

# Gender Wage Gap and Gender Work Inequality in India

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## Abstract

*This study attempts to find how gender inequality in wages influences the inequality in gender work division within households. While the gender wage gap is falling, there is continuous fall in female labour market participation, rather than rising, which is a puzzling situation. This study has tried to explain this puzzling situation using Periodic Labour Force Survey (2018-19) and Time Use Survey (2019). Inequality in wages have been considered in terms of gender wage gap. Using fractional regression analysis, we find that gender wage gap positively influences the paid work participation for both males and females. Simultaneously, it causes a fall in unpaid work activities, such as care work. For females, the impact is more strong implying that own income effect is stronger than substitution effect of wages, while for males, the substitution effect is stronger. The males switch their time from domestic and care work to paid work when wage gap rises. But females switch time from care work and own production work to paid work when wage gap rises. The study ends with recommendation of policies such as incentives and benefits for working women which will increase the substitution effect of wages for the females and induce them into the labour market.*

**Keywords:** Gender wage gap, Labour Market Participation, Unpaid Work, Time Use

## Introduction

There is large inequality existing in labour market participation between men and women in the labour market. Whereas 36.32 per cent men were involved in paid work, 23.6 per cent of women were engaged in paid work according to Periodic Labour Force Survey of India (2019). Moreover, the International Labour Organisation (ILO) in 2014 reported a puzzling trend where female labour force participation rate in India is seen declining from 34.1 per cent in 1999-00 to 27.2 per cent in 2011-12. The reasons suggested include rising educational enrolment and household income effect as the causes for the declining trend. While there has indeed been improvement in access to education for females, especially in rural areas, studies have also found a simultaneous rise of per cent of females engaged in domestic work in India (Singh and Pattanaik, 2020). This implies that females are switching from paid work outside household to unpaid domestic work within household. Some studies have also pointed to a phenomenon of housework penalty where due to burden of housework, females are unable to participate

in paid work (Bryan and Sevilla-Sanz, 2011; Powell and Craig, 2015; Kizilirmak and Memis, 2019). Another reason forwarded is the negative impact of household income effect on female labour force participation. Due to the secondary earning status given to females, they get involved in paid work when the household is suffering from income deficit and withdraw when the household is economically better-off (Utomo, 2012). Given the economic growth experienced by the country in recent years, there has been improvement in wages in the labour market (Sharma, 2022). This, in turn, has led to a rise in household income which has reduced the need for women in the family to seek paid work outside. This has caused a rise in unpaid work while simultaneously reduces their participation in paid work.

Another reason forwarded is wage discrimination in the labour market. While unpaid work and its gender dimension have widely been discussed in literature, an important aspect linking the two is labour market characteristics, such as gender discrimination, prevailing in the region, which is often overlooked. Gender wage

gap in India, where workers are paid unequal wages based on their gender, is explained primarily by gender discrimination (Mondal, Ghosh, Chakraborty, and Mitra, 2018). Becker (1965) argued that the wage discrimination in the labour market causes households to allocate paid work to males since they receive better remuneration than the females. This forces the females to allocate their time to household work, since the male members assumes the role of primary earners in the household. While there is presence of considerable wage gap between male and female workers in the labour market in India, where females earn 19 per cent less than the males, yet studies have shown the gap has narrowed considerably in recent years (International Labour Organisation, 2022). According to Becker's (1965), this should induce females to enter the labour market rather than force them to leave. Our study attempts to explain this puzzling phenomenon.

This study attempts to find how wage discrimination influences the male and female members in the households. This will be the focus of this study where we shall attempt to find how the wage gap associates differently with paid and different components of unpaid work of males and females and make a comparative analysis between them. The study hypothesises that wage is an important reason which explains why individuals working in different industries chooses to devote different amounts of time to unpaid work. This is because, a critical aspect of any job is the remuneration received by individuals for the work they put in. Wage rate is therefore an important aspect taken into consideration by individuals while allocating time in various activities. The study finds evidence that wage is a significant determinant of time devoted to paid work. Since as wage rises, the opportunity cost of not working rises, individuals devote more time to paid work. Therefore, paid work time and wage rate per hour are directly related. However, unpaid work time and wage rate are inversely related. Since time is scarce for every individual, devoting more time to paid work has a detrimental impact on time devoted to unpaid work, which falls. Therefore, with rise of wages, unpaid work is substituted for paid work. However, Becker's study failed to consider the different components of unpaid household work and how it gets impacted by wage gap prevailing in the labour market. This study will also attempt to analyse the impact on different components of unpaid work.

### **Methodology**

In order to measure wage gap, we require data on wages in the labour market. We use wage data from NSS Periodic Labour Force Survey (PLFS) (2018-19) which provides detailed information about labour market outcomes at

household level. We take the industry wide average per hour wages at the district level, after consideration of status of employment. For calculation of gender wage gap, we have considered the following expression which is related to the relative wage gap measure proposed by OECD (2023):

$$\text{Gender Wage gap} = \frac{(\text{Wage for males} - \text{Wage of females})}{\text{Wage for male}}$$

While the PLFS data collects information on domestic work and allied activities, it fails to capture the different components of unpaid work. Due to this, we consider the Time Use Survey data (2019) for the study. The Time Use Survey data provides detailed information about the amount of time spent by individuals in different activities on the day before the survey. Therefore, it not only helps to capture the paid work, but also the unpaid work activities. Unpaid work is not transacted in the market and so it is not possible to measure its value in monetary terms. Time Use data helps to solve this issue by helping to capture the value placed by individuals on unpaid work activities based on their decisions to spent time on such activities. Therefore, time use data helps to make visible the unpaid work activities which takes place within the confines of households. This is useful to measure the contribution of women to the economy since they bear a greater portion of the unpaid work activities.

We consider work performed by an individual as consisting of two types of activities: paid work and unpaid work. Paid work consists of those activities performed in the labour market due to which they receive remuneration. In TUS (2019), we consider codes 110 to 182 as paid work, which also includes self-employment work. However, it excludes the time spent in seeking employment. Unpaid work consists of those activities which do not get any monetary return since it is not transacted in the market place. It can be further divided into the following three types:

1. Domestic work- This activity consists of time spent in providing at-home services for the family, such as cooking and cleaning. Therefore, all activity codes between 301 and 400 fall under this category.
2. Care work- Care provided by individuals are provided to the entire family. All these activities are not remunerated and therefore, fall under unpaid work. Activities which have codes between 401 and 500 fall in this category.
3. Own production- The time taken to produce goods for final use at home are considered under this category. Since these products are not marketed, their valuation is not possible. Therefore, when individuals spend time in production of such goods at home, it is unpaid work, as it is unremunerated.

Example of such activities are time spent in collecting water and fuel for household use. Such activities take place when the households cannot afford to buy the market substitutable of these products. The TUS activity codes which capture these activities are coded from 201 to 300.

The objective of this study is to find the association of gender wage gap on division of paid and unpaid work between male and female members in households. Therefore, we use the estimation of following regression model for analysis:

$$Y_{1,j} = \text{Intercept} + \beta_1 * \text{Gender Wage Gap} + \beta_2 * \text{Logarithm of Monthly Consumption Expenditure} + \beta_3 * \text{Number of children (0-5 years)} + \beta_4 * \text{No. of male children (6-13 years)} + \beta_5 * \text{No. of female children (6-13 years)} + \beta_6 * \text{No. of male adolescents (14-17 years)} + \beta_7 * \text{No. of female adolescents (14-17 years)} + \beta_8 * \text{Household Size} + \beta_9 * \text{Dummy for General Caste} + \beta_{10} * \text{Dummy for Hindu} + \beta_{11} * \text{Dummy for Urban Sector} + \beta_{12} * \text{Dummy for Married} + \beta_{13} * \text{Dummy for Beyond Secondary Education} + \beta_{13} * \text{Age} + \beta_{14} * \text{Age Squared} + \varepsilon_{1,j} \quad (1)$$

The dependent variable is the proportion of time in a day (in minutes) that the individual spends in a day on the activity out of a total of 1440 minutes in a day. The dependent variable therefore lies between 0 and 1, and so we use fractional regression estimation. The equation (1) has been separately calculated for each of the following activities: paid work, unpaid work and its three components: domestic work, care work and own production work. The independent variable Gender Wage Gap is the variable of interest for this study. The other independent variables included in equation (1) are control variables, which may influence the nature of relation between proportion of time spent in an activity and gender wage gap. The logarithm of monthly consumption expenditure has been taken as control since it indicates the economic condition of household which may influence the individual's decision of time allocation, and so it has been controlled for. Variables pertaining to the composition of household such as number of children, the gender of adolescent members and the household size will influence the decision of individuals while allocating time to different activities (Gupta, 1999; Rego, 2021). Variable such as the social group and religion of household which captures the cultural influence are also important (Das and Desai, 2003). Individual level factors such as marriage is found to reduce the paid work time for females and unpaid work time for males (Majumdar, 2011). Other factors such as education, age and age-square are also significantly influencing the time allocation of individuals (Singh and Pattanaik, 2018; Malathy, 1989; Dasgupta and Goldar, 2005).

Our analysis is only focused on individuals who fulfil the following criteria:

- age group is between 18 to 64 years (working age group)
- households whose surveyed day was characterised as "normal day" which means the day's schedule was not non-normal
- with no missing values for all the key variables that has been used for the analysis.

## Results and Discussions

It is important to understand how gender wage gap is influencing the decision of male members in households in dividing their time between paid and unpaid work. We find in Table 1 (in Appendix) that gender wage gap is increasing the proportion of time devoted to paid work by the male members, as it has a positive significant coefficient of 0.018 proportion. This increase is independent of household income effect, since we have controlled for monthly consumption expenditure. This shows that a rise of gender wage gap induces the male members to devote more time to paid work and less time to unpaid work. When males are being paid more than females in the labour market, they devote more time to paid work which ultimately reduces their time of unpaid work activities, which falls by 0.033 proportion. The unpaid work which suffers is care work and domestic work, which significantly falls by 0.045 and 0.03 proportion respectively. This shows the pure impact of wage discrimination in the labour market on the time use decisions of males in a household.

Table 2 (in Appendix) shows the association of gender wage gap on the time use of female members. Contrary to Becker (1965), we find gender wage gap induces females to devote more time to paid work in India, since the coefficient of gender wage gap is significantly positive (=0.045). From the definition of gender wage gap, we find that a higher gap implies females are being paid lesser per hour than their male counterparts in the same industry and status of employment. A higher wage gap indicates a greater wage discrimination which Becker (1965) pointed would discourage females and reduce their participation in the labour market. However, Table 2 shows that wage discrimination is associated with more time devoted to paid work in a day by the females, due to reasons other than household income effect. Given the more time devoted to paid work, the females choose to engage less in unpaid work activities, which significantly falls by 0.055 proportion. When we consider the component of unpaid work which suffers, we find

that it is mostly care work which falls by 0.235 proportion while own production falls by 0.161 proportion. So, due to gender wage discrimination, females substitute the time in care work and own production work for paid work activities.

If we compare the results of males and females, then the impact of gender wage gap is more for females than males. It increases the paid work time proportion for females by a greater magnitude than that of males. As a result, unpaid work falls by greater proportion for females in the form of care work and own production work. Their domestic work remains unaffected which implies they continue to devote same time to domestic work activities.

When we consider the control variables, we find that presence of children in households increases the proportion of time devoted to unpaid work at the cost of paid work, though the impact is more for females. Larger household size increases the paid work time for females since they take up jobs to sustain the more members in the family. Cultural factors such as religion and social group are also significant for females more than males. Presence of the household in urban area considerably increases paid work for both while reducing their time for unpaid work in the form of own production work. Being a household head increases the burden of unpaid work, while for females it also increases paid work burden. Being married causes males, whose unpaid work falls at the cost of paid work, while for females their unpaid work rises, though paid work is insignificantly affected. Age has positive impact on paid work time proportion for females while increasing their domestic and care work time also. For males, the impact of age is significant on unpaid work components whose time rises with rise of age.

### Conclusion

While inequality of wages in the labour market has been studied widely in literature, there have been few attempts to find the nature of association between inequality of wages and inequality in labour market participation based on gender. This study attempts to explain how gender wage gap in the labour market influences males and females differently in their decisions to allocate time. Like wages, gender wage gap can be said to have two off-setting impact on individuals: substitution effect and own income effect. For males, we can say that substitution effect is stronger since as their relative wages are improving, they are switching more time from unpaid work activities (such as domestic work and care work) to paid work activities. Since females

have secondary earner status in households, they work only when there is income deficit. When wage gap is high, it implies that the gap between male and female wages are more, where females are getting lower wages. This forces them to devote more time to paid work to earn the same income. When the gap between the male and female wages becomes lower, female wages are rising at a greater rate than male wages. This allows them to spend less time in paid work to compensate for the household income deficit and devote more time to unpaid work such as care work. Therefore, for females, the direct relation between gender wage gap and labour market participation can be summarized as due to two factors: stronger own income effect and secondary earner status accorded to females. To improve the labour market participation of women, there should be attempts to increase the substitution effect of wages for females through incentives and special benefits in work places for working females. There should also be attempts to increase access to time-saving technologies which will reduce the time for unpaid work which ties women inside the household. Facilities such as creches in the work place will encourage mothers to take up more jobs in the labour market. This will help to increase the substitution effect of female wages on their labour market participation which will increase.

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**Appendix**

**Table 1 Weighted fractional regression results for proportion of time use by males in different components of work**

Variables	Paid work	Unpaid work	Domestic work	Care work	Own Production
Gender wage gap	0.018*** (0.003)	-0.033*** (0.008)	-0.030*** (0.010)	-0.045*** (0.009)	-0.011 (0.017)
Logarithm of Monthly Consumption Expenditure	0.039*** (0.003)	-0.051*** (0.009)	-0.065*** (0.009)	0.073*** (0.010)	-0.095*** (0.019)
Number of children (0-5 years)	-0.005** (0.002)	0.172*** (0.006)	0.068*** (0.007)	0.284*** (0.006)	0.048*** (0.013)
No. of male children (6-13 years)	0.005* (0.003)	0.080*** (0.008)	0.071*** (0.009)	0.105*** (0.008)	0.036** (0.015)
No. of female children (6-13 years)	0.006** (0.003)	0.021*** (0.008)	0.024** (0.010)	0.055*** (0.009)	-0.019 (0.016)
No. of male adolescents (14-17 years)	-0.004 (0.004)	0.026** (0.012)	0.033*** (0.012)	-0.012 (0.015)	0.016 (0.023)
No. of female adolescents (14-17 years)	-0.002 (0.004)	0.047*** (0.012)	0.043*** (0.014)	-0.086*** (0.017)	0.091*** (0.021)
Household size	-0.001 (0.002)	-0.071*** (0.005)	-0.079*** (0.006)	-0.067*** (0.005)	-0.013 (0.008)
General Caste=1	-0.005 (0.004)	0.084*** (0.009)	0.102*** (0.010)	0.040*** (0.011)	0.055*** (0.021)
Hindu=1	0.017*** (0.003)	0.064*** (0.009)	0.048*** (0.010)	0.066*** (0.010)	0.068*** (0.020)
Urban sector=1	0.037*** (0.003)	-0.171*** (0.008)	-0.100*** (0.009)	-0.053*** (0.009)	-0.382*** (0.021)

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Household head=1	0.004	0.065***	0.087***	0.035**	0.037
	(0.005)	(0.013)	(0.016)	(0.015)	(0.025)
Married=1	0.015***	-0.087***	-0.269***	0.384***	0.031
	(0.005)	(0.012)	(0.014)	(0.023)	(0.024)
Beyond secondary education=1	-0.013***	-0.017	-0.019	0.013	-0.029
	(0.005)	(0.013)	(0.015)	(0.014)	(0.029)
Age	0.001	0.013***	0.026***	0.018***	-0.008*
	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)
Age squared	-0.000*	-0.000***	-0.000***	-0.000***	0.000***
	0.00	0.00	0.00	0.00	0.00
Constant	-0.813***	-1.515***	-1.757***	-3.554***	-1.543***
	(0.032)	(0.082)	(0.088)	(0.098)	(0.173)
Observations	12,167	12,167	12,167	12,167	12,167
R-squared	0.000399	0.0184	0.0188	0.0763	0.0254

*Source: Author's calculations*  
*Figure in parentheses are standard errors*

**Table 2 Weighted fractional regression results for proportion of time use by females in different components of work**

Variables	Paid work	Unpaid work	Domestic work	Care work	Own Production
Gender wage gap	0.045**	-0.055***	-0.013	-0.235***	-0.161***
	(0.019)	(0.019)	(0.019)	(0.050)	(0.052)
Logarithm of Monthly Consumption Expenditure	0.002	-0.031*	-0.027**	0.194***	-0.162***
	(0.017)	(0.016)	(0.013)	(0.042)	(0.044)
Number of children (0-5 years)	-0.075***	0.095***	0.047***	0.390***	-0.099**
	(0.017)	(0.016)	(0.013)	(0.032)	(0.048)
No. of male children (6-13 years)	-0.019	0.071***	0.080***	-0.011	0.013
	(0.017)	(0.015)	(0.015)	(0.047)	(0.048)
No. of female children (6-13 years)	-0.003	0.042***	0.063***	0.035	-0.094*
	(0.015)	(0.014)	(0.014)	(0.039)	(0.053)
No. of male adolescents (14-17 years)	0.016	0.063***	0.089***	0.101*	-0.195***
	(0.020)	(0.019)	(0.019)	(0.052)	(0.064)
No. of female adolescents (14-17 years)	-0.026	0.013	0.054**	-0.252***	-0.176**
	(0.021)	(0.024)	(0.022)	(0.069)	(0.071)
Household size	0.021***	-0.061***	-0.063***	-0.061***	0.021
	(0.008)	(0.008)	(0.008)	(0.019)	(0.024)

General Caste=1	0.035*	-0.060**	-0.037	-0.152**	-0.082
	(0.020)	(0.024)	(0.023)	(0.075)	(0.077)
Hindu=1	0.101***	-0.052**	-0.012	-0.320***	0.029
	(0.027)	(0.026)	(0.021)	(0.055)	(0.069)
Urban sector=1	0.077***	-0.066***	-0.029**	0.070*	-0.418***
	(0.016)	(0.015)	(0.013)	(0.042)	(0.064)
Household head=1	0.048*	0.119***	0.138***	0.027	-0.094
	(0.027)	(0.029)	(0.024)	(0.060)	(0.084)
Married=1	-0.013	0.318***	0.313***	0.364***	0.011
	(0.022)	(0.026)	(0.022)	(0.064)	(0.069)
Beyond secondary education=1	-0.023	-0.052	-0.043	0.176*	-0.606***
	(0.036)	(0.038)	(0.035)	(0.094)	(0.187)
Age	0.011**	0.002	0.014***	-0.093***	0.015
	(0.005)	(0.005)	(0.004)	(0.010)	(0.014)
Age squared	-0.000***	0	-0.000***	0.001***	0
	0.00	0.00	0.00	0.00	0.00
Constant	-0.943***	-0.742***	-1.202***	-2.128***	-0.812**
	(0.160)	(0.147)	(0.130)	(0.373)	(0.378)
Observations	676	676	676	676	676
R-squared	0.00274	0.0112	0.0102	0.139	0.037
<i>Source: Author's calculations</i>					
<i>Figure in parentheses are standard errors</i>					