



Unveiling the Gender Divide: A Sectoral Analysis of Male and Female Employment in Rural India.

¹Mr. Mohan Nagnath Adude

¹Assistant Professor

¹Department of Humanities

¹Vande Mataram College of Arts, Commerce and Science, Dombivli (w), Affiliated to the university of Mumbai, India.

Abstract: This study examines gender disparities in rural employment across three key economic sectors in India: primary, secondary, and tertiary. Using a sectoral regression framework, we compare employment distributions per 1,000 workers between rural males and rural females, with rural males serving as the benchmark category.

These findings indicate significant gender-based differences in employment patterns. In the primary sector, rural female employment per 1,000 workers exceeds that of rural males by 152.66 units, highlighting a pronounced concentration of female labor in agriculture and allied activities. Conversely, in the secondary and tertiary sectors, rural female employment is significantly lower than that of their male counterparts by 52 units and 100.59 units, respectively. These differences are statistically significant, as indicated by t-tests and P-values well below the conventional 5% significance threshold.

These results underscore the persistent gender divide in rural employment, suggesting structural barriers that limit female participation in higher-value secondary and tertiary sector jobs. Policy interventions should aim at reducing these disparities by enhancing skill development, access to employment opportunities, and gender-inclusive labor policies. This study contributes to the broader discourse on gendered labor market dynamics in rural India, emphasizing the need for targeted economic reforms.

Key Words - Mean Employment Situation In India - Per 1000 individuals of Rural Male in Primary, Secondary and Tertiary Sector, Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary, Secondary and Tertiary Sector, (ANOVA) Models.

I. INTRODUCTION

Gender disparities in employment have long been a subject of academic and policy discourse in India. Rural India, in particular, presents a unique employment landscape where traditional roles, economic structures, and social norms significantly influence male and female participation across various sectors. The objective of this study is to examine the gender divide in employment within rural India by analyzing the sectoral distribution of male and female workers.

Employment patterns in rural areas are predominantly shaped by the availability of sector-specific opportunities and societal expectations. The primary sector, consisting mainly of agriculture and allied activities, has historically been a major source of employment for both men and women. However, the extent of female participation in this sector, relative to their male counterparts, remains a topic of interest. Similarly, the secondary sector, which includes manufacturing and construction, and the tertiary sector, encompassing services and trade, have exhibited differential employment patterns based on gender. Understanding these patterns is crucial for addressing employment inequalities and formulating targeted policies that promote inclusive growth.

This study employs a linear regression model to compare the mean employment situation of rural females in the primary, secondary, and tertiary sectors relative to rural males. By using benchmark categories for male employment in each sector and introducing dummy variables to capture female employment trends, we assess whether significant differences exist in employment distribution.

These findings indicate a statistically significant difference in employment distribution between rural males and females across all three sectors. Rural females are found to have a higher representation in the primary sector but face substantial employment deficits in both the secondary and tertiary sectors. These results underscore the need for policy interventions that facilitate greater female participation in non-agricultural sectors, thereby ensuring a more equitable employment landscape.

This paper contributes to the ongoing discourse on gender and employment in India by providing empirical evidence on the disparities in rural employment patterns. The findings have significant implications for labor market policies, rural development programs, and gender-inclusive economic strategies aimed at bridging the employment gap in India's rural workforce.

II. RESEARCH OBJECTIVE:

To analyze gender disparities in rural employment across three major economic sectors in India primary, secondary, and tertiary by employing a sectoral regression framework..

III. RESEARCH HYPOTHESIS:

For each sector, the null and alternative hypotheses are formulated as follows:

Null Hypothesis: $H_0: \beta_i = \beta_{i0}$

There is no significant difference in employment levels between rural males and females in a given sector.

Alternative Hypothesis: $H_1: \beta_i \neq \beta_{i0}$

There exists a statistically significant difference in employment levels between rural males and females.

IV. LITERATURE REVIEW:

The gender divide in employment has been a subject of extensive research, particularly in developing economies where socio-cultural and economic factors significantly influence labor market participation. The rural employment landscape in India reflects deep-rooted gender disparities across different economic sectors. This literature review explores the key studies and theoretical frameworks that contextualize the findings of the current study.

“Several studies have examined the patterns of male and female employment in rural India. Kingdon and Unni (2001) highlight the persistent gender gap in labor force participation rates, attributing it to a combination of social norms, household responsibilities, and educational disparities. Similarly, Neff, Sen, and Kling (2012) argue that rural women's participation in employment is often underreported due to the informal and unpaid nature of their work. The National Sample Survey Office (NSSO) data has consistently shown that female labor force participation in rural areas remains low despite economic growth (NSSO, 2018)”.

“The distribution of male and female employment across primary, secondary, and tertiary sectors reveals distinct gendered patterns. Studies by Meenakshi and Ray (2013) indicate that a majority of rural women are engaged in the primary sector, primarily in agriculture and allied activities. The feminization of agriculture, as discussed by Agarwal (1994), highlights the increasing dependence of rural women on agrarian labor due to male out migration. However, this sector remains characterized by low wages, job insecurity, and seasonal employment, further exacerbating gender inequalities (Srivastava & Srivastava, 2010)”.

“In the secondary sector, women's employment is significantly lower compared to men. Studies by Das and Desai (2003) suggest that socio-cultural barriers and skill mismatches prevent women from participating in manufacturing and industrial jobs. The limited presence of women in rural industries and construction work also reflects structural constraints such as lack of training, mobility restrictions, and gender-biased hiring practices (Kapsos, Silberman, & Bourmpoula, 2014)”.

“The tertiary sector exhibits a stark gender gap as well, with men dominating employment in services such as trade, transportation, and administration. The gendered nature of occupational segregation is emphasized by Desai and Jain (1994), who argue that women's participation in rural services is constrained by educational attainment and prevailing gender norms that limit mobility and access to employment opportunities”.

“Wage disparities between men and women in rural employment have been widely documented. Klasen and Pieters (2015) suggest that wage gaps persist due to occupational segregation and discrimination, with women often engaged in low-paying, informal jobs. The International Labour Organization (ILO, 2020) has also reported significant wage gaps in rural India, particularly in non-agricultural sectors where men have greater access to formal employment opportunities”.

“Furthermore, Bhandari and Soni (2021) analyze employment trends and argue that rural women face structural barriers that limit their participation in higher-paying jobs. The interplay of education, social norms, and economic policies contributes to the observed disparities, reinforcing the need for policy interventions that promote gender-inclusive labor market reforms”.

V. RESEARCH METHODOLOGY:

This study employs a quantitative research design to analyze gender disparities in employment across different sectors in rural India. The analysis is based on empirical data using a linear regression model to compare the employment distribution per 1000 individuals among rural males and females in the primary, secondary, and tertiary sectors.

The data for this study is sourced from official government reports, NSS 60th and 61st Round, Periodic Labour Force Survey Report (PLFS), National Statistical Office, Ministry of Statistics And Programme Implementation, Government of India. These sources provide credible employment statistics disaggregated by gender and sector.

VI. VARIABLES AND MODEL SPECIFICATION:

To examine gender-based employment differences, the following regression models are estimated for each sector:

I.PRIMARY SECTOR:

$$Y_{Pi} = \beta_{P0} + \beta_2 D_2 + u_i \dots\dots\dots \text{Where: Benchmark Category is Rural, Male, Primary Sector.}$$

Y_{Pi} = represents employment per 1000 individuals in the primary sector.

β_{P0} = is the mean employment level for rural males in the primary sector.

β_2 = is the difference in employment between rural males and females.

D_2 = is a dummy variable (1 if Rural Female in Primary Sector; 0 otherwise).

u_i = is an error term.

II.SECONDARY SECTOR:

$$Y_{Si} = \beta_{S0} + \beta_3 D_3 + u_i \dots\dots\dots \text{Where: Benchmark Category is Rural, Male, Secondary Sector}$$

Y_{Si} = represents employment per 1000 individuals in the Secondary sector.

β_{S0} = is the mean employment level for rural males in the Secondary sector.

β_3 = is the difference in employment between rural males and females.

D_3 = is a dummy variable (1 if Rural Female in Secondary Sector; 0 otherwise).

u_i = is an error term.

III.TERTIARY SECTOR:

$$Y_{Ti} = \beta_{T0} + \beta_4 D_4 + u_i \dots\dots\dots \text{Where: Benchmark Category is Rural, Male, Tertiary Sector.}$$

Y_{Ti} = represents employment per 1000 individuals in the Secondary sector.

β_{T0} = is the mean employment level for rural males in the Secondary sector.

β_4 = is the difference in employment between rural males and females.

D_4 = is a dummy variable (1 if Rural Female in Secondary Sector; 0 otherwise).

u_i = is an error term.

The Ordinary Least Squares (OLS) method is employed to estimate the parameters in each sector. This approach helps determine the significance and direction of the gender employment gap across different sectors. The t-statistic and corresponding p-values are used to assess the statistical significance of the gender employment gap at a 5% significance level ($\alpha = 0.05$). If the p-value is less than 0.05, the null hypothesis is rejected. The coefficient estimates (β) from each regression model indicate whether female employment is higher or lower than male employment in a given sector. A positive coefficient implies higher employment for rural females, while a negative coefficient suggests lower employment. The magnitude of the coefficient provides a measure of the employment gap. While this study provides valuable insights into sectoral employment differences, it has some limitations. The analysis does not account for factors such as education, skill level, and social constraints that may influence employment patterns. The study focuses only on rural areas, excluding urban employment trends. Potential data limitations and classification issues in employment statistics may impact findings.

By employing a linear regression model and hypothesis testing, this study aims to quantify the gender divide in rural employment across primary, secondary, and tertiary sectors. The findings contribute to the broader discourse on gender-based labor market disparities in India and provide a basis for policy recommendations.

VII. DATA COLLECTION AND DATA SOURCE:**TABLE NO. :1 EMPLOYMENT SITUATION IN INDIA - PER 1000 DISTRIBUTION OF USUALLY EMPLOYED BY BROAD GROUPS OF INDUSTRY FOR VARIOUS ROUNDS**

Rounds	Survey Period	Rural					
		Male			Female		
		Primary Sector	Secondary Sector	Tertiary Sector	Primary Sector	Secondary Sector	Tertiary Sector
PLFS 6	July 2022- June 2023	491	281	228	762	127	112
PLFS 5	July 2021- June 2022	510	254	237	759	134	108
PLFS 4	July 2020- June 2021	538	242	221	754	135	113
PLFS 3	July 2019- June 2020	554	231	216	757	130	112
PLFS 2	July 2018- June 2019	532	235	232	711	154	136
PLFS 1	July 2017- June 2018	550	232	220	732	136	132
68	July 2011- June 2012	594	220	187	749	167	83
66	July 2009- June 2010	628	193	178	794	130	76
64	July 2007- June 2008	665	162	173	835	97	68
62	July 2005- June 2006	652	165	183	813	120	68
61	July 2004- June 2005	665	155	180	833	102	66
60	January-June 2004	659	160	180	841	94	65
59	January-December 2003	708	141	151	852	95	53
58	July-December 2002	688	138	174	849	87	65
57	July 2001 - June 2002	678	145	177	840	109	51
56	July 2000- June 2001	690	136	174	818	133	49
55	July 1999- June 2000	714	126	160	854	89	57
54	January-June 1998	757	102	141	885	66	49
53	January-December 1997	758	106	136	885	72	42
52	July 1995 - June 1996	748	114	137	868	80	52
51	July 1994- June 1995	756	103	141	871	83	46
50	July 1993-	741	112	147	862	83	55

	June 1994						
49	January- June 1993	750	109	141	872	74	54
48	January- December 1992	757	104	139	862	78	60
47	July-December 1991	749	112	139	863	79	58
46	July 1990- June 1991	710	121	169	849	81	70
45	July 1989 - June 1990	717	121	162	814	124	61
43	July 1987- June 1988	745	121	134	847	100	53
38	January- December 1983	775	100	122	875	74	48

Data Source:

NSS 60th and 61st Round, Periodic Labour Force Survey Report (PLFS), National Statistical Office, Ministry of Statistics And Programme Implementation, Government of India.

Data Note :

1. Data on NSS rounds 38, 43, 50, 55, 61, 66 and 68 relates to quinquennial rounds.
2. Data for July 2017-June 2018, pertain to the Periodic Labour Force Survey (PLFS), that accounts labour force estimates for both status (ps and ss).

The primary sector includes Agriculture and allied activities. The secondary sector includes Mining, manufacturing, electricity, gas, water, etc. and construction. The tertiary sector includes Trade, hotel and restaurant, Transport, storage and communication and Other services.

VIII. DATA ANALYSIS:

Consider the (ANOVA) Models with one dummy variables for each sector:

$$\text{PRIMARY SECTOR: } Y_{Pi} = \beta_{P0} + \beta_2 D_2 + u_i \dots\dots\dots (1)$$

$$\text{SECONDARY SECTOR: } Y_{Si} = \beta_{S0} + \beta_3 D_3 + u_i \dots\dots\dots (2)$$

$$\text{TERTIARY SECTOR: } Y_{Ti} = \beta_{T0} + \beta_4 D_4 + u_i \dots\dots\dots (3)$$

Since the qualitative variable is a 'gender' which has two categories Male and Female, we have introduced only one dummy variable for each sector. The category for which no dummy variable is assigned, is known as the base, benchmark, control or reference category; and the comparison is made in relation to the benchmark category. For this analysis Rural-Male of each sector is considered as a Benchmark Category. The coefficients attached to the dummy variables in the regression equation are known as the differential intercept coefficients because they tell us by how much the value of the category that receives the value differs from the intercept coefficients of the benchmark category. The Ordinary Least Squares (OLS) method is employed to estimate the parameters in each sector. The output is as follows.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	671.6896552	13.1111382	51.23046106	0
D_2	152.6551724	18.54194946	8.232962381	0
Intercept	156.5862069	8.020834514	19.52243331	0
D_3	-52	11.34317295	-4.584255236	0.00002599596205
Intercept	171.6896552	5.615825663	30.57246885	0
D_4	-100.5862069	7.941976816	-12.66513479	0

PRIMARY SECTOR: $Y_{Pi} = 671.6896552 + 152.655172 D_2 + u_i$ (1)

SECONDARY SECTOR: $Y_{Si} = 156.5862069 - 52 D_3 + u_i$ (2)

TERTIARY SECTOR: $Y_{Ti} = 171.689655 - 100.5862069 D_4 + u_i$ (3)

The Intercept represents the expected value of the benchmark category when all other independent variables are assumed to be zero.

For the primary sector the intercept value represents the mean value of the benchmark category. Hence, in the first regression the intercept value of about 671.6896552, represents the Mean Employment Situation In India - Per 1000 individuals of Rural Male in Primary Sector. The value 152.655172 tells us that the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector is more than the benchmark category. To calculate the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector we have to add the respective coefficient of the dummy variable. By this calculation we can get The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector which is 824.3448276.

Similarly, in the second regression the intercept value of about 156.5862069, represents the Mean Employment Situation In India - Per 1000 individuals of Rural Male in Secondary Sector. The value 52 tells us that the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Secondary Sector is less than the benchmark category. Therefore the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Secondary Sector is 104.5862069.

In the third regression the intercept value of about 171.689655, represents the Mean Employment Situation In India - Per 1000 individuals of Rural Male in Tertiary Sector. The value 100.5862069 tells us that the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Tertiary Sector is less than the benchmark category. Therefore the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Tertiary Sector is 104.5862069.

IX. HYPOTHESIS TESTING:

To Know that all the above mentioned Mean Employment Situation In India - Per 1000 individuals of Rural Female in each sector are statistically different from the benchmark category we have to find out if each of the slope coefficients in the registration equation is statistically significant. For this we use the t-test which is used to compare the means of two groups or categories that are statistically significant or not.

Null Hypothesis: $H_0: \beta_2 = \beta_{P0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector is similar to the base category i.e. Rural Male in Primary Sector.

Alternative Hypothesis: $H_1: \beta_2 \neq \beta_{P0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector is not similar to the base category i.e. Rural Male in Primary Sector.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	671.6896552	13.1111382	51.23046106	0
D_2	152.6551724	18.54194946	8.232962381	0

The P-value (i.e. the exact level of significance) is that if the null hypothesis were true, the probability of obtaining a t value of as much as 18.5419494 or greater (in absolute terms) is 0, which is indeed zero probability, much smaller than the artificially adopted of =5%. Reject the Null Hypothesis that is $H_0: \beta_2 = \beta_{P0}$ and accept the Alternative Hypothesis.

In other words, the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Primary Sector is more by 152.6551724 individuals per 1000 than the base category and this difference is statistically significant. Therefore The Mean Employment Situation In India - Per 1000 individuals of Rural females in Primary Sector is 824.344827586207.

Null Hypothesis: $H_0: \beta_3 = \beta_{S0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Secondary Sector is similar to the base category i.e. Rural Male in Secondary Sector.

Alternative Hypothesis: $H_1: \beta_3 \neq \beta_{S0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Secondary Sector is not similar to the base category i.e. Rural Male in Secondary Sector.

	Coefficients	Standard Error	t Stat	P-value
Intercept	156.5862069	8.020834514	19.52243331	0
D_3	-52	11.34317295	-4.584255236	0.00002599596205

The P-value (i.e. the exact level of significance) is that if the null hypothesis were true, the probability of obtaining a t value of as much as -4.584255236 or greater (in absolute terms) is 0.00002599596205, which is indeed zero probability, much smaller than the artificially adopted of =5%. Reject the Null Hypothesis that is $H_0: \beta_3 = \beta_{S0}$ and accept the Alternative Hypothesis. In other words, the Mean Employment Situation In India - Per 1000 individuals of Rural females in the Secondary Sector is lower by 52 individuals per 1000 than the base category and this difference is statistically significant. Therefore The Mean Employment Situation In India - Per 1000 individuals of Rural females in the Secondary Sector is 104.586206896552.

Null Hypothesis: $H_0: \beta_4 = \beta_{T0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Tertiary Sector is similar to the base category i.e. Rural Male in Tertiary Sector.

Alternative Hypothesis: $H_1: \beta_4 \neq \beta_{T0}$

The Mean Employment Situation In India - Per 1000 individuals of Rural Female in Tertiary Sector is not similar to the base category i.e. Rural Male in Tertiary Sector.

	Coefficients	Standard Error	t Stat	P-value
Intercept	171.6896552	5.615825663	30.57246885	0
D_4	-100.5862069	7.941976816	-12.66513479	0

The P-value (i.e. the exact level of significance) is that if the null hypothesis were true, the probability of obtaining a t value of as much as -12.66513479 or greater (in absolute terms) is 0, which is indeed zero probability, much smaller than the artificially adopted of =5%. Reject the Null Hypothesis that is $H_0: \beta_4 = \beta_{T0}$ and accept the Alternative Hypothesis.

In other words, the Mean Employment Situation In India - Per 1000 individuals of Rural Female in Tertiary Sector is lower by 100.5862069 per 1000 individuals than the base category and this difference is statistically significant. Therefore Mean Employment Situation In India - Per 1000 individuals of Rural females in the Tertiary Sector is 71.1034482758621.

X. CONCLUSION:

This study provides a sectoral analysis of gender disparities in employment in rural India, focusing on the primary, secondary, and tertiary sectors. The findings reveal significant differences in employment distributions between rural males and females across these sectors. The analysis shows that rural females in the primary sector have a significantly higher employment rate than rural males, with an increase of approximately 152.66 per 1000 workers. This suggests a greater reliance on agriculture and allied activities for rural female employment. Conversely, the employment rate for rural females is notably lower in both the secondary and tertiary sectors. Rural female employment in the secondary sector is 52 per 1000 workers lower than that of rural males, while in the tertiary sector, it is reduced by 100.59 per 1000 workers. These disparities indicate structural constraints, potential gender-based occupational segregation, and limited access to non-agricultural employment opportunities for rural women.

The statistical significance of these findings underscores the need for targeted policy interventions. Expanding skill development programs, improving access to education, and fostering gender-inclusive employment policies in the secondary and tertiary sectors could help bridge this employment gap. Addressing socio-economic and cultural barriers that limit female workforce participation in these sectors is also crucial. Overall, this study highlights the persistent gender divide in rural employment and emphasizes the necessity for comprehensive policy measures to promote equitable employment opportunities for women in India's rural economy.

REFERENCES

- [1] Agarwal, B. (1994). *A field of one's own: Gender and land rights in South Asia*. Cambridge University Press.
- [2] Bhandari, L., & Soni, N. (2021). Employment trends and gender disparities in rural India. *Economic & Political Weekly*, 56(12), 45-57.
- [3] Das, M., & Desai, S. (2003). Why are women missing from Indian work? *Journal of Development Economics*, 71(1), 1-26.
- [4] Desai, S., & Jain, D. (1994). Maternal employment and changes in family dynamics in rural India. *Population and Development Review*, 20(4), 681-702.
- [5] International Labour Organization (ILO). (2020). *India Wage Report: Wage policies for decent work and inclusive growth*. Geneva.
- [6] Kapsos, S., Silberman, A., & Bourmpoula, E. (2014). Why is female labor force participation declining so sharply in India? ILO Research Paper.
- [7] Kingdon, G., & Unni, J. (2001). Education and women's labor market outcomes in India. *Education Economics*, 9(2), 173-195.
- [8] Klasen, S., & Pieters, J. (2015). What explains the stagnation of female labor force participation in urban India? *The World Bank Economic Review*, 29(3), 449-478.
- [9] Meenakshi, R., & Ray, S. (2013). Gender disparities in employment patterns in rural India. *Journal of Rural Development*, 32(2), 125-140.
- [10] National Sample Survey Office (NSSO). (2018). *Employment and unemployment situation in India*. Ministry of Statistics and Programme Implementation.
- [11] Neff, D., Sen, K., & Kling, V. (2012). The puzzling decline in rural women's labor force participation in India: A re-examination. *GIGA Working Papers*.
- [12] Srivastava, N., & Srivastava, R. (2010). Women, work, and employment outcomes in rural India. *Economic & Political Weekly*, 45(28), 49-58

