitong Khasmahal village the differences were not statistically significant.

Table 4. Gender Differential in Time Allocation in the Sampled Villages by Size Class

Samalbong						
Size Class	Less than 1 Acre		1-2 Acres		More than 2 Acres	
Activity	Male	Female	Male	Female	Male	Female
Crop Production	2.20	2.36	2.78	3.07	2.57	3.98
Livestock Rearing	1.00	0.98	1.24	1.39	1.30	1.42
Forage Collection	0.89	0.89	1.00	1.00	0.94	1.14
Household Work	0.71	4.53	0.54	4.46	0.67	4.22
Fetching Water	0.00	0.24	0.00	0.23	0.06	0.24
Fuel Collection	0.18	0.26	0.14	0.31	0.14	0.20
Social Participation	0.07	0.04	0.07	0.05	0.07	0.03
Other Income Generating Activities	2.77	0.95	3.26	0.88	3.23	1.37
Personal Time	4.37	3.89	4.19	3.93	4.39	3.36
Total	12.20	14.15	13.23	15.32	13.37	15.96
Git Dubling Khasmahal						

Crop Production	3.16	2.18	3.06	3.08	5.33	3.99
Livestock Rearing	0.98	1.39	1.23	1.04	1.72	1.52
Forage Collection	1.04	0.84	1.08	1.40	1.58	1.58
Household Work	0.68	4.98	0.90	4.82	1.16	4.96
Fetching Water	0.00	0.36	0.01	0.18	0.01	0.19
Fuel Collection	0.21	0.39	0.12	0.27	0.21	0.21
Social Participation	0.05	0.07	0.09	0.05	0.09	0.05
Other Income Generating Activities	1.85	0.59	1.97	0.50	1.32	0.65
Personal Time	4.04	3.16	4.31	3.31	3.63	3.10
Total	12.01	13.96	12.78	14.64	15.05	16.23
Sitong Khasmahal						
Crop Production	2.61	2.95	2.97	3.15	3.77	3.56
Livestock Rearing	1.01	1.01	1.20	1.54	1.32	1.56
Forage Collection	0.75	0.73	0.80	0.92	0.72	1.31
Household Work	0.70	4.00	0.65	3.89	0.60	3.42
Fetching Water	0.08	0.14	0.12	0.11	0.11	0.10
Fuel Collection	0.19	0.27	0.25	0.18	0.18	0.16
Social Participation	0.06	0.03	0.05	0.03	0.06	0.04
Other Income Generating Activities	2.86	1.13	2.37	0.46	2.34	0.66
Personal Time	4.40	3.93	4.48	4.27	4.37	4.26
Total	12.66	14.19	12.78	14.55	13.58	15.06

Source: Field Survey

In Samalbong village statistically significantly differences were observed in total time (Brown-*Forsythe-statistic* = 60.443, p = 0.043) between small and large holdings (Games Howell p = 0.059 at α = 0.10). In Git Dubling Khasmahal village, besides crop production statistically significant difference was observed in livestock rearing (F-statistic = 4.311, p=0.017) between medium and large holdings (Games Howell p = 0.010); and for total time per day (F-statistic = 7.951, p=0.001) between medium and large holdings (Games Howell p = 0.001). In Sitong

Khasmahal village statistically significant difference was observed in livestock rearing (*F*-statistic = 3.319, p = 0.041) with significant difference between small and large holdings (Games Howell p = 0.061 at α = 0.10); forage collection (*Brown-Forsythe-statistic* = 81.926, p=0.011) with significant difference between small and large holdings (Games Howell p = 0.011); fuel collection (*Brown-Forsythe-statistic* = 88.986, p=0.036) with significant difference between small and large holdings (Games Howell p = 0.026).

In terms of time spent in other income generating activities which may include petty trade, regular wage/ salaried job or casual or part time work outside family farms it can be seen that the amount of time spent in such activities is higher for smaller farms in Sitong Khasmahal and Git Dubling Khasmahal but is not so in Samalbong village. In rural areas the size of the land holding is taken as a proxy for the economic status of the household since households with larger landholdings may be more affluent than the ones with smaller landholdings. This would then imply that households with smaller land holdings would be more involved in off-farm activities since land cannot provide adequate income. This is plausible in rural areas where land is a prime asset and landlessness or lack of cultivable land forces people to find livelihoods in non-agricultural pursuits, whatsoever income or wages they receive [19]. The empirical evidence presented above is inconclusive regarding increased participation in non-agriculture for smaller sized holdings as the results do not hold uniformly for all the three villages under study. Women with larger land holdings may also take up other income generating activities along with agricultural activities during the lean season to augment family income.

7. Limitations of the Study:

1. The study is based on time use statistics in which the data was collected on a recall basis. As such there might be errors in the time reported by individuals as some activities may be over reported and some may be under reported.
2. Simultaneous activities are not considered which leads to some activities being unreported.
3. Information was collected through in depth interview of the female respondent and the male members who provided information about the other members of the family which may not yield accurate results.

8. Conclusion: From the analysis presented in the current study the important and the indispensible role of women in rural households in the economy of the hill areas of Darjeeling and Kalimpong can be properly understood through their involvement in cop production, tending of animals, collection of fuel wood, fodder, water etc. Besides, women also undertake a multitude of household activities along with participation in paid work in farm and off farm activities either on full time or part time basis which further add to women's contribution to the well being of their families. In terms of total time devoted to different activities per day, women in all the three study villages spent more time than men with statistically significant differences. The significant contribution of women to agricultural activities which include crop production and livestock rearing can also be seen from the proportion of daily time devoted to such activities. Further, no statistically significant differences were observed between men and women in the time spent in such activities which shows that women and men shoulder equivalent responsibilities in carrying out these activities. Little division of labour was observed in crop production activities in the study villages with women being actively involved in almost all activities including ploughing in some cases which is generally considered a man's work. However, women's involvement in household work like cooking, cleaning etc. is clearly much higher than that of men with statistically significant differences. In other activities i.e. social participation, other income generating activities and personal time the time devoted by men is higher than the time devoted by women in all the villages and found to be statistically significant except for personal time in Sitong Khasmahal village which was not statistically significant. The study also shows that while women expend the bulk of their time in domestic activities, men expend more time on personal activities.

From the above analysis the study accepts the hypothesis that the labour input of women is higher than that of men in domestic work. Although the time devoted by women to crop production is higher than that of men in two study villages, ANOVA analysis shows non statistically significant differences in time allocation between men and women to crop production. The study therefore partially accepts the hypothesis that the labour input of women is higher than that of men in agricultural activities. As regards differentials in time allocation for women by size class, significant differences were observed in crop production, livestock rearing and total time spent in two villages; and in fuel and forage collection only in one village. In

other activities no significant differences were observed. It can therefore be inferred that the time spent in crop production, livestock rearing and total work time by women belonging to families with larger land holdings is more than that for women belonging to families with smaller land holdings in the study area. For other activities there is not much variation in the time spent by women belonging to different land holdings. From this it may be concluded that there is not much variation in women's situations across different land holdings as regards domestic and household responsibilities. As regards women's higher participation in paid work in families with smaller holdings, the results of the study are inconclusive and needs to be analysed through an in depth study of women's work participation through econometric analyses.

The low participation of men in household activities is a reflection of societal norms which consider work within the household or the private space as feminine. Davies and Carrier (1999) observes that "gender division of labour within households are not manifestations of household needs, but a reflection and reinforcement of the much broader organisation of society around assumptions of gender which rationalises the gendered nature of domestic work as "natural" and therefore "inevitable"" [24]. Women's higher participation in unpaid domestic work creates a hierarchical system within the domestic sphere with women occupying the subordinate status socially and economically. Proper evaluation of women's contributions is therefore extremely crucial for improving women's status in society. Integrating women's issues in the development agenda through formulation of policies designed to benefit women is an essential step in this direction. In this context the following measures can be adopted such as improving women's level of education, their skill formation, capacity building through training and workshops, inclusion of women in local self government etc. Finally a holistic approach including both men and women is essential for bringing about gender equality which would contribute to improvement in women's status within the household and society and pave the way for development of the region.

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