

# Exploring Factors Influencing Wage Inequality in India: An Empirical Analysis

Navin Kumar

Research Scholar, Department of Economics, Patna University, Patna

Prof. B. K. Lal

Associate Professor, P.G. Department of Economics, Patna University, Patna

## ABSTRACT

The objective of the study is to find the main determinants of wage inequality in India. The explanatory variables of the study are derived from Mincer's wage equation that proposes that education and experience have significant impact on the wage difference among individuals. The data for the study is taken from Periodic Labour force survey for the year 2017-18. The results from the study verify the Mincer's wage equation. Education and experience are significantly correlated and are responsible for wage difference among individual. The study further concludes that individual working in informal sector receives relatively less wages as compared to a person working in formal sector.

**Keywords:** Wage inequality; Skills; Schooling; Experience; Education

## Introduction:

Wage constitutes one of the major components of income. In a narrow sense, it is the price paid for the services of labour that includes only performance wages. Increasing wage inequality has always concerned economists and policymakers. Economists have always tried to understand the factors responsible for wage inequality. Over time, various theories were proposed, like the theory of equalising differences (Smith, 1776), the relative demand for more skilled workers, skilled biased technological change, human capital theory etc., to explain the increasing wage inequality.

In this paper, we will discuss the prevailing wage inequality in the Indian economy and determine the major determinants of wage inequality in the country. Thus, the objective of the study is to find the main determinants of wage inequality in India.

Table 1 shows the wages of males and females in rural and urban areas. Wages differ across not only gender but also regions. A male casual worker received 259 rs in rural areas compared to a worker in urban areas who are paid 312 rs for a day.

**Table - 1**  
Average daily wages for employment status and gender of age group (14-64) yrs (CWS)

Employment Status	Rural		Urban	
	Male	Female	Male	Female
Casual labour	259.2011	178.2538	312.2968	207.0623
Salaried	447.1746	295.5035	607.0057	485.1765
Self-employed	238.9236	43.4103	464.615	153.3473

Source: Computed by Author from PLFS data 2017-18

Table 2 shows wage differences across gender for different level of education attainment in rural and urban areas. From the table, it is clear that a person with higher level of education is receiving higher wages. However, gender differences still plays an important role in determining the wages in both rural and urban areas.

Table 2:

## Average daily wages for gender and education level of age group (14-64) yrs (CWS)

## Rural Area

Education level	Self-employed		Regular/salaried		Casual worker	
	Male	Female	Male	Female	Male	Female
Below primary	242.3654	40.32174	268.739	118.6541	248.4185	175.5649
Primary	231.7939	44.03436	273.561	144.5265	258.3559	176.1189
Middle	227.0091	42.01719	317.2171	169.9054	267.8997	173.7633
Secondary	260.7939	56.00488	389.3614	234.8638	281.2645	189.5862
Higher secondary	261.0653	60.45682	473.511	324.3	267.5583	170.6805
Diploma/certificate	354.7738	41.17004	511.1693	469.2553	383.9323	241.8577
Graduation	259.6039	78.41845	644.314	479.4898	268.8607	244.3453
Post-graduation and above	297.4187	145.957	849.3044	619.9454	246.0645	642.0435

## Urban

Education level	Self-employed		Regular/salaried		Casual level worker	
	Male	Female	Male	Female	Male	Female
Below primary	336.1009	114.1234	303.4516	178.8064	287.1175	196.3814
Primary	372.5576	89.45337	322.5577	189.1605	310.4693	202.8136
Middle	383.3967	109.8975	370.4095	220.7856	323.3371	214.3363
Secondary	462.2074	148.7101	454.4226	338.4643	320.4403	186.0111
Higher secondary	504.8436	164.2584	533.6846	415.744	311.3891	222.7782
Diploma/certificate	620.8989	241.5525	757.1213	679.4026	404.7786	481.6702
Graduation	662.7004	385.0322	874.6346	689.9647	321.9975	308.9986
Post-graduation and above	790.6695	399.1344	1135.875	900.3765	290.683	137.1429

Source: Computed by Author from PLFS data 2017-18

This paper is organised as follows: Section 1 gives background information about wage inequality. Second section is a brief literature review that discusses earlier studies' problems and findings. Third section provides information about data and methodology used in the study. The fourth section discusses results and findings of the present paper. Fifth and last section draws a conclusion from the present paper.

### 1. Review of literature:

This paper discusses the effect education and experience of person on wages received by him. In labour market, wages received by workers differ according to the nature of jobs. However, it can vary due to other observable differences like gender, age, roles etc. (Enu, Hagan, Ahouandjinou & Attah-Obeng, 2014). Various authors in their papers have documented that different level of education attainment leads to wage differences among the people.

Since labour market is not characterised by single wage, i.e., workers differ and jobs differ. Adam smith propounded the traditional theory of wage differentials. He proposed the concept that job characteristics influence labour market equilibrium. If a job is unpleasant, the firm has to pay higher wages to attract workers and vice-versa. This give rise to compensating wage differentials theory or theory of equalising differences (Smith, 1776).

Technological advancement and widening wage gap during 90's gave rise to a faction of economists who believed that technology and skill are complement (Goldin & Katz, 1996). Manacord, Sánchez-Páramo, & Schady (2010) argued that it is the Skill-biased technological change (SBTC) that was responsible for increasing wage premiums to skilled workers in developed countries during 1980's.

Acemoglu (1998) observed that increase in supply of skills via education would reduce skill premium in short-run. However, in long run it will increase productivity for skilled workers and induces SBTC.

Another theory that explains wage differences is human capital theory. Earlier, it was argued that it is capital (machinery) that enhances labour productivity. Schultz (1961) and Mincer (1974) proved that expenditure on human capital can also increase productivity.

Jacob Mincer's (1974) model of earnings is a landmark work in field of economics. He has established that there is definite and significant relationship between wages and other explanatory variables like education, experience. Increasing educational level is directly linked with the skills of an individual. Education and skills together increases productivity (Alsulami, 2018).

Barro (1991) and Mankiw, Romer, and Weil (1992) asserted that workers' quality might be one of the reasons for the difference in wages and income. An O-ring production function explains how slight differences in worker skills create differences in productivity and wages.

Kim (2021) in his study discussed the extent of heterogeneity in education that contribute to wealth inequality and life cycle savings. The study found that to understand the wealth inequality and life-cycle savings, it is important to understand the source of wage differential across households that have different level of education.

## 2. Data and methodology

The data for this study is taken from Periodic labour force survey 2017-18 which is a nationally representative household survey. The data collected in this survey was based on stratified multi-stage sampling method (NSSO, 2016). The first stage sampling frame consists of Urban Frame Survey<sup>1</sup> (UFS) blocks for urban areas and 2011 population census villages for rural areas. Households are the Ultimate Stage Units (USU). Households<sup>2</sup> are selected using simple random sampling without replacement<sup>3</sup> (SRSWOR) method. The survey data used in the study covers whole of India except villages in Andaman and Nicobar islands. It is a nationally representative data in which information like demographic characteristics, activity status, primary and secondary activities, wages, etc. are recorded. In this study, we have used OLS<sup>4</sup> model to explain the relationship between explanatory variables and explained variables. The general equation for OLS model is given as:

$$y_i = \sum_{j=1}^p \beta_j X_{ij} + \varepsilon_i, (i = 1, 2, \dots, n) \quad \dots (1)$$

Our empirical analysis proceeds as follows: Firstly, we use simple OLS regression following Mincer (1974) wage equation. We have used education and experience as main explanatory variables while the dependent variable in the following model is log average daily wages. Next, we progressively augmented the model by introducing more explanatory variables.

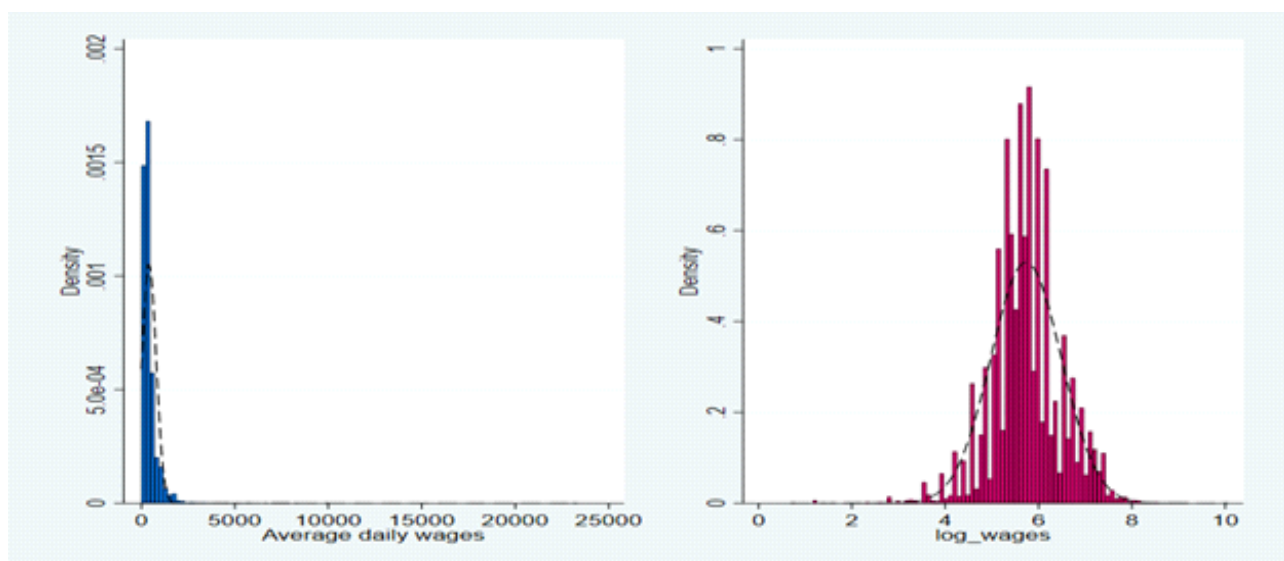


Figure 1 : Histogramme of average daily wages and log of average daily wages

The log mean daily wages is used as regressand because the distribution is highly skewed (see fig 1). The histogram of average daily wages shows that it is right skewed. Therefore, to reduce the effect of outliers in the model, log-linear model or semi-log model is used. Semi-log model used in the study is as follows:

$$\ln WAGES = \beta_0 + \beta_1 EDU + \beta_2 EXP + \beta_3 EXP^2 + \mu$$

Where, 'EDU' is numbers of years of formal schooling, 'EXP' represents the years an individual has worked after schooling, 'EXP<sup>2</sup>' is experience squared, and  $\mu$  is the error term.

To obtain experience from the data we calculated "potential experience" proposed by Mincer i.e.,

$X = A - S - 6$  Where A is age of individual and, S-6 is the years of schooling by individual assuming that he started schooling at the age of 6yrs. We have used STATA (version 15) for data analysis.

#### 4. Results and Discussion:

Table 2 given below gives the basic description of variables used further in the study and their descriptive statistics.

**Table 3:**  
**Descriptive Statistics**

Variables	Description	N	Mean	S.D.	Min	Max
Ln_wages	Log of Average daily wages	113,153	5.64	.725	.69	10.05
GEN	Gender of the person	113,153	1.17	.375	1	2
EXP	Working experience (in yrs)	113,153	24.3	12.56	0	53
EXP <sup>2</sup>	Square of experience	113,153	748.469	653.17	0	2809
EDU	Number of years of formal education	113,153	7.54	5.27	0	28
SECTOR	Formal or Infomal sector	38,427	.324	.468	0	1

The Table 3 shows the estimates of two OLS model, i.e., Model 1 and Model 2. All the co-efficient in both the model are significant 99.9% level of significance. R-square<sup>1</sup> (R<sup>2</sup>) for model 1 is .203 whereas R<sup>2</sup> for model 2 is .552.

**Table 4:**  
**Regression results**

Log wage	Model	Model 2	Model 3
EDU	0.0730***(0.000832)	.0690***(0.0008179)	0.0412***(0.00136)
EXP	0.0269***(0.00101)	0.02501***(0.0009743)	0.0279***(0.00112)
EXP <sup>2</sup>	-0.000283***(1.95e-05)	-0.0002***(0.0000188)	-0.000344**(2.11e-05)
GEN Female		-0.4417***(0.0093)	-0.387***(0.0133)
Third Gender			-0.391***(0.0978)
SECTOR Formal			0.881***(0.0138)
Constant	4.656*** (0.0152)	5.2258***(0.0185135)	4.911***(0.0197)
N	113,170	113,153	36,415
R <sup>2</sup>	0.203	.2548	0.552
Adjusted R <sup>2</sup>	0.203		0.552

*Robust standard errors in parentheses*

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Log-transformed dependent variable implies our simple linear model has been exponentiated<sup>1</sup>. Model 1 is the basic Mincer wage equation and Model 2 and model 3 are the extended version of Mincer equation with gender and sector in which a person is working .i.e., formal sector or informal sector. Every country has its own definition and criteria to classify formal and informal employment (OECD and ILO, 2019). Here, formal sector variable has been created from three variables that are given in the PLFS data. For a person is said to be engaged in formal employment if it fulfils three conditions given below:

- i. Size of economic unit
- ii. Employer's social security contribution
- iii. Entitlement to paid leaves

In model 3, education coefficient is 0.412 suggest that for every additional year of schooling, average wage rate increases by 4%, *ceteris paribus*. Likewise, for every additional year of work experience average wage rate rose up by 2.829%, *ceteris paribus*. The female dummy coefficient of -0.387 suggest that average female wage rate is lower than male average wage rate by 32.1%. Likewise, people engaged in formal sector receives 141% higher wages as compared to people working in informal sector.

### Conclusion:

This paper find evidences that there exist pay disparity among workers who had more years of education and experience as compared to workers with less education and experience. It is also found that gender also plays an important role in determining remuneration paid to the workers. A female workers usually considered less productive and therefore are paid less. Similarly, a worker engaged in formal sector is receiving higher wages than a person working in informal sector.

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