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How Far Is the Labour Market Biased? A Study in the Context of the Himalayan States of India

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I. The Context

The participation of women in the labour market varies largely across countries, reflecting differences in economic development, education levels, fertility rates, access to childcare and other supportive services and, ultimately, social norms. This is one of the reasons for whichparticipation rates vary considerably across the world with some of the lowest rates witnessed in South Asia**(Chaudhary and Vernick 2014).**Gender inequalities related toeducation and employment limit the productive capabilities of women and hence hinder the process of development of nations**(UN,2016).**Substantial evidence from the literature **((Dreze and Sen 2013; Arora 2012; Duflo 2012)** demonstrates that empowering women can correlate with a reduction in maternal mortality,and fertility rate, as well as an increase in the average age at first marriage. As a major component of the Sustainable Development Goals (SDGs) set forth by the United Nations (UN), gender equality is an essential element in facilitating economic development. Women's participation in the labour market is one mechanism for achieving this, and it can create significant improvements in primary development objectives including poverty reduction; access to health care, education, land, technology, and capital; environmental sustainability; institutional effectiveness; and democratic participation **(White 2006).** Thus, gender neutrality in the labour market especially in terms of participation and wages has been considered as a major indicator for development in the literature.

II. Labour Market of India

A study by **Chaudhary and Vernick (2014)** points out that the most notable is the falling participation of women in the Indian labour force, especially in rural areas, which arose despite strong economic growth and rising wages/incomes. Understanding these issues is critical because: (i) female labour force participation is a driver of growth and thus participation rates indicate the potential for a country to grow more rapidly; (ii) in many developing countries, participation of women is a coping mechanism which arises in response to economic shocks that hit the household; and (iii) participation is an (imperfect) indicator of women's economic empowerment.A study by **CII(2018)** shows thatdespite positive growth and development parameters in the last 20-25 years, India has experienced a continuous decline in its female labour force participation rate (FLFPR). The total FLFPR declined sharply from 42.7% in 2004-05 to 31.2% in 2011-12 which further declined to 27.4% in 2015-2016. In 2013, International Labour Organization (ILO) ranked India's FLFPR at 121 out of 130 countries, one of the lowest in the world. India also secured a poor rank in the Global Gender Gap Report 2017 by World Economic Forum, where it was ranked 108 out of 144 economies.

In India, the labor market situation has remained unfavorable to women in terms of both demand and supply **(Mukhopadhyay & Tendulkar, 2006).**Historically, women's primary role in the labor force has been in the agricultural sector. However, more and more Indian women working in this sector find themselves working primarily as unpaid labor in the field; all decision-making related to non-field operations and marketing is left in the control of men **(Banerjee 2002).** Over the last two decades, there has been significant progress in the educational achievements of women, but these have not manifested in substantial improvement in their positions at avenues of employment. In numerous regions in the globe, in comparison with their male counterparts, females have a higher propensity of becoming and remaining unemployed, have lower probabilities of participating in the labour force and—when they occasionally do—are often at a qualitative disadvantage in terms of job profile **(Chinara 2018**).These disadvantages are also reflected in wages and salaries as pointed out in literature.

III. Gender, Wageand Development

Female labor force participation (LFP) is a basic pillar of female economic empowerment. Gaps in female LFP vis-à-vis male LFP are macro critical, i.e., they impact macroeconomic growth and stability**(Badel and Goyal 2023)** .One of the most visible characteristics of inter-gender differences in India is the gender gap in the labor market. According to the GGGR, India ranks 140th out of 156 nations in terms of the economic gender gap in 2021**(Singh and Ningthoujam 2022)**. The gender wage gap study conducted by **Chakraborty and Mukherjee (2014)** on the 66th Round of NSS data revealed a considerable gender wage gap across industries and occupations. The study found a large element of discrimination in rural and urban areas reiterating the reality of wage discrimination and bias against women in the labour market. The results revealed that there was a 37% wage gap when the urban and rural areas were aggregated in the analysis. Another encouraging finding of the study was that education played an equalizer among both men and women and higher education enabled women to earn higher remuneration. **Sengupta &Das (2014**) have shown that women workers were discriminated more if they were in economically backward caste and religious minority group.

Chakraborty and Majumder(2016) in their paper on their empirical study on the relative importance of intra and inter-occupational earnings differential between males and females, using NSSO 68th Round employment-unemployment data, have observed that, in the total earning differential, intra-occupational earnings differential plays a far more important role than inter occupational earnings. Further, the intra-occupational differential is mostly unexplained. **ILO's Global Wage Report 2018-19** explores the reasons behind gender pay gaps across the world. In some of the countries as the report suggests educational qualification did not positively influence wages of female employees. The real reasons affecting the wage gap were occupational segregation and polarization of industries based on gender. There are presumably male-dominated industries in which women are under-represented and earn lesser compensation despite their educational accomplishments

Thus economic inequality between men and women is an important problem deserving of indepth study because of the large number of people it affects.Studies like **Blau,Ferber, Winkler (2001)** have found evidence that women tend to spend income differently than men, with greater shares being put back into the household and more equally allocated between children of both sexes .

However, this varies from region to region based on how women are looked upon in the community, how the community perceives the role of women and whether the community is patriarchal or matriarchal. Hence regional studies are of great importance in addressing such issues.

IV. Regional Dimension of Gender

Mahajan and Ramaswami (2015) investigate the apparent paradox that gender wage gaps in agricultural wages are higher in south India, a region with more favorable indicators for women, compared to north India. They investigate whether this could be due to Esther Boserup's proposition, viz., that higher gender gaps in the south are due to higher female LFPRs in that region **(Boserup, 1970).** They find that differences in female labour supply are able to explain about 55 percent of the gender wage gap between the northern and southern states of India. Their paper highlights the importance of looking at LFPR as a determinant of gender wage gaps. **Deshpande and Deshpande (1997)** in theirstudy compares summary statistics drawn from NSS reports for the 38th (1983) and 50th rounds (1993-94) for the city of Mumbai and the rest of urban India. It documents gender gaps in work force participation rates, unemployment rates, occupational status and wages by broad education levels. **Duraisamy and Duraisamy (2005)** use least squares as well as quantile regressions on data from the50th round NSS EUS for 1993-94 to examine gender differences in wage premia associated with various educational categories across states. They find that at the national level, returns to education rise up to the secondary education level, and decline thereafter. They also find that for all educational categories except primary, wage premia accruing to women with middle, secondary and higher secondary education is higher than for men, with returns to secondary education being twice that for men. Quantile regressions reveal that returns to primary, middle and secondary education increase at the higher quantiles, except at the top decile, again by larger amounts for women.

Thus it is clear from such literature that gender differences in LFPR, WFPR, wages etc are region specific and peer states may be categorized separately to make such studies. In this paper, therefore, we carry out the study for only the Himalayan states and Union Territories of India. The unique characteristics of such states due to different natures of topography, weather, climate, roads,skills, and livelihood opportunitiesjustify the need to carry out studies on the labour market of the Himalayan States.

V. Methodology

V. a:Objectives:

1. To examine whether there is significant differences in labour employment in terms of gender in the Himalayan states and UTs of India
2. To calculate and analyse Gender Employment Gap Index(GEGI) based on the methodology of Pennings (2022)
3. To calculate and analyze the gender wage gaps[based on World Bank] for each of the categories of NCO [National Classification of Occupation] in the Himalayan States of India.

b. Study Area This study has considered the Himalayan States of India i.e the eleven Himalayan States which have large portions in the Himalayan region [In a few variables we have used disintegrated statistics for J& K but in some variables we have used the statistics of undivided state as disintegrated data was not available] Therefore the states considered are the seven sisters of the north eastern India viz Arunachal Pradesh, Assam, Mizoram, Manipur, Nagaland , Tripura , Meghalaya, three northern Himalayan states of Jammu and Kashmir, Uttarakhand and Himachal Pradesh and Sikkim .In this study the term gender is used for two categories only i.e female and male.

c. Data: In this study we have used secondary data and the data for Himalayan states have been extracted from various studies of MoSPI like Women and Men in India (2021), Labour and Employment Statistics (2022).

d. Variables: The mainvariables considered in the study are

Variable 1: State-wise Percent Share of Female Population in Total Population
Variable 2: Worker Population Ratio by gender for 15 years and above at usual status 2020-21(Rural +Urban) for the Himalayan States of India
Variable 3: Labour Force participation rate by gender for 15 years and above at usual status for 2020-21 (Rural + Urban) in the Himalayan States of India
Variable 4: : Distribution of female workers to total workers in usual status (ps+ss_ working in Managerial Positions in the Himalayan States of India
Variable 5: Distribution of Proprietary establishments by sex of owner in the Himalayan States of India
Variable 6: Distribution of female workers to total workers in usual status (ps+ss_ working in Legislators, Senior Officials and Managersin the Himalayan States of India
Variable 7: Wage Gap for National Classification of Occupation (NCO) 1 in the Himalayan States of India
Variable 8: Wage Gap forNational Classification of Occupation (NCO 2) in the Himalayan States of India
Variable 9: Wage Gap forNational Classification of Occupation (NCO 3) in the Himalayan States of India
Variable 10: Wage Gap forNational Classification of Occupation (NCO 4) in the Himalayan States of India
Variable 11: Wage Gap forNational Classification of Occupation (NCO 5) in the Himalayan States of India
Variable 12: Wage Gap for National Classification of Occupation (NCO 6) in the Himalayan States of India
Variable 13: Wage Gap forNational Classification of Occupation (NCO 7) in the Himalayan States of India
Variable 14: Wage Gap forNational Classification of Occupation (NCO 8) in the Himalayan States of India

e. Tools and Techniques used for analysis

i. In this study, we have used various **descriptive statistics** like some measures of central tendency, dispersion, skewness, kurtosis. We have also used a two sampled t test to test the differences of means between the two samples -men and women for select variables and various **charts** like clustered bar charts, funnel charts, bar diagrams etc

ii. We have used **two sampled t test** to test the differences in means for equal variances using the following statistic

$$t = \frac{\bar{x}_M - \bar{x}_F}{s_p\sqrt{\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$s_p^2 = \frac{(n_1-1)s_M^2 + (n_2-1)s_F^2}{n_1+n_2-2}$$

df=$n_1 + n_2 - 2$

iii. For the calculation of **wage gap** for the various categories of NCO we have used the following formula of World Bank

$$\textbf{Wage Gap [\%]} = \left[\frac{Male\ hourly\ wage - Female\ hourly\ Wage}{Male\ hourly\ Wage}\right] X100$$

The wage gap based on average hourly earnings as an indicator considers pay for one hour of work. It is the most neutral and lowest wage gap compared with weekly and yearly earnings indicators, and is best used for research because it controls for factors such as differences of hours worked with employees who work full-time, part-time, flex-time, etc.

iv. For calculation of **Gender Employment Gap Index (GEGI)** we have used the methodology of Pennings (2022)

Basic Gender Employment Index (GEGI) = $\frac{L_M - L_F}{L_M + L_F}$ x100 %

Where, LM= Proportion of male labour in total male working population

L_F= Proportion of male labour in total male working population

VI. Analysis

For analysis this section has been divided into three subsections

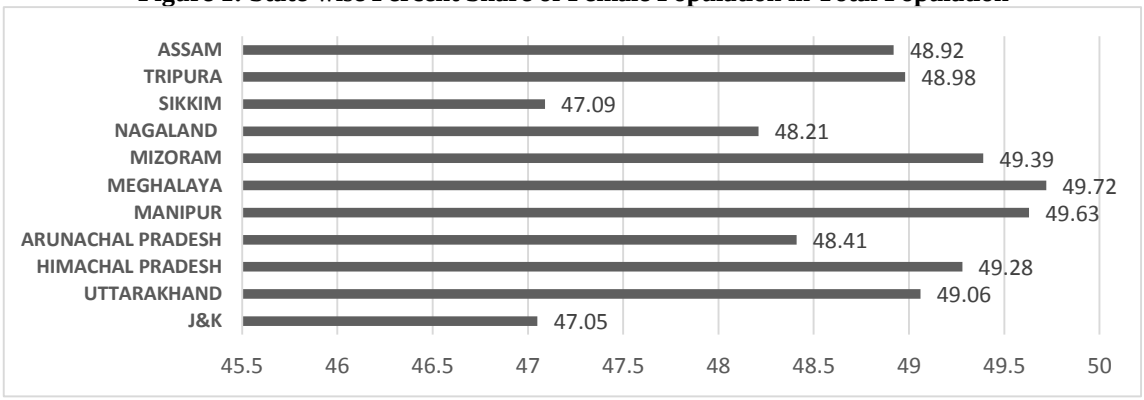
(a) Population, Workforce and Labour Force Participation

(b) Share Of Female in Managerial Positions, Proprietorshipand As Legislators, Senior Officials and Managers

(c) Distribution of average wage per hour in various NCO (National Classification ofOccupation) and Calculation of wage gap

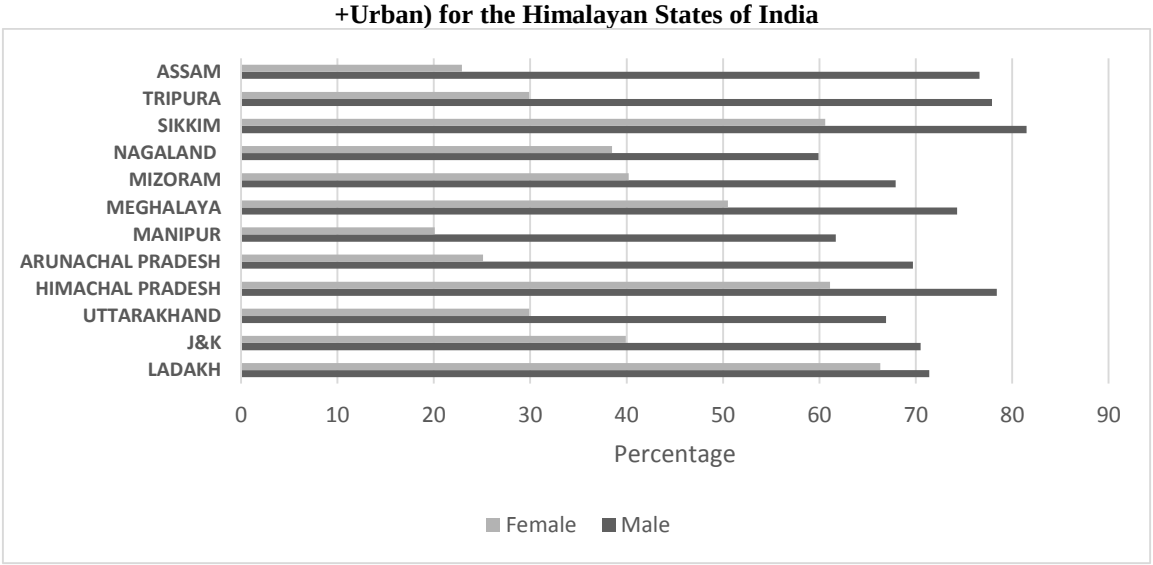
a. Population, Workforce and Labour Force Participation

Figure 1: State-wise Percent Share of Female Population in Total Population



Source: Women and Men In India, MoSPI, 2021

Figure 2: Worker Population Ratio by gender for 15 years and above at usual status 2020-21(Rural +Urban) for the Himalayan States of India



Data Source : PLFS Annual Report , MoSPI ,2022

It is very clear from Figure 1 that all the Himalayan States of India have less than fifty percent of the women population but more than 45 percent of the women population. The mean is at 48.70 which reveals that most of the states have around 50 percent of women population. Thus, we argue that such composition must also be reflected in the labour market of these states and we can expect a gender-neutral labour market in those states.

Figure 2 shows the worker population ratio by genderin the Himalayan States and Union Territories of India. We usethe formula used by Pennings (2022) for measuring the Basic Gender Employment Gap Index (GEGI).

Table 1: Computed Basic Gender Employment Gap Index (GEGI) for the Himalayan States and UTs

HIMALAYAN STATES & UTs	GEGI
LADAKH	3.703703704
J&K	27.7173913
UTTARAKHAND	38.2231405
HIMACHAL PRADESH	12.40143369
ARUNACHAL PRADESH	47.0464135
MANIPUR	50.85574572
MEGHALAYA	19.07051282
MIZORAM	25.62442183
NAGALAND	21.74796748
SIKKIM	14.70795215
TRIPURA	44.52690167
ASSAM	53.96984925

Source: Authors Calculations based on the methodology of Pennings (2022)

Table 2: Descriptive Statistics for Worker Population Ratio by gender for 15 years and above at usual status 2020-21(Rural +Urban) for the Himalayan States of India

	Male	Female	Result
Mean	42.79167	40.41667	Higher mean of Male compared to Females
Standard Error[SE]	4.637748	4.594279	SEs are very near to one another. Small SE reflects more accurate reflection of population mean by the sample mean
Median	42.55	39.2	Median and Mean are very near to each other both for male and female indicating normal distribution
Standard Deviation	16.06563	15.91505	Male data set has comparatively higher SD implying a higher spread of data
Kurtosis	-1.19846	-1.20342	Negative kurtosis value indicates distribution is flatter than normal
Skewness	0.302285	0.426191	Nearly symmetrical in both male and female. Mean is more than Median
Range	48.2	46.2	Range of Men is higher indicating higher dispersed values
Minimum	21.4	20.1	The minimum of male is higher by 1.3
Maximum	69.6	66.3	The maximum of male is 3.3 points higher than female
Sum	513.5	485	
Count	12	12	

Source: Calculated by the authors

Figure3: Labour Force participation rate by gender for 15 years and above at usual status for 2020-21 (Rural + Urban) in the Himalayan States and UTs of India

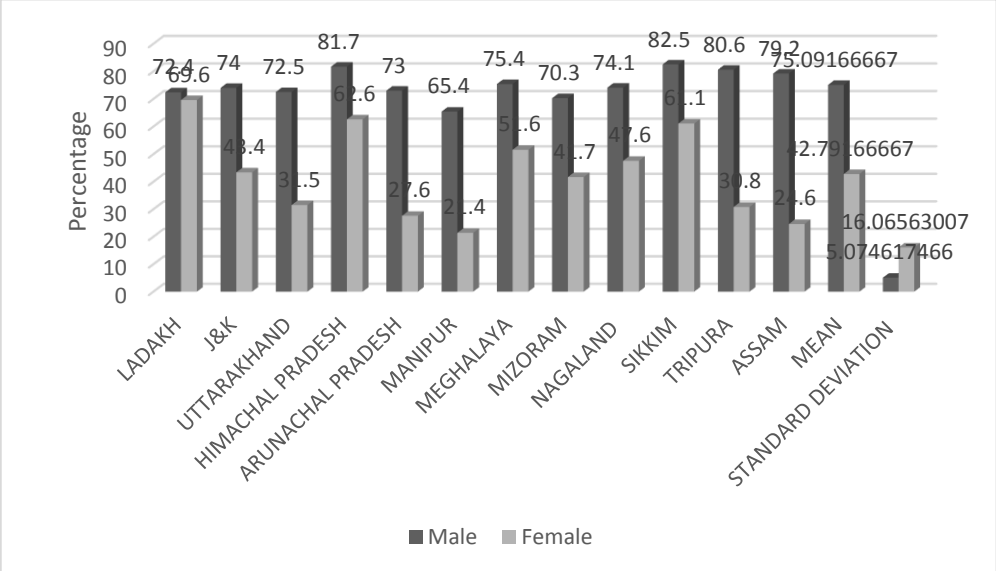


Table 3: Summary Descriptive Statistics of LFPR

Descriptive Statistics	Male	Female	Results
Mean	75.09167	42.79167	Higher mean of Male compared to Females
Standard Error	1.464916	4.637748	SE of Male is much lower compared to females
Median	74.05	42.55	Median of male is much higher than females
Standard Deviation	5.074617	16.06563	SD of Female is much higher than males indicating larger dispersion
Kurtosis	-0.32804	-1.19846	Negative kurtosis suggests lighter tails and a flatter distribution.
Skewness	-0.11436	0.302285	The skewness value is between -0.5 & 0.5, which reveals that data is nearly symmetrical for both male and female
Range	17.1	48.2	Higher range for female imples more dispersion on Female LFPR compared to males.
Minimum	65.4	21.4	The maximum of male is 44 points higher than female
Maximum	82.5	69.6	The minimum of male is 12.9 points higher than female
Sum	901.1	513.5	
Count	12	12	

Source: Calculation of the authors

We also test whether there is significant differences in the two sample means by carrying out a two sample t test as follows

H_0: There is no significant difference between the means of men and women in Labour Force participation rate by gender for 15 years and above at usual status for 2020-21 (Rural + Urban) in the Himalayan States and UTs of India

H_1:There is significant difference between the means of men and women in Labour Force participation rate by gender for 15 years and above at usual status for 2020-21 (Rural + Urban) in the Himalayan States and UTs of India

Table 4: Result of two sampled t test

	Variable 1	*Variable 2*
Mean	75.09167	42.79166667
Variance	25.75174	258.1044697
Observations	12	12
Pooled Variance	141.9281	
Hypothesized Mean Difference	0	
df	22	
t Stat	6.64116	
t Critical two-tail	2.073873	

Source: Calculation of the authors

It is very clear from Table 4 that null hypothesis (H_0) gets rejected at 5 percent level of significance for degrees of freedom 22 which implies that there is significant difference in LFPR between men and women in the Himalayan states and UTs of India

b. Share Of Female in Managerial Positions, Proprietorshipand As Legislators, Senior Officials and Managers

Figure 4:Distribution of female workers to total workers in usual status (ps+ss_ working in Managerial Positionsin the Himalayan States of India

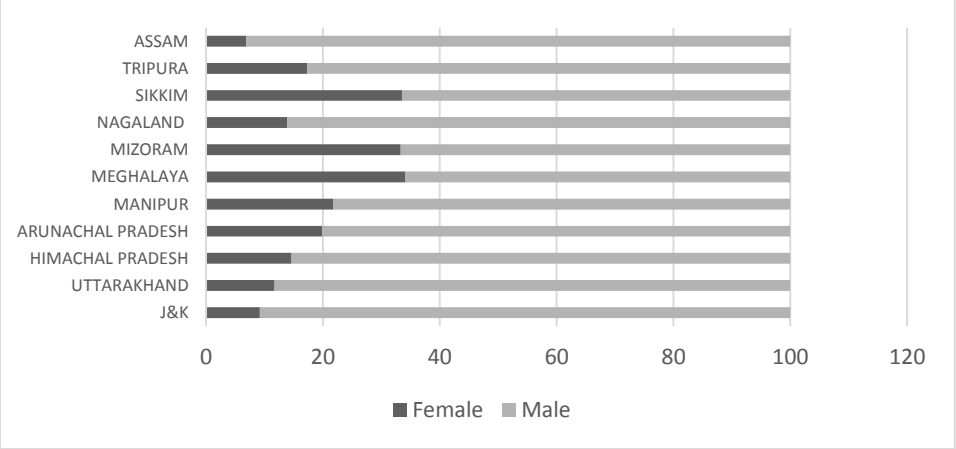


Figure 5 Distribution of female and male workers to total workers in Proprietary establishments in the Himalayan States of India

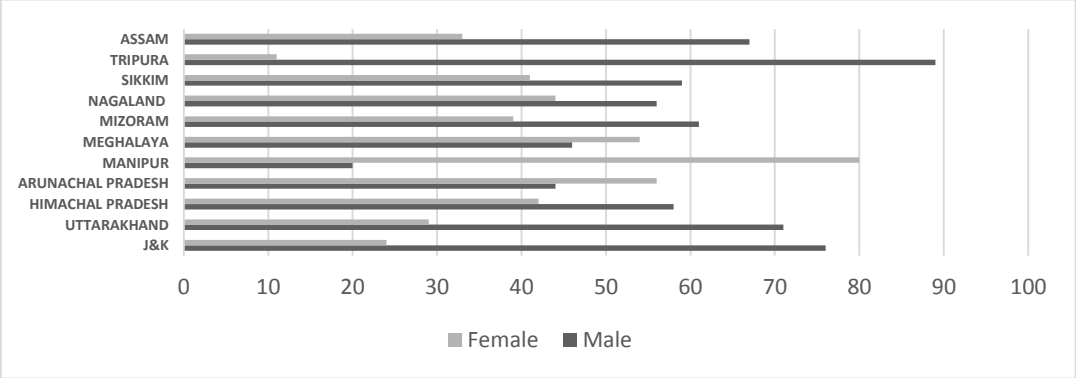
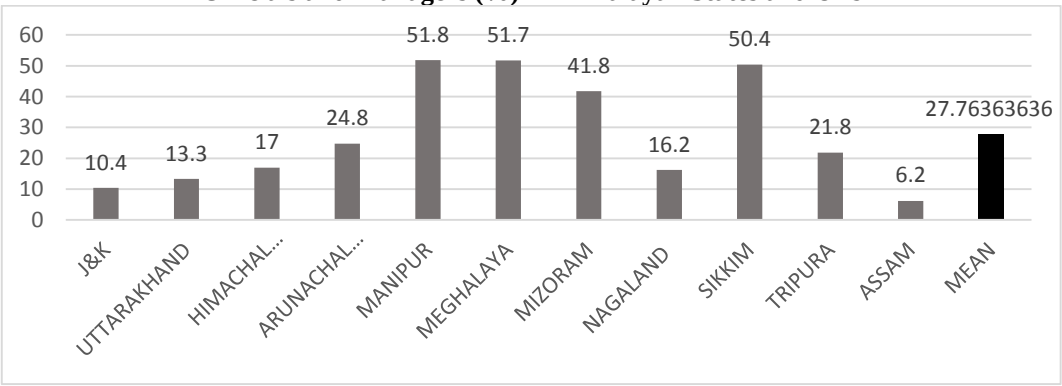


Figure 6: Ratio of female worker to male workers in usual status(ps + ss) working as Legislators, Senior Officials and Managers (%) In Himalayan States and UTs



c.Distribution of average wage per hour in various NCO (National Classification ofOccupation) and Calculation of wage gap in the Himalayan States of India

Table 6: Average wage (in Rs) per hour earned by occupation divisions as per national occupational classification-1, 2 and 3 [NCO -1, NCO 2 and NCO 3]and percentage wage gap for Himalayan States of India

Himalayan States	NC0-1		Wage gap [%]	NC0-2		Wage gap[%]	NC0-3		Wage Gap [%]
	Male	Female		Male	Female				
Arunachal Pradesh	135	294	-117.77	161	117	27.32	121	40	66.94
Assam	129	147	-13.95	127	102	19.68	128	45	64.84
Himachal Pradesh	144	155	-7.63	133	96	27.81	125	50	60
Jammu and Kashmir	165	231	-40	143	106	25.87	120	82	31.66
Manipur	150	130	13.33	111	91	18.01	86	41	52.32
Meghalaya	121	103	14.87	131	58	55.72	105	69	34.28
Mizoram	130	150	-15.38	122	105	13.93	109	89	18.34
Nagaland	97	128	-31.95	110	94	14.54	126	102	19.04
Sikkim	111	89	19.81	120	96	20	129	85	34.10
Tripura	124	122	1.61	120	86	28.33	93	92	1.07
Uttarakhand	135	50	62.96	126	80	36.50	106	48	54.71

NCO 1: Legislators, Senior Officials and Managers; NCO 2: Professionals; NCO 3: Technicians and associate professionals;Source: Wage Gap percentage calculated by the authors from Data of MoSPI, 2021

Table 7: Average wage (in Rs) per hour earned by occupation divisions as per national occupational classification-4, 5 and 6 [NCO -4, NCO 5 and NCO 6] and percentage wage gap for Himalayan States of India

State	NC0-4		Wage gap[%]	NC0-5		Wage gap[%]	NC0-6		Wage Gap[%]
	Male	Female		Male	Female				
Arunachal Pradesh	126	91	27.77	110	76	30.90	121	0	100*
Assam	102	42	58.82	55	43	21.81	32	23	28.12
Himachal Pradesh	84	126	-50	56	23	58.92	73	21	71.23
Jammu and Kashmir	107	92	14.01	74	49	33.78	84	139	-65.4
Manipur	89	96	-7.86	86	65	24.41	69	35	49.27
Meghalaya	109	76	30.27	79	49	37.97	59	26	55.93
Mizoram	98	99	-1.02	92	52	43.47	46	59	-28.2
Nagaland	91	96	-5.49	95	70	26.31	64	86	-34.3
Sikkim	108	75	30.55	76	37	51.31	61	70	-14.7
Tripura	80	70	12.5	61	43	29.50	45	36	20
Uttarakhand	83	78	6.02	52	34	34.61	71	24	66.19

NCO 4: Clerks; NCO5: Service Workers and Shop and Market Sales Workers 6: Skilled Agricultural and Fishery Workers. Note: Though Arunachal Pradesh shows wage gap of 100 due to 0 value in female category in NCO 6 but due to ambiguity and unusualness in the nature of data we do not consider Arunachal Pradesh in NCO 6 only for analysis; Source: Wage Gap Calculated by authors from data of MoSPI ,2021

Table 8: Average wage (in Rs) per hour earned by occupation divisions as per national occupational classification-7, 8 and 9 [NCO -7, NCO 8 and NCO 9] and percentage wage gap for Himalayan States of India

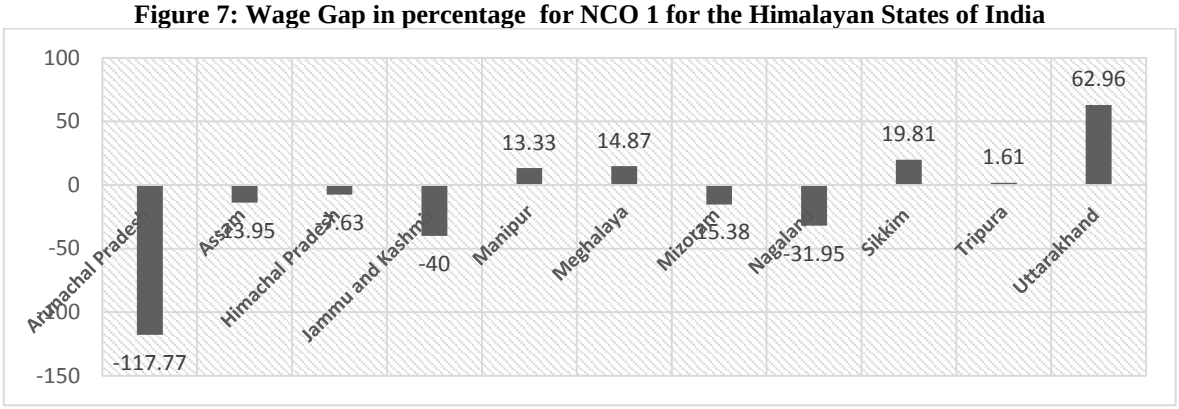
State	NC0-7			NC0-8			NC0-9		
	Male	Female	Wage gap [%]	Male	Female	Wage gap [%]	Male	Female	Wage gap [%]
Arunachal Pradesh	55	0	100	52	0	100	33	16	51.51
Assam	44	24	45.45	42	20	52.38	32	21	34.37
Himachal Pradesh	46	30	34.78	44	31	29.54	48	32	33.33

Jammu and Kashmir	65	17	73.84	57	69	-21.0	48	46	4.16
Manipur	42	34	19.04	43	22	48.83	45	24	46.66
Meghalaya	45	32	28.88	41	0	100	44	35	20.45
Mizoram	53	27	49.05	41	63	-53.6	41	31	24.39
Nagaland	85	0	100	66	33	50	59	53	10.16
Sikkim	56	102	-82.1	48	100	-108.3	49	35	28.57
Tripura	43	44	-2.32	43	25	41.86	40	33	17.5
Uttarakhand	42	26	38.09	43	29	32.55	37	28	24.32

NCO 7 : Craft and related Trades workers ;NCO 8 : Plant and Machine operators and assemblers ;NCO 9: Elementary Occupations; Note: Though Arunachal Pradesh shows wage gap of 100 due to 0 value in female category in NCO 7 and 8 and Sikkim in NCO 8 but due to ambiguity and unusualness in the nature of data we donot consider Arunachal Pradesh and Sikkim only for analysis in those NCO categories

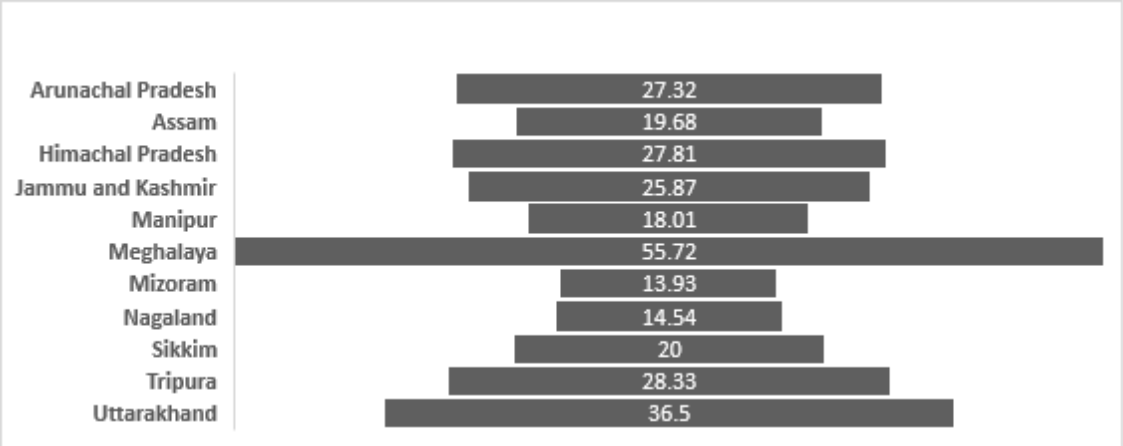
Source: Wage Gap Calculated by authors from data of MoSPI ,2021

Figure 7: Wage Gap in percentage for NCO 1 for the Himalayan States of India



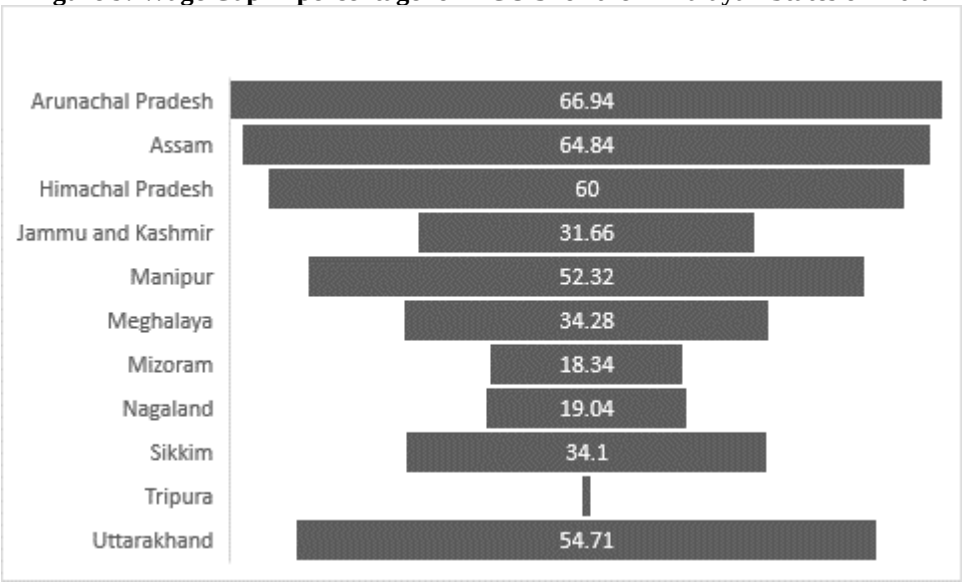
Source: Calculated by the authors based on MoSPI Statistics,2021

Figure 8: Wage Gap in percentage for NCO 2 for the Himalayan States of India



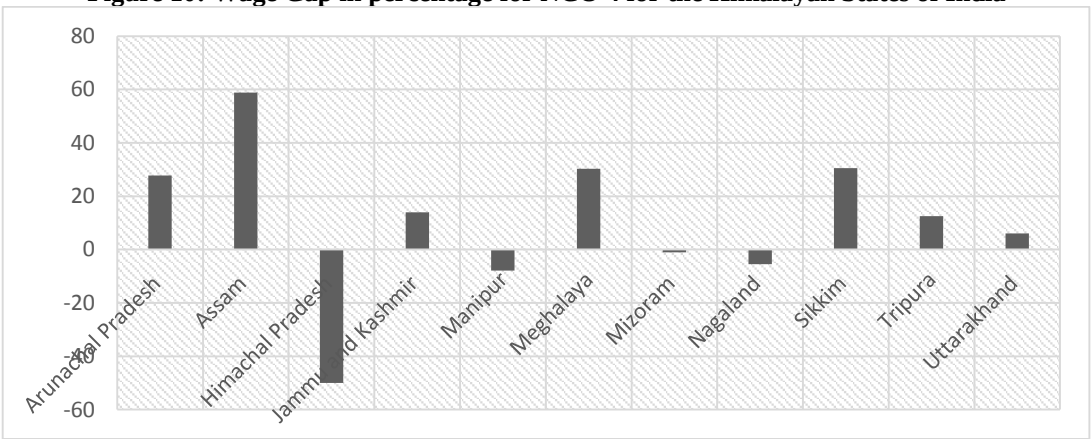
Source: Calculated by the authors based on MoSPI Statistics

Figure 9: Wage Gap in percentage for NCO 3 for the Himalayan States of India



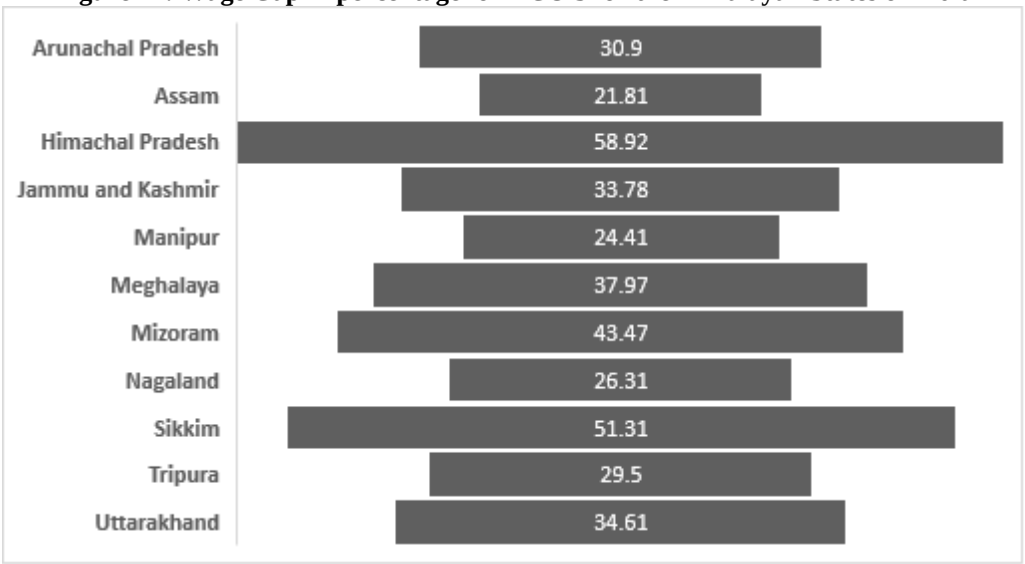
Source : Calculated by the authors based on MoSPI statistics,2021

Figure 10: Wage Gap in percentage for NCO 4 for the Himalayan States of India



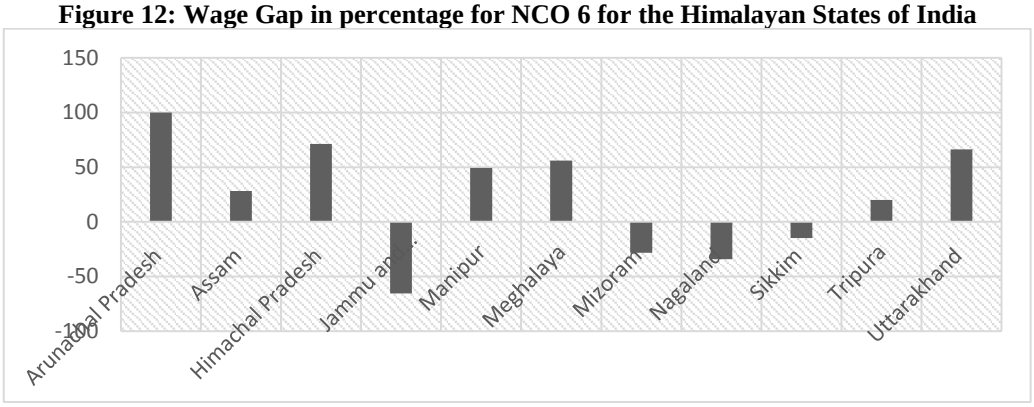
Source: Calculated by the authors based on MoSPI statistics,2021

Figure 11: Wage Gap in percentage for NCO 5 for the Himalayan States of India



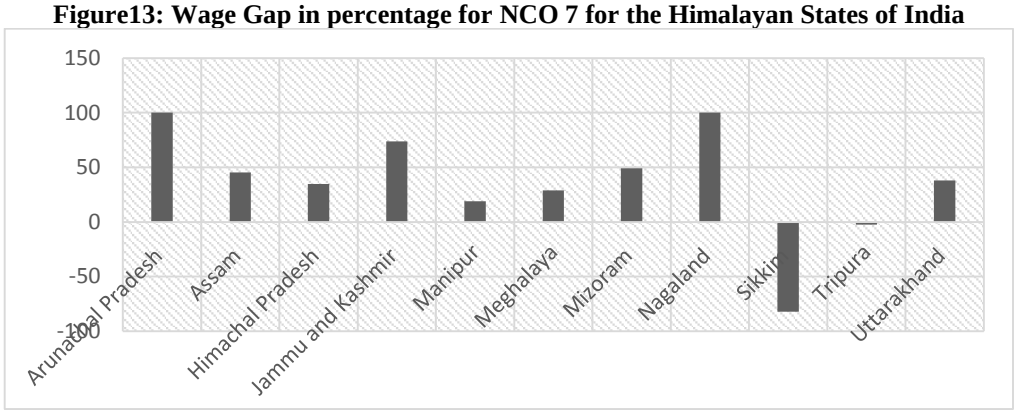
Source: Calculated by the authors based on MoSPI statistics,2021

Figure 12: Wage Gap in percentage for NCO 6 for the Himalayan States of India



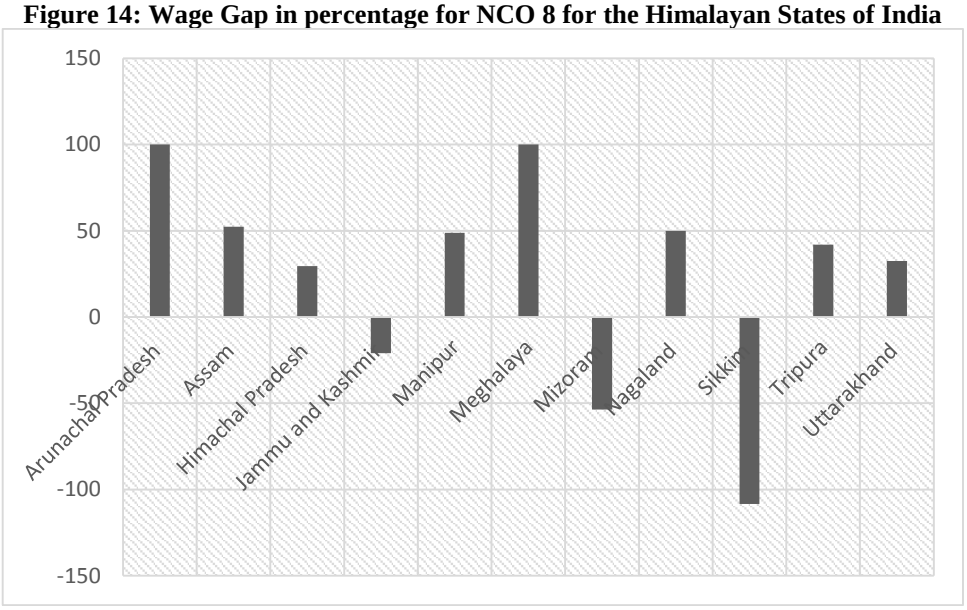
Source: Calculated by the authors based on MoSPI statistics ,2021

Figure13: Wage Gap in percentage for NCO 7 for the Himalayan States of India



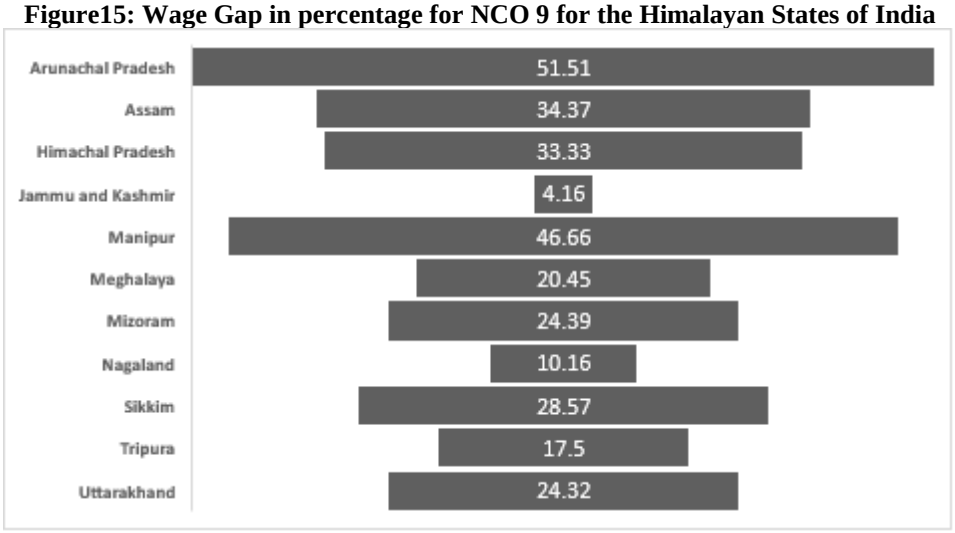
Source: Calculated by the authors based on MoSPI statistics ,2021

Figure 14: Wage Gap in percentage for NCO 8 for the Himalayan States of India



Source: Calculated by the authors based on MoSPI statistics,2021

Figure15: Wage Gap in percentage for NCO 9 for the Himalayan States of India



Source: Calculated by the authors based on MoSPI statistics,2021

VII. Findings and Conclusion

The study clearly depicts that though the proportion ofwomen population to total populationin almost all the Himalayan States and UTsis around 50 per cent, the worker population ratio shows that in all of the states,there is a large gap between females and male. The "basic" GEGI is the gap between male and female employment, as a share of total employment.Our calculated GEGI indicates large gaps in the states of Assam, Manipur, Arunachal Pradesh, moderate in J&K, Uttarakhand, Mizoram and Nagaland and low gaps in Sikkim, Meghalaya, Himachal Pradesh and Ladakh.Our findings of two sample t test at 5 percent level of significancereflects that there is significant differences between the means of men and women.As far as the distribution of female workers to totalworkers in usual status in a managerial position isconcerned, Meghalaya,Sikkimand Mizoram shows highestparticipations while stateslike Assam, J & K, Uttarakhand, Nagaland shows low participation of femalein labour market in managerial position. In case of the ratio of female workers to male workers in Legislators, Senior Officials etc, Manipur, Meghalaya, Sikkim and Mizoram are on higher side of the mean whereas the rest of the Himalayan states are on the lower side of the mean.

The average wages (in Rs) per hourfor both males and female have been reported for all the occupation classifications of NCO and Wage gap percentages have been calculated. The results reveal that in Arunachal Pradesh (-117.77), Assam (-13.95), Himachal Pradesh (-7.63), J &K (-40),Mizoram (-15.38) and Nagaland (-31.95) wage gap is negative indicating that women earn more average labour per hour in NCO 1 category. The rest of the states show positive NCOs but the range varies substantially. While the wage gap percentage of Tripura is 1.61 in NCO 1, it is 62.96 in Uttarakhand. This indicates very large differences in average per-hour wages and salaries among the Himalayan States for NCO 1.

For NCO 2 the calculatedwage gap percentage is positive for all the states with Meghalaya at the highest with 55.72 per cent and Mizoram at the lowest with 13.93 percent.Thus, wage gap of professionalsshows high differences in Meghalaya (55.72) followed by Uttarakhand (36.50), Tripura (28.33), Himachal Pradesh (27.81), Arunachal Pradesh (27.32) etc. For NCO 3 i.e.,technicians and associate, the highest wage gaps are witnessed in Arunachal Pradesh (66.94), Assam (64.84), Himachal Pradesh (60) andUttarakhand (54.71) while low wage gaps are found in Tripura (1.07), Mizoram (18.34), Nagaland (19.04).

As far as wage percentage for NCO 4 i.e Clerks are concerned, Himachal Pradesh (-50) followed by Manipur (-7.86), Nagaland (-5.49) and Mizoram (-1.02) show negative wage gaps indicating higher average wage of female compared to men working as Clerks while Assam (58.82), Sikkim (30.55),Meghalaya (30.27), Arunachal Pradesh (27.77), J & K (14.01), Tripura (12.5) and Uttarakhand (6.02) which indicates higher average wages of males compared to females.

For Service Workers and shop and market sales workers (NCO 5) all the Himalayan states show positive wage gap with Himachal Pradesh at 58.92 and Assam at 21.81. This implies that though men earn higher average wages in this category compared to female but such gaps are very high in states like Himachal Pradesh and comparatively low in states like Assam.For skilled agricultural and fishery workers (NCO 5) calculated wage gap is negative for J &K (-65.4), Nagaland (-34.3), Mizoram (-28.2), Sikkim (-14.7) while it is positive for Himachal Pradesh (71.23), Uttarakhand (66.19), Meghalaya (55.93), Manipur (49.27), Assam

(28.12), Tripura (20). The states with negative wage gap reveal average higher wagesof females while positive values depict higher average wages of males for agricultural and fishery workers.

NCO7 i.e., Craft and related trade workers category show negative wage gaps for Sikkim (-82.1) and Tripura (-2.32) i.e., in these two Himalayan Stateshave higher average wages of females compared to their male counterparts. However, the difference is large in Sikkim and very low in Tripura. The other Himalayan States have a positive wage gap in this category with J & K at 73.84 and Manipur at 19.04. This indicates much higher wages for male craft and related traders in J & K compared to their female counterparts.

For the category of plant and machine operator assemblers (NCO-8)the states of Sikkim(108.3), Mizoram (-53.6) and J & K (-21.0) show negative wage gaps indicating higher average wage per hour for female which the other states of Himalayan region show positive wage gaps with Assam at 52.38,Nagaland at 50, Manipur at 48.83, Tripura at 41.86, Uttarakhand at 32.55, Tripura at 41.86 and Himachal Pradesh at 29.54 indicating higher average per hour wages for males engaged in occupation of plant and machine operator assemblers.Finallyfor NCO 9 i.e elementary occupations like Sales and Services Elementary Occupations, Agricultural, Fishery and Related Labourers, Labourers in Mining, Construction, Manufacturing and Transport etc, all the Himalayan States show positive wage gaps indicating higher average per hour wages formales compared to females.

The findings from the study depict high biasness in the workforce, labour force, proprietorship, managerial positions etc in the Himalayan States and UTs. The bias is in favour of the male labour force in most cases.However, it is observed that there are large differences in scale of such disparities among the Himalayan States and UTs. The same kind of bias is witnessed for wages. Except for a few categories of the National Classification of Occupation (NCO), all categories reveal male domination in average hourly wages. In a few categories if a few states have shown female biases as far as average hourly wages are concerned, there are large differences in scale in these few states and no consistency was observed in such wage gaps.

Due to lesser scope of livelihood in the hills as illustrated out in studies **like Khanduri and Datta (2021)**due to various constraints like infrastructure, terrain, harsh weather, frequent natural disasters, adverse climatic conditions, accessibility etc the absorptive capacity in certain occupation is limited thereby leading to burgeoning labour force.

Hence there is need for more government interventions so that not only more women participation is witnessed in the labour market of the Himalayan States in all the NCOs but also wage neutrality is brought in the labour market as far as gender is concerned. These interventions may be done through women education, skill development,awareness regarding the rights of women. Moreover, government, NGOs, social activists must work hand in hand at ground level to ensure that policies that boost up such equality reaches the last village in the hill.

References

[1]. Arora, R. 2012. 'Gender Inequality, Economic Development, and Globalization: A State Level Analysis of India'. The Journal of Developing Areas 46 (1): 147–164. https://doi.org/10.1353/jda.2012.0019

[2]. Badel A and Goyal R,2023, 'When Will Global Gender Gaps Close?' IMF Working Paper WP/23/189

[3]. Banerjee, N. 2002. 'Between the Devil and the Deep-Sea Shrinking Options for Women in Contemporary India.' In Kapadia, K. (ed) The violence of development: the politics of identity, gender and social inequalities in India / edited by Karin Kapadia. London: Zed Books.

[4]. Blau, F D., Ferber M A and Winkler. A. E ,2001 The Economics of Women, Men, and Work. New Jersey: Pearson Education Inc.

[5]. Boserup, Ester, 1970. 'Women's Role in Economic Development', St. Martins, New York

[6]. CII, 2018, 'Declining Female Labour Force Participation in India: Concerns, Causes and Policy Options'

[7]. Chakraborty, N & Majumder, A 2016, 'Occupational Segregation and wage differential between males and females in India,' Sarvekshna,100 th issue

[8]. Chakraborty, S., & Mukherjee, S. 2014, 'Gender wage gap in the Indian labour market: Evidence from the NSS 66th round data'. The Indian Journal of Labour Economics, 57(2), 259–280.

[9]. Chaudhary, R and Verick S, 2014. 'Female Labour Force Participation in India and Beyond', ILO Asia-Pacific Working Paper (New Delhi: ILO).

[10]. Chinara M (2018), 'Gender Discrimination in Wage Earnings: A Study of Indian Wage Market, Indian Journal of Labour Economics'. https://doi.org/10.1007/s41027-018-0132-5

[11]. Deshpande S, & Deshpande L. .1998. Impact of Liberalisation on Labour Market in India: What Do Facts from NSSO's 50th Round Show? Economic and Political Weekly, 33(22), L31–L39. http://www.jstor.org/stable/4406831

[12]. Drèze, J., and A. Sen. 2013. An Uncertain Glory: India and its contradictions. London: A. Lane.

[13]. Duflo, E., 2012, 'Women Empowerment and Economic Development';Journal of EconomicLiterature, Vol. 50, pp. 1051–1079

[14]. Duraisamy, P. and Malathi Duraisamy, 2005. 'Regional Differences in Wage Premia and Returns toEducation by Gender in India', Indian Journal of Labour Economics, 48(2): 335-347

[15]. International Labour Office (ILO). 2018, Global wage report. https://www.ilo.org/global/research/global-reports/ global-wage-report/2018/lang—en/index.htm

[16]. International Labour Office. 2012. Global employment trends for women 2012. IDEAS Working Paper Series from RePEc, IDEAS Working Paper Series from RePEc, 2012. https://doi.org/10.5848/ilo.978-9-221266-58-7_2.
[17]. International Labour Office (ILO), 2003. 'Guidelines Concerning a Statistical Definition of Informal Employment, Endorsed by the Seventeenth International Conference of Labour Statisticians', Geneva, December
[18]. Khanduri S. and Datta R. .2021, 'Handlooms and Handicrafts: Employment Prospects and Sustainable Livelihood Option for the Himalayan State of Uttarakhand, International Journal of Arts Humanities and Social Sciences Studies, Vol 6, Issue 12, Dec, ISSN 2582-1601
[19]. Mahajan, Kanika and Bharat Ramaswami, 2015. 'Caste, Female Labour Supply and the Gender WageGap in India: Boserup Revisited', Indian Statistical Institute, Working Paper
[20]. MoSPI, GoI, 2021, Women and Men in India [23rd Issue]
[21]. MoSPI, GoI, 2022, Labour and Employment Statistics
[22]. Mukhopadhyay, S., & Tendulkar, S. D. 2006. 'Gender differences in labor force participation in India' (Working Paper No. GN(III)/2006/WP2). Lodhi, New Delhi: Institute of Social Studies Trust. https://doi.org/10.1.1.555.5428
[23]. Pennings, S. M. 2022. 'A Gender Employment Gap Index (GEGI): A Simple Measure of the Economic Gains from Closing Gender Employment Gaps, with an Application to the Pacific Islands'. Washington, DC: World Bank. http://hdl.handle.net/10986/37062
[24]. Rangarajan, C., P. Iyer Kaul and Seema 2011. 'Where Is the Missing Labour Force?' Economic and Political Weekly, Vol. XLVI, No. 39, 24 September.
[25]. Sengupta. A, and P.Das.2014: 'Gender Wage Discrimination across Social and Religious Groups in India: Estimates with Unit Level Data.' Economic and Political Weekly 49: 71–76
[26]. Singh, S.P,Ningthoujam Y 2022. 'Gender Wage Gap in Rural Labour Markets: An Empirical Study of North East India', Journal of Asian Finance, Economics and Business Vol 9 No 6 (2022) 0151–0158
[27]. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development, 2015. UN Sustainable Development Goals: Knowledge Platform: https://sustainabledevelopment.un.org/post2015/transformingourworld.
[28]. White, S.C. 2006. The "gender lens": A Racial Blinder? Progress in Development Studies 6 (1): 55–67. https://doi.org/10.1191/1464993406ps127oa.