Can education help in bridging the existing wage gap in gender?

By

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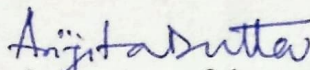
UNIVERSITY OF CALCUTTA

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Abstract

Gender wage discrimination has been a widely prevalent phenomenon across several nations around the globe, including both developed as well as developing countries. Most of these countries have not been successful in bridging this gap across dimensions at large. Although there exists a huge literature on this across several developing countries, there has been an observed gap in research with respect to India. Several reasons contribute to the existence of the gender wage gap. One such significant factor being education, this paper presents an extensive analysis of the impact of education in gender wage gap, segregated class wise. The first section includes an analysis of FLFPR trends across developed and developing countries, followed by a comparative analysis with reference to India. We discuss this phenomenon sector-wise and then mention how successive generations of Indian women have increased their participation in the labour force relative to their predecessors due to an overall increase in level of education and skill.

Keywords: Gender wage discrimination; Wage Gap; FLFPR; Education

Acknowledgements

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List of Acronyms

EU	European Union
FLFPR	Female Labour Force Participation Rate
GDP	Gross Domestic Product
ILO	International Labour Organization
IT	Information Technology
LF	Labour Force
LFP	Labour Force Participation
LFPR	Labour Force Participation Rate
NFHS	National Family Health Survey
NSS	National Sample Survey
NSSO	National Sample Survey Office
PLFS	Population Labour Force Survey
PPP	Purchasing Power Parity

SECTION-I

Introduction

Gender discrimination has been a widespread phenomenon for decades and it affects individuals across the globe as it leads to unfair treatment and unequal rights across dimensions.

The gender wage gap is defined as the difference between median earnings of men and women relative to median earnings of men. The pay gap can be divided in two parts: explained and unexplained pay gap. The former accounts for the different characteristics (hours worked, occupations chosen, education, skill and job experience and so on) that are different across members of different genders, whereas, the latter accounts to the gap that cannot be explained by the said covariates and hence is termed as discrimination.

Ensuring gender equality is a difficult task for even the most developed countries of the world, as none of them have achieved full equality of sex, including in respect of labour rights **(Bilan et al., 2020)**. Several labour economists owe its presence to sizable roles for occupational segregation, differences in human capital accumulation, demand for flexibility, and differences in preferences **(Goldin, 2014; Card, Cardoso and Kline, 2016; Olivetti and Petrongolo, 2016 in Coffman et al., 2018)**. Economic theories suggest that investment in human capital in terms of education and technical training increases the skill set of a labourer, enabling them to earn more and thereby increase labour force participation. However, huge productivity differences have been observed between men and women. Women empowerment is an essential ingredient to reduce discrimination owing to lower education levels of women **(Khanna, 2015).** At the same time, it is seen that despite having the same level of productivity as their male counterparts, women are paid less. Wage differentials between men and women workers in the Indian labour market cannot be explained by the gender gap of human capital only and discrimination is more severe for women workers in the backward ethnic groups, such as, from minority religious and tribal-social groups. Gender discrimination, superimposed on caste and religious discrimination, leads to social exclusion of women belonging to certain castes and religions. So, while majority of the women remain outside the labour market, those who are working are often clustered in specific sectors,

due to occupational preferences, educational gender gaps, discrimination, social norms and stigma, or opportunity cost considerations. Looking at how women are employed across sectors, **Klasen and Gaddis (2011)** point out that initial share of female employment in a sector is not important for the percentage change in the female employment rate in that sector. Higher autonomy in decision-making may also reflect higher autonomy in skill choices and job choices and a greater level of independence from the social stereotypes **(Mohanty and Bisht, 2014).**

Discrimination plays a particularly important role in contributing to gaps in earnings and advancement. On one hand, there has been social norms for division of work within the household, while there are employer-induced perceptions regarding the ability of women workers to perform and support the organization. The social institutions, primarily the ethnicity and caste system, do play a very crucial role in shaping this nature and degree of wage discrimination. On the other hand, education and skill generation among the women can be instrumental in reducing such discrimination.

Given this background, our review thus focuses on a cross-country analysis of female LFPR and the nature of wage discrimination across several sectors and sub-sectors follows. We attempt to analyze the intersectionality of power axes and hence study how far caste-education co-foundedness can control the wage discrimination in India. This paper majorly aims to analyze the role played by education in discrimination and whether that role is homogeneous across social groups.

SECTION-II

Overview of Literature

This chapter includes a detailed literature survey of available literature in the following sub-sections. Each of the sub-sections deals with a particular sub-theme.

II.A: Gender discrimination in labour market: Possible reasons

Discrimination against women in the workplace can be attributed to various factors: employer's bias refers to the discrimination against women and preference for male employees. Such bias occurs due to various reasons such as age of women, their preference towards household chores and also the so called "mommy track", or, the path in a woman's life that puts priority to being a mother **(Wilde et al., 2010).** A theory frequently cited for why mothers earn lower wages than non-mothers is that mothers tend to spend fewer hours in the workplace because of their loyalty towards their children. Employers are hence inclined towards hiring non-mothers.

Another possible reason behind women being discriminated against, especially in sectors using heavy manual labour, where physical strength is the more determining factor than skills, such as the agricultural sector, is that, they tend to be physically weaker than men **(Mahajan, 2017).** Similarly, in the tech sectors, women negotiate for perks associated with their domestic duties instead of focusing on their salaries. Women feel particularly burdened due to restrictions regarding participation in the labour force imposed on them by society. The female work culture, therefore, is often stigmatized. Several descriptive and prescriptive gender stereotypes—through distinct mechanisms—promote inequities in the selection, promotion, and evaluation of women **(Heilman, M. E., and Caleo, S. 2018).** Gender stereotypes regarding what women and men *are like* lead to discrimination as women are considered to be ill equipped to succeed in traditional male position. On the other hand, stereotypes regarding what men and women *should be like* lead to discriminatory behavior by spurring disapproval and penalties for women who behave inconsistent with the established stereotypes. These stereotypes apply to occupational roles across sectors and influence employers in their selection process thereby leading to discrimination again.

This reduces their willingness to participate in the labour force which often acts as a reason that contributes to discrimination in the workplace, but more importantly, reduces female labour force participation rate (LFPR). For instance, in India, women on being married into a rich family withdraw from the labour force, partly due to existing wage differences **(Chatterjee et al., 2018)** and partly as they are asked to withdraw by their in-laws, despite them being highly educated. A decline in female LFPR is difficult to explain in terms of economic variables when a country experiences rapid economic changes. The prevailing socio-cultural system, like stringent social norms, low status of women, and lack of education and so on affects the careers of women and reduces their participation rate **(Mahapatra, 2014).** India has the lowest female LFPR in the world, especially among the urban population. It is greater among the rural women primarily because of poverty. LFPR for women in the urban areas have been historically very low, and stagnating at a low level **(Klasen and Pieters, 2015).** Some unconventional reasons contributing to the low LFPR for women in India might be due to the country's male-biased sex ratios owing to a preference for sons over daughters and gender gaps in education, health, and mortality might also contribute to a lower LFPR for women in India **(Craigie and Dasgupta, 2017).** Droughts increase the time spent by women in carrying water for their homes as this task is typically performed by women and since women's loyalties are supposed to be towards domestic chores, this takes away the opportunity they might have in participating in income generating activities **(Mahajan, 2017).**

Hence, there are in fact several reasons that contribute to discrimination in the workplace and bring forth an evident wage gap.

II.B: Female Labour Force Participation

Female labour force participation is a driver of growth and therefore, participation rates indicate the potential for a country to grow more rapidly. The participation of women in the labour force varies considerably across developing countries and emerging economies. Labour market gender gaps are more pronounced in developing countries, and disparity is the highest in South Asian countries.

The decision of and ability for women to participate in the labour force is the outcome of various economic and social factors that interact in a complex fashion at both the household and macro level. Based on global evidence, some of the most important drivers include educational attainment, fertility rates and the age of marriage, economic growth/cyclical effects, and urbanization. In addition to these issues, social norms determining the role of women in the public domain continue to affect outcomes

The FLFP in India behaves according to the feminization U hypothesis **(Chatterjee et al., 2018).** According to it, in the development process, female labour force participation first declines and then rises. There is a decline in female participation in rural areas is concentrated among married women aged 25-64. The rising education, incomes, and husband's education could account for most of the decline in female labour force this. Another reason is that the rising education and incomes are allowing women to get out of menial and undesirable employment, while jobs deemed appropriate for more educated women have not grown commensurately. Structural change in India also led to a rapidly shrinking agricultural sector in favour of a rapidly expanding service and construction sector. This also mainly contributed to the declining female labour force participation.

Another reason for low FLFPR is the mommy track. A mommy track is a path in a woman's life that puts priority to being a mother. It can also specifically refer to work arrangements for women in the workforce that facilitate motherhood, such as flexible hours, but at the same time usually provides fewer opportunities for career advancement. Women often tend to priorities their household chores and responsibilities over their professional lives.

II.B1: Trends in FLFPR in Developed Nations

In this section we look at the overall trends and variations in the labour force participation rate of females in the developed regions of the world. For that purpose, we focus on the South Mediterranean countries and countries belonging to the European Union (EU). Later we would be comparing the LFPR trends and variations in these regions with that of India. **Altuzarra, et al (2019)** attempt to empirically test the feminization U-hypothesis, that is, the U-shape relation between the level of GDP per capita and the female labour force participation rate of women in

the nations belonging to the European Union (EU). The analysis has been done in two parts: first, the U-shape relation was tested for all the 28 countries belonging to the EU during 1990-2016, and then the analysis was disaggregated into two groups of countries, the old (EU-15) and new (EU-13) member states. Using the datasets from World Bank open data repository and Eurostat, authors found that the U-shaped hypothesis is confirmed for the U-28 nations, on an average. Countries situated below the curve turning point are older member countries of the EU (except Denmark, Finland, Sweden and the UK) and some new member states (Malta, Cyprus, Bulgaria or Romania).

However, most Eastern countries exhibited above average female labour participation rates. These economies of Eastern Europe represent cases of highly feminized labour forces because of the socialist commitment to and imperative for women's economic mobilization. However, considering the U-15 (older) countries, the authors found an inverted U-shape relationship between LFPR and GDP per capita at PPP. For the EU-15 countries, the existence of the U-shaped relationship was not verified. Most of these countries were already high-income economies in the 90s, and female labour participation had almost reached its full potential. Among the U-13 countries, (newer member nations) the analysis located a slight U-relationship. Many studies have noted that female education and fertility rates are strongly inversely correlated, creating a collinearity problem in the equations. The coefficients of education variables were positive and statistically significant meaning that an increase in the education level leads to higher female labour participation. The unemployment rate held a negative and significant coefficient.

Most Eastern transition nations, such as, Lithuania, Latvia, Hungary, Slovenia, Estonia and Czech Republic, have above average rates of FLFP owing to the legacy of socialism. For the U-13 countries, past values of the FLFP did not contribute to forecasting future values of FLFP as much as in the EU-15 subgroup of countries. In other words, the resilience to recover from a shock was lower for the U-13 countries. Lastly, besides the traditional control variables considered in this analysis, there may be other factors affecting women's labour participation such as legal and tax regulation, level of competition and liberalization or the openness of the country as claimed by **Lechman and Kaur (2015). Tsani et al., (2013)** has studied the relationship between female labour force participation and economic growth in the South Mediterranean countries. The econometric results confirmed the arguments on the U-shaped relationship between economic growth and female labour force participation rates. With regard to the South Mediterranean

countries the estimation results suggested that characteristics specific to the latter countries may play part in explaining the low levels of female labour force participation in the region. Pooled time series cross-section data are employed for 160 countries for the period 1960–2008. For this purpose total, male and female active population data extracted from International Labour Organization (ILO), and active population growth rates provided by **Groenewald et al., (2012)** have been used. The econometric model has been used so as to estimate the effects of income changes and region-specific differentials on female labour force participation.

Further, simulation results indicate that the effects of lower female labour participation rates may be small in South Mediterranean countries. This is associated with lower female participation in the labour force constrains labour supply. As a result, wages increase. Increase in wages increases the cost of production. Exports of the South Mediterranean countries become less competitive while imports reduce as domestic production contracts. Following this, policies in the region should promote further female labour force participation as this will benefit growth (**Tsani et al., 2013).**

II.B2: Trends in FLFPR in Developing Nations

The association between economic development and women's labour force participation tends to be positive, but it is not clear-cut or constant at the national level. The labour force participation of women differs significantly more from that of males across developing nations. *Due to disparities in social norms, economic development, educational attainment, fertility rates, and availability to childcare and other supportive services, women's labour force participation differs greatly among countries. As a result, there are huge global disparities in participation rates, with South Asia having some of the lowest rates* (**Chaudhary and Verick, 2014).**

Women's participation in the labour force has been relatively stable internationally from 1993 to 2013 as shown in Figure 1, compared to the male participation rate. However, women still only make up about 40% of the global labour force, even though 345 million more have joined it in the last 20 years.
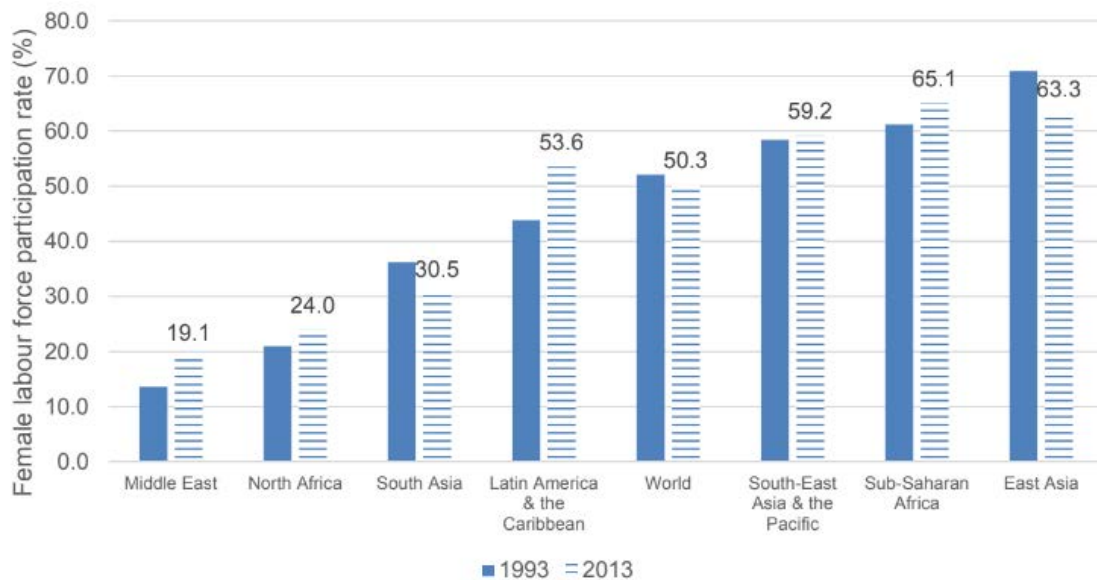
FIGURE 1: The labour force participation rate of women (%), selected regions, 1993 and 2013
Source: Chaudhary and Verick, 2014
https://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@sro-new_delhi/documents/publication/wcms_324621.pdf

Less than 40% of women who are 25 years old and older work in the Middle East, North Africa, and South Asia as shown in Figure 2. However, between 1992 and 2012, participation rates in the Middle East and North Africa rose while they decreased in South Asia. *The labour force participation rate in the eight South Asian countries (61.09%) was slightly lower than the global average (62.02%), which was roughly equal. Only Nepal (83.605%) had a higher labour force participation rate than China when compared to the other eight South Asian nations (61.09%), which are all below the average for China* **(Shi and Yang, 2019).**
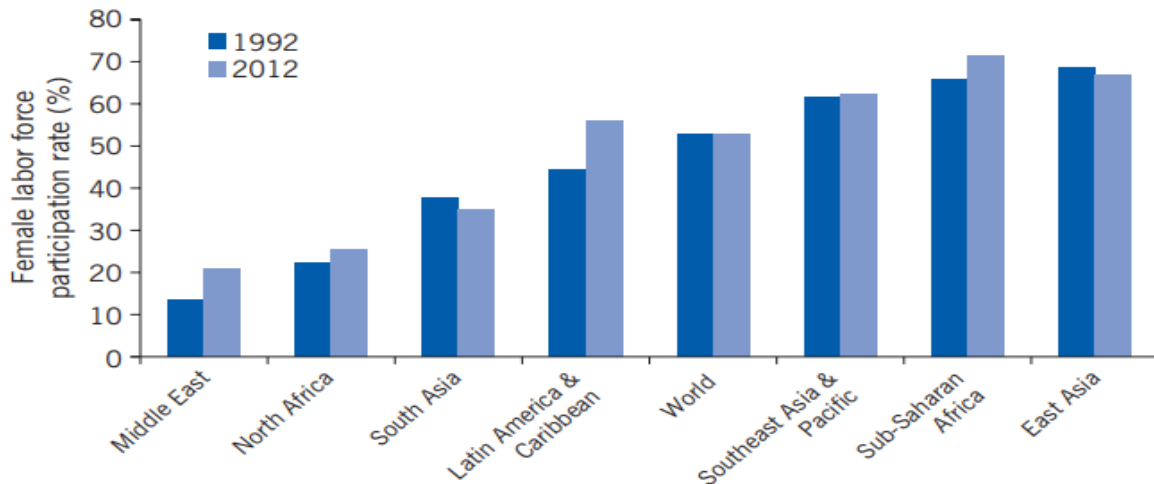
FIGURE 2: Regional estimates of female labour force participation rates, 1992 and 2012 (adult population 25 and older)
Source: Verick, 2014
https://wol.iza.org/uploads/articles/87/pdfs/female-labor-force-participation-in-developing-countries.pdf

In 2012, the FLFPR rate in South Asia was only 31.8%, compared to 81.4% for men. Both the rate for women in South Asia and the rate for women in East Asia were much lower than the global average of 51.1% and 66.4%, respectively. These low percentages are a result of social conventions and cultural views prevalent in the South Asian countries.

Country-specific trends are much more perplexing than these broad generalizations about the situation in South Asia as shown in Figure 3, in the next page.

FIGURE 3: Trends in female labour force participation rates across South Asia (%)
Source: Chaudhary and Verick, 2014
https://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@sro-new_delhi/documents/publication/wcms_324621.pdf

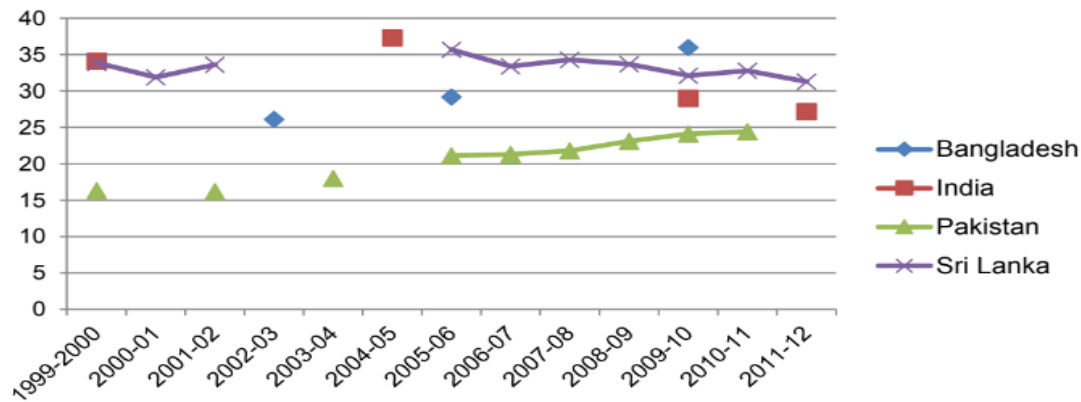The declining participation of women in the labour force in India, which happened despite rapid economic expansion, is most noteworthy. However, due to the expansion of the ready-made garment industry and an increase in female employment in rural areas, women in **Bangladesh** have expanded their engagement in the labour market relative to India. Bangladesh's female work force has a significant impact on the ready-to-wear industry, which is crucial to the nation's growth paradigm. Female labour force participation and overall labour force involvement both have short-term, significant beneficial benefits on Bangladesh's economic development, but long-term negative implications. While gross fixed capital formation has a short-term, considerable negative influence on economic development, it has a clear, significant positive impact on Bangladesh's economic development **(Ul Haque et al., 2019).**

In **Sri Lanka**, the LFPR for women is among the lowest in South Asia at 34%, while the LFPR for males is 75%. *Although there are more women than men in Sri Lanka, men participate at a rate that is twice as high. Compared to Indian female LFPR (23%), Sri Lanka's FLFPR increased from 33.1% in 1993 to 34.7% in 2014, however the country's male LFPR remained at 65.3% in 1993 and rose to 74.6% in 2014. GDP time series data from 2006 to 2016 show a dramatic rise in female LFP as a result of career opportunities for female graduates in Sri Lanka. The skilled agriculture sector was where most working women were employed, not the industrial or service sectors. According to employed population by status and gender 2015, the percentage of employed*

women (57.5%) is roughly equivalent to that of employed men (57%) and the percentage of unpaid women workers is significantly higher (17.9%) than that of unpaid males (2.8%). Therefore, we can conclude that the majority of female LFs are still employed at the lowest levels **(Dilhani and Jayasekara, 2018).**

Similarly, by the World Development Report 2013, more than 80% of **Pakistani** women attribute their low labour force participation to family responsibilities and a lack of education. Moreover, women experience an unemployment rate of 8.7%, compared to men's 4%. *The country's GDP is dependent on both male and female education and employment. However, the main issue in Pakistan is gender inequality in all fields, particularly education and employment opportunities. Although Pakistan's male and female populations are equal, there are differences in labour force participation and educational enrolment between men and women. Female education and labour force participation rates are far lower than male education and labour force participation rates* **(Ali, 2015).**

Therefore, in addition to being ingrained in societal norms, gender inequality also permeates the institutional and policy frameworks that influence the career options available to women in South Asia. In South Asia, the proportion of women employed in the labour force has climbed over the past ten years in Bangladesh and Pakistan while being stable in Sri Lanka. However, the proportion of women who work is decreasing despite India's quick economic growth.

II.B3: Indian Scenario

Several studies have closely examined the trends and patterns in the female Labor Force Participation Rate in India. In one such study, **Mahapatro (2014)** concentrates on the most current NSSO data that shows a reduction in female LFPR in India. The study looks into the trends of female labour force participation that are declining with age, period and cohort effects. The findings imply that with supply of higher education and more opportunities for younger female cohorts female employment will increase. Age has a substantial impact on women's engagement in the labour force, according to the findings. For example, women between the ages of 15-24 and 55-64 have lower involvement rates than men between the ages of 35-44. Studies have shown that women's participation in the labour force over the course of a lifetime, changes significantly.

Women's participation in the workforce is found to be high in their late twenties and early thirties. It increases in their late thirties and early forties, and falls again in their early forties until women reach the age of 65. This shows that the life cycle necessitates changes the female participation rate. Time is another very important factor that greatly affects participation rate of a woman. The most recent period, 2009–10, has a negative influence on when compared to 1999–2000 rate of involvement. Along with an increase in education, the shifting organizational economic conditions, a lack of expansion in employment prospects, etc. deterred women from entering the workforce.

Another paper by **Klasen and Pieters (2015)** tries to describe the stagnation of female labor force participation in urban India and find the reasons behind it. This study reveals that India has likewise undergone a substantial fertility reduction, a rapid schooling expansion and a decrease in the education gender gap, although in the light of this, the reported female LFPR in urban India has remained constant since 1980s at around 18%. The NSS survey statistics on earnings demonstrate that real salaries nearly doubled between 1987 and 2011. Nonetheless, the ratio of male to female average weekly earnings has declined over these years. The study discovered a negative income effect and income security (male salaried employment) also lowers women's participation in the labour force, causing a particularly significant detrimental effect of household head education.

Kumari and Pandey (2012), in another paper, underline the degree of inequality in the women's participation in the workforce both urban and rural areas across all of India's states. This study argues that women's engagement in the labour force has shrunk since 1994, and gender disparities have increased. The number of actual women workers has increased more in the rural India than in urban India. According to the study, high woman engagement has been observed in low-income caste division. The women from wealthy families and those who belong to the upper classes participate in volunteer and domestic work. However, it has been noted that upper class women participated in high-level professional jobs, business and other service sectors.

There are several factors responsible for the low female LFPR in India. Variations across different social and religious groups, differences in the levels of education, social stigma etc are some of the major causes.

In one study **Dunn (1993),** shows how the female LFPR vary across different social groups in India by considering the situations of women especially in scheduled castes and tribes. The major

results show that women in the scheduled castes and tribes have much less access to resources for both education and work than do men. Additionally, according to this study, socioeconomic progress helps to lessen the disadvantage that scheduled group women face in comparison to men. Findings show less gender imbalance in education and employment among the scheduled groups, which are often regarded as better developed.

Another study by **Mishra and Parhi (2018)** also tries to find out the trends in the wage differential between caste groups in different age cohorts. The study comes to the conclusion that, when compared to 1993–1994, there is a significant increase in discriminatory practices in India in the recent time. It is seen that younger age cohorts are more profoundly affected by caste prejudice than older age cohorts. The data demonstrate that since the transition era, the prevalence of caste prejudice has remained consistent across all social categories. The social behaviors, historical turning points, and economic realities have strengthened or changed the relationship between caste and class in India.

Generally, investing in human capital formation in terms of education and technical training increases the skill set of a labourer, enabling them to earn more and thereby increase the labour force participation. However, India happens to be a peculiar case in which it exhibits a U-shaped or a J-shaped labour force participation curve in terms of education. There are several reasons as to why this happens. Part of the decline at moderate levels of education may be due to an income effect whereby women with more education marry into richer families that enable them to withdraw from the labor force or due to a gender bias that exists in the wages received by them from their employers.

Most recent studies have noted the generally J-shaped or U-shaped relationship of women's education with their labor force participation (**Reddy 1979; Sathar and Desai 2000; Das and Desai 2003; Kingdon and Unni 2001; Das 2006; Klasen and Pieters 2015 in Chatterjee et al., 2018**). As national participation rates have continued to decline over the last few decades (**Abraham, 2013; Chatterjee, Murgai, and Rama 2015 in Chatterjee et al., 2018**), cohort shifts out of low levels of education to intermediate and secondary education have been blamed for much of this decline (**Afridi, Dinkelman, and Mahajan, 2016 in Chatterjee et al., 2018**). Studies from the past suggest that both cultural factors, such as norms restricting the mobility of women, and structural factors, such as a lack of appropriate job opportunities for educated women, play

important roles in determining the U-shaped relationship between women's education and labor force participation in India (**Das and Desai 2003; Das, 2006 in Chatterjee et al., 2018**).

Chatterjee et al, 2018 in their own study find a strong negative effect of other family income on women's labor force participation is observed. They again find a U-shaped relationship between women's education and her labor force participation, even after taking into account other family income. The other family income controls make the negative sloping part of the curve flatter and the positively sloping part steeper, but the relationship remains curvilinear rather than uniformly positive.

Another study by **Mohanty (2021)** tries to find out whether there is a wage gap between men and women workers with same level of technical education in urban India. Findings suggest that for individuals with a Diploma or certificate at the below graduate level, differences in marital status favour men's pay at lower portions of the wage distribution, but these differences vanish at higher portions of the income distribution. For individuals with Diploma or certificate at the graduate and above level, the variations in technical education and work experience are more important in predicting the salary gap. The study emphasizes the fact that women receive less technical education due to social constraints as the cause of the gender wage gap. Additionally, having children in the family, being married, and having less experience all contribute to earning less money with the same level of technical education.

II.B4: Comparative Analysis

An extensive literature has developed around the nature of female labour force participation (FLFP) and its relationship with development and economic growth, in part because of the intricacy of the factors influencing female labour force participation. The U-shaped association between economic growth and women's labour force participation rates is one of the most talked-about phenomena. The conclusion, however, holds up better in cross-country comparisons. Female labour force participation (FLFP) trends have been highly variable, growing rapidly in Latin America while making only little progress in the Middle East and even declining in South Asia. Female labour force participation rates decline when the economy transitions from an agricultural economy with intimate ties between home and market production to an industrial and services-

based formal economy. Cross-country analysis forms the foundation of the majority of the empirical data supporting the U-shaped hypothesis. Numerous studies contend that middle-income nations record the lowest levels of women's labour market involvement, whereas high- and low-income countries claim the greatest levels. For instance, in Bangladesh, a low-income nation, the female labour force participation rate increased from 23.9% in 1990 to 36.0% in 2010, but it stagnated or even decreased in India, particularly in rural regions. Individual-level empirical investigations reveal that the U-shaped link is not (yet) visible in the case of India (Bhalla and Kaur, 2011; Lahoti and Swaminathan, 2013; Rao et al., 2010), whereas others discover one in the case of Pakistan (Mujahid et al., 2013). Although the decline in participation rates in India is perplexing, similar patterns have been seen in other countries as well, most notably in Turkey, where involvement rates among women fell from 36.1% in 1989 to 23.3% in 2005. Urbanization and structural change have been used to explain this declining tendency. Most recent studies have noted the generally J-shaped or U-shaped relationship of women's education with their labor force participation in India **(Reddy 1979; Sathar and Desai 2000; Das and Desai 2003; Kingdon and Unni 2001; Das 2006; Klasen and Pieters 2015).**
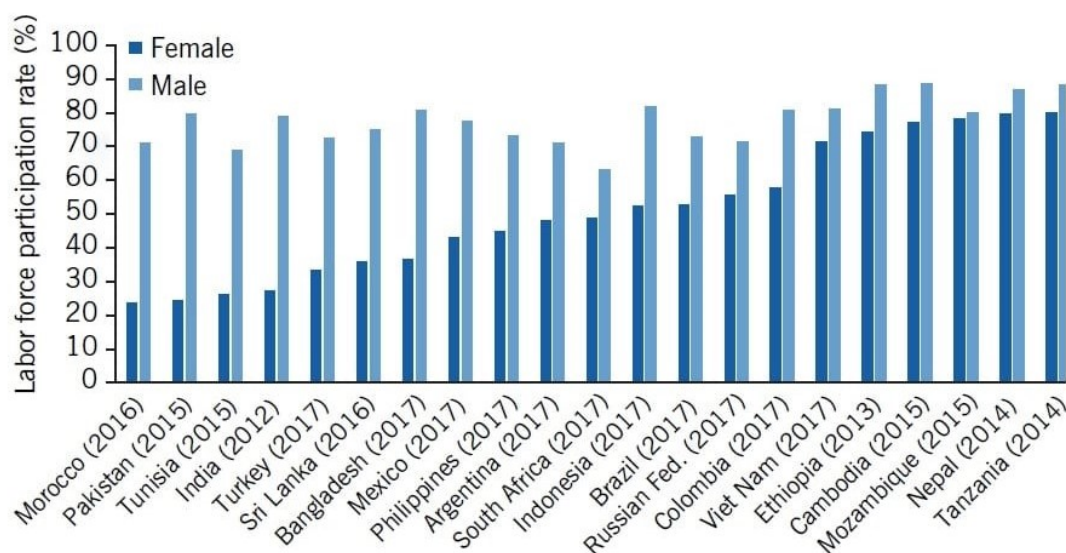
Source: National estimates from ILO Statistical Database, ILOSTAT. Online at: http://www.ilo.org/ilostat

FIGURE 4: Gender disparities in labour force participation rates in selected developing countries, various years (2012-2017)

Source: National Estimation from ILO Statistical Database, ILOSTAT (Online at: http://www.ilo.org/ilostat)

However, there is significant variability even within areas where total female labour force participation rates are low. The enrollment percentages of women in South Asia varies from about 30% in Pakistan and India to almost 80% in Nepal. Bangladesh has seen a substantial rise in the employment of women from a low starting point, which has been linked to the expansion of the readymade garment market and an increase in livestock farming. Female LFPR in Sri Lanka was 33.1 in 1993 and increased to 34.7 in 2014, which was higher than Indian female LFPR (23%). In Sri Lanka, female labour force participation rates have been comparatively constant, averaging approximately 33% (2016). In India, female participation rates fell from 34.1% in 1999–2000 to 27.2% in 2011–2012. The rise in the number of girls and young women enrolling in school as well as the dearth of employment possibilities for women are the causes of this fall. Marriage and childbearing are important demographic factors that determine female LFPR in the Indian context. Female labour force participation rates have increased faster in Latin America and the Caribbean than in other areas, reaching 53.6% in 2013. Brazil's female labour force participation rates increased in this region, going from 54.1% in 2001 to 57.9% in 2009. Both pull and push forces contributed to the rise in women's participation in Brazil, partially as a result of trade liberalization and the ensuing sectoral changes. With female participation rates falling from 36.1% in 1989 to 23.3% in 2005, Turkey has also seen decreases from a low starting point. Rising urbanization and structural change have been used to explain this decreasing trend. Turkish women have, however, returned to the workforce since 2005, a year that saw improved socioeconomic conditions. As a result, participation rates improved in 2017 to 33.5%. Indonesia has a lower percentage of women in the work force than other South-East Asian nations. Following the 1997–1998 East Asian Financial Crisis, which resulted in a large number of male employees losing their formal sector positions, women boosted their labour supply, mostly through employment in the unorganized sector and agriculture, in order to balance household consumption. As a result, the percentage of women who are in the labour force in Indonesia increased from 49.9% in 1997 to 51.2% in 2017. At the same income level, India (27.2% in 2012) and Turkey (33.5% in 2017) have much lower female participation rates than the majority of other nations. Other countries, such as Brazil and the Russian Federation, however, have greater rates of female labour force participation than is average (between 50%-60% in 2017) for their stage of economic development. **(Source: National estimates from ILO Statistical Database, ILOSTAT. Available at:** http://www.ilo.org/ilostat**)**

II.C: Gender Wage discrimination across Sectors

Public vs Private Sectors

Study conducted on the Indian labour market **(Chakraborty, 2021)** found out that in the public sector, occupational discrimination explains the major part of the gender wage gap and it amplified through 1993–1994 to 2018–2019 because of the implementation of various public employment strategies.

Similarly, in the private sector gender differentials are explained primarily by the unexplained difference in occupational allocation. This is because of an increasing number of women involved in the manufacturing industry in rural areas, whereas in urban areas, women are increasingly employed as domestic workers. In the private sector, women are increasingly involved in the male dominated manufacturing industry where gender wage gaps are high whereas in urban areas, more women workers were involved in paid domestic work in private households as compared to urban men workers as well as compared to rural women workers.

Finally, the increase in gender wage gap in the public sector is strongly related to the use of underpaid women workers in implementing major public schemes for nutrition, health and education, which had the perverse effect of intensifying gender discrimination in terms of occupational segmentation and gender wage gaps.

Primary, Secondary and Tertiary sectors

 Both occupational discrimination and wage discrimination against female workers prevail in almost all the sectors of the Indian economy. This gender wage gap may arise due to gender difference in human capital accumulation and investment on human capital, or because women deliberately choose less paying or less remunerative jobs so that they can combine paid work with unpaid care work, or may arise simply due to employer's bias.

Occupational discrimination among male and female workers, if we consider the case of the Construction industry, across both rural and urban sectors, the percentage of women employed is much lesser as compared to men. This might be due to the fact that the construction sector requires

more manual labour, so given abundant labour supply, the demand for males is more as they happen to be physically stronger than women.

Among the sectors, the gender wage gap is highest in the Secondary Sector (43.8%) and the gender wage gaps in the Primary (23%) and Tertiary sectors (25.3%) are almost identical **(Poddar and Mukhopadhyay, 2018).**

Agriculture is the major employer of India's female workforce consisting of small and marginal female workers. They are engaged in almost all the activities of agriculture, but continue to receive lower wages than men. As a result of such wage discrimination, women have a tendency to move out and be concentrated in the secondary sector of labour market. Their work is low paying, casual, and lacks potential upward mobility **(Agarwal et al., 2016)**. The Ministry of Labour puts the difference at 60% of men's wages, while the Indian Labour journal showed that women received 75% of men's earning. Furthermore, we find that the gender wage gap increases during negative rainfall shocks and falls during positive rainfall shocks in rice suitable area **(Mahajan, 2017).** Within India, a paradox is observed: gender differentials in agricultural wage are the largest in the Southern Region of India which might be due to greater labor force participation by women in these regions that stemmed from differences in cultural restriction on women in economic activity.

The sector-wise analysis shows the gender pay gap at the highest in manufacturing sector (34.9%) and lowest in the transport, logistics and communication (17.7%). The earnings of the regular salaried women workers are at par or slightly higher than that of their male counterpart only in sub-sectors like information communication, finance, insurance, transport, real estate and utilities (This may be because these segments require highly skilled workers, and most of these sub-sectors are part of organized sectors). These segments employ only 13% of the regular salaried female workers (most of them belong to upper caste), who faces a sticky floor, but not a glass ceiling.

The Indian IT sector, despite requiring minimum manual labour also suffers from gender pay gap, which can be to a large extent attributed to the organizational practices of the companies; such as rewarding long hours and travelling was internalized as legitimate and a pay gap based on such issues was accepted. This disparity is not particular to India, but witnessed globally **(Karlsson, 2015).**

In the informal sector the pay gap has come down from 29.2% (2004–2005) to 19.78% (2011–2012). Women employed in accommodation food service industry earned 4.19% less than men, women employed in arts, entertainment, industry earned 41.17% less than men (**Sengupta and Puri, 2021).** The occupational pattern in India is peculiar in the sense that most women are concentrated only in a kind of salaried job. Out of 27% of women in private sector, 80% are teachers and more than 12% workers are nurses.

As a result of labour market discrimination women are found to be working in lowest rungs of all industrial activities and women's participation is dominated in low skill jobs: such as in women labor force dominated garment manufacturing units, primarily due to technology modernization (**Chakravarty, 2004***).*

In the textile retail sector, the state of women workers is very pathetic in such a way that they are exposed to health issues, gender bias, wage gap, lack of social security, heavy work schedule, mental harassment from employer etc. Women workers are receiving lesser wage compared to their male counterpart and 65% women workers accepted the fact that they were experiencing wage gap. Majority of the female workers are not able to meet their necessities in the textile retail sector even after working for long hours (**G Parvathy, 2018**).

II.D: Effect of globalization on gender wage gap

The 1990s ushered in the era of globalization. Several studies have been conducted to assess the impact of globalization on the gender wage gap. Contrary to conventional trade theories which suggest that an open economy would have a lower wage gap as compared to economies under autarky, there have been no definitive empirical evidences for the same. If the level of skill among men and women differ, then women aren't able to reap the benefits of globalization (**Reilly and Dutta, 2005**). **Arora (2012),** in her inter-state study on India points out that there might not always exist a positive correlation between per capita income and gender equality for all the states of India. If growth is capital-intensive, it might not lead to as many employment opportunities for women, as it does for men.

The existence of a wage disparity between men and women in the labour market is regarded as a universal phenomenon in almost all countries, regardless of the nature and structure of the

economic system. Over the last two decades, many countries have embarked on liberalization programmes, opening their economies to the forces of globalization. Given the situation, an important policy question raised by these economic reforms is the extent to which they have impacted women.

During the period 1992-2000, the liberalization process stimulated a robust growth in real GDP of about 6.4% per year, which was accompanied by strong export and import growth. Real wages rose by about 6% per year over the same period, in line with strong GDP growth.

There are a number of reasons adduced as to why increased globalization may eventuate in a contraction of the gender pay gap. A prominent explanation is generally rooted in **Becker's (1971)** taste-based approach to labour market discrimination **(Reilly and Dutta, 2005)**

The process of globalization is seen as increasing competitive forces within product markets, making it more difficult for firms or individuals to indulge their taste for discrimination. Furthermore, conventional trade theory suggests that increased trade should narrow the gender pay gap in developing countries where unskilled labour supply is abundant if women are disproportionately concentrated in unskilled jobs. Increased trade liberalization is also widely acknowledged to stimulate economic growth and raise living standards.

There are also compelling reasons to believe that globalization will widen the gender pay gap. If trade is skill-biased, and women have lower levels of skill than men, the unadjusted gender pay gap may widen because women are unable to reap the benefits of trade. Furthermore, if businesses are potentially more mobile and can relocate, the threat of movement from one country to another may exert downward pressure on the unskilled wages of those most at risk, which may disproportionately include women.

Reilly and Dutta (2005) use individual-level sample data from the NSSO which is restricted to males and females in wage employment aged 15 to 65 between the years 1999 and 1983, 1999 and 1993, and 1993 and 1983.

Over the last two decades, the role of ethnicity and religious affiliation appears to have grown in importance in the wage determination process for both gender groups. Members of scheduled caste or tribe is generally associated with a well-defined wage disadvantage in comparison to all other castes and religions. In contrast to evidence from more advanced economies, being married has a

positive effect on hourly wages for both gender groups. Thus, it implies that being a married woman in India does not appear to send a negative signal to potential employers. It is, in fact, a trait that is rewarded for both genders, though more so for men.

Finally, we observe a significant hourly wage disadvantage associated with casual work for both men and women, which appears to have increased steadily between 1983 and 1999. Men's disadvantage has increased by more than one-third, while women's disadvantage has increased by more than half. In particular, men engaged in casual work earned approximately 20% less in hourly terms than those in regular employment in 1999, and the comparable estimate for women was approximately 17% less. In general, the gender wage gap narrows with education, and this pattern appears to be relatively stable over time.

The two trade liberalisation indicators are based on tariff and trade-flow data. The trade-flow data are used to calculate industry-level import and export shares. Increased import creates more competition in the product market, effectively reducing firms' ability to indulge their discriminatory tastes. In contrast, if large firms with some degree of monopoly power dominate export-oriented industries, there may be some opportunity for unequal treatment between the two gender groups at the expense of profits.

Trade liberalisation was only one part of the reform process in India over this period **(Reilly and Dutta (2005)).** According to **Winters (2004),** one of the advantages of trade liberalisation is the supportive nature of other policies and institutions. This assertion may be relevant to the position of women in the Indian labour market in the context of a trade-liberalizing economy.

Arora (2012) investigates whether gender inequality differs across Indian states and whether it is lower in more open and "globalized" states. Her findings show that at the sub-national level in India, higher per capita income is associated with lower gender inequality, but gender inequality is also very high in some high-income states. High gender inequality was also observed in states that score high on the openness index.

Gender equality and economic growth have a positive relationship. Growth is generally thought to be 'beneficial to women.' Lower gender inequality is associated with higher per capita income. The impact of globalization on gender equality has been mixed. Despite globalisation, women in the informal sector in India remain marginalised due to limited access to land, credit, education, and

health care. They are frequently exploited by working long hours for low pay, and they also lack a voice and participation.

Due to inter-regional disparities, the gender-globalisation relationship may still differ at the sub-national level from the national or cross-country level. Thus, the impact of national trade policies may differ depending on the region, state, and people employed in various firms and industries.

According to **Arora (2012)'s** research, gender inequality is low in states with high per capita income and high in states with low per capita income. However, the research found that gender inequality is high even in high-income states like Punjab and Haryana. In these two states, girls have much higher rates of child mortality and under-5 mortality than boys.

The southern and western states of the country have lower levels of gender inequality than the northern states. West Bengal, Andhra Pradesh, Orissa, Haryana, and Punjab have moderate gender inequality. Gender inequality is much higher in the BIMARU low-income states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh). In both education and health, there is significant gender inequality.

The results for the openness index and gender inequality, on the other hand, are mixed. Tamil Nadu is the only state that has a high ranking in both indices. Rajasthan, a state with a high level of gender inequality, ranks highly on the openness index. Similarly, Punjab ranks 10 in the gender inequality index but ranks high among states in the openness index. Kerala has the lowest gender inequality in terms of education and health access. However, the NFHS (2005-06) report shows that, despite having the lowest gender inequality of any state in India and having high access to education and health care, a large proportion of women in Kerala do not work. In terms of openness, the study discovered that most of the states that ranked high in the openness index (with the exception of Tamil Nadu) also had high gender inequality.

It is possible that women in the informal sector are employed at the lowest levels of employment, performing menial tasks, which, while increasing their employment in terms of number, may still result in their status in terms of access to education and health remaining inferior.

SECTION III

Measuring Gender Discrimination

Gender Discrimination and Blinder - Oaxaca Decomposition

- **What is meant by gender discrimination?**

Gender discrimination refers to any situation where a person is denied an opportunity or misjudged solely on the basis of their sex, rather than on the basis of their individual skills or capabilities. Women and girls are most likely to experience negative impacts of gender discrimination. It means restricted access to education, a lower standing in society, and lower wages for the jobs they do.

- **How do we measure gender discrimination?**

In order to study the gender discrimination in the labour market economists often use the Blinder–Oaxaca decomposition **(Blinder 1973; Oaxaca 1973)** method. It is a statistical method which is used to study labour market outcomes by groups (sex, race, and so on) by decomposing the mean differences in log wages based on regression models in a counterfactual manner. This procedure divides the wage differential between two groups into a part that is 'explained' by group differences in productivity characteristics such as education, training or work experience and a residual part that cannot be accounted for by such differences in wage determinants. This 'unexplained' part is often used as a measure for discrimination, but it also includes the effects of group differences in unobserved predictors. The 'explained' and 'unexplained' portions are also called characteristics and coefficients effect using the terminology of regression analysis, which provides the basis of this decomposition technique.

A brief explanation of the technique is given below. This section draws on the exposition in **Jann, 2008**. Suppose, two groups *A* and *B* refer to males and females, (log) wages be the outcome variable *Y* and human capital indicators such as education and work experience be the predictors. The mean outcome difference is given by

$$R = E(Y_A) - E(Y_B) \tag{1}$$

where $E(Y)$ denotes the expected value of the outcome variable which is accounted for by group differences in the predictors.

Based on the linear model,

$$Y_W = X'_W \beta_W + \varepsilon_W, \quad E(\varepsilon) = 0, \quad W \in \{A, B\} \tag{2}$$

where X is a vector containing the predictors and a constant, β contains the slope parameters and the intercept, and ϵ is the error. Then the mean outcome difference can be expressed as the difference in the linear prediction at the group-specific means of the regressors,

$$R = E(Y_A) - E(Y_B) = E(X_A)' \beta_A - E(X_B)' \beta_B \tag{3}$$

In the above formulation, the slope coefficients referred to alternatively as 'rates of return' to a predictor and vary as per the group being considered. This difference in the slope coefficients entails discrimination between the groups, that is, a gap in the outcome that is not attributable to gap in inputs or predictors. The results of the decomposition of the wage gap thus allows for the slope coefficients to be the same for the two groups.

One decomposition, prominent in the discrimination literature results from the concept that there is some non-discriminatory coefficients vector that should be used to determine the contribution of the differences in the predictors. Considering β* to be a non-discriminatory coefficients vector the outcome difference can be written as

$$R = [E(X_A) - E(X_B)]' \beta * + [E(X_A)'(\beta_A - \beta^*) + E(X_B)'(\beta^* - \beta_B)] \tag{4}$$

Thus we have a twofold decomposition where the first component is the part of the outcome differential that is 'explained' by group differences in the predictors ('quantity effect') and the second is the 'unexplained' part, which is usually attributed to

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discrimination. Hence, the Blinder-Oaxaca decomposition technique has been and will continue to be largely used in studying differences and changes in various socioeconomic variables due to its simplicity and flexibility in implementation.

COVARIATES

While many factors contribute to the gender wage gap, including <u>discriminatory practices</u> **(Neumark, Bank and Nort, 1996)** and social stigmas, research suggests that time away from employment, occupational clustering, and the time demands of jobs explain much of the difference in wages between men and women. Traditionally, many women dropped out of the labour force for some time in their childbearing years. Though there have been significant changes in this pattern in recent decades, women often do not have the same continuity of work experience as their male counterparts, which contributes to lower wages **(Lundberg and Rose, 2000).** So in order to understand the gender wage differential it is imperative to take into account a wide array of factors while constructing a model. Gender becomes one of the most important covariate in the model which would reflect how female employees get paid compared to their male counterparts. This should be used as a dummy variable in the model. The gender dummy would take a value of 1 for females, and therefore a negative coefficient on the gender dummy would be an indication of gender wage gap where men are paid more than women.

Additionally, personal characteristics such as age, level of education, years of experience, also play an important role in explaining the gender wage differentials in the model. **(Sengupta and Puri, 2021).** With increase in age it is expected that the person might be able to increase his/her human capital over the period of time through acquiring more education or skill or gain job experience. A highly qualified or a highly experienced person is easily absorbed into the labour market and it also enables them in earning higher wages. Taking these factors into consideration would help in explaining the wage differential across the various levels of education and experience level.

Women's expectations about their careers may affect their educational and occupational choices, which greatly affect earnings. Women are overrepresented in low-earning occupations, such as cashiers, administrative assistants, and childcare workers. Women may be pushed into these

occupations through discrimination, which excludes them from higher paying occupations, or socialization, which makes them more likely to seek these jobs.

Along with the personal characteristics it is imperative to include the social characteristics of a person too. The marital status of an employee can also help us understanding a different aspect of the wage differential. The ones who are married and widowed have a mean earning more than that of the ones who are never married.

The social group to which the person is belonging to can also be considered as an important determinant. Intuitively we can think that a person belonging to the scheduled caste, scheduled tribe and other backward class would earn significantly less than the benchmark class of general cast as they are exposed to lesser opportunities and denied many benefits from the society.

Sectors (urban/rural) can also help in describing the overall wage differential across the different industries operating within the different sectors. Including regions along with their LFPR data might be very useful in understanding relationship between the LFPR and the gender wage differential across the different countries/ states. Including other macroeconomic variables such as GDP, per capita income in the model would help in explaining the wage differential across different economies.

The number of hours of work also appear to affect the hourly wages **(Goldin, 2015)** of low- and moderate-income workers. Both men and women experience a large hourly wage penalty for working less than 40 hours a week, but women are more likely to work part-time and therefore are affected to a greater extent.

One study found that only 15 percent **(Goldin, 2015)** of the gender wage gap would be eliminated if men and women were equally represented in each occupation, but 85 percent would be eliminated if they were paid equally within each occupation. This is partially due to the fact that, even within professions, women prefer jobs with flexible work schedules, lower weekend and evening demands, and roles that support family responsibilities. Men are more likely than women to accept a job with lengthy and rigid hours and obtain the correspondingly higher pay within a profession.

SECTION IV

The Research Gap and Objectives of our forthcoming study

Our literature survey has pointed out clearly that unlike most of the developing countries, India's female labour force participation has fallen across sectors in last few decades. The social norm, employer's options and demand side preferences push women accept low paying jobs in lieu of several other non-economic perks (working hours, location etc), which exacerbates the gender wage gap that exists in labour markets. We have noticed a wage gap in gender across social groups and religions, across educational levels, across age cohorts, across sectors- private and public sectors, and across primary, secondary and tertiary sectors.

While literature also suggests that education and skill enhancement often improves wage rate irrespective of gender, the question that persists is whether it can be instrumental to reduce the wage gap between men and women. We hence choose to test the hypothesis: *As education levels increase, does discrimination in wage against women in the workforce correspondingly fall?*

In addition to education, existing literature on caste and social markers indicate that often the gender norms and rules are spread unevenly across them. And hence the intersectionality between caste and education might work in different directions and some women can leverage the dominant power axes to overcome the discrimination partially, while others cannot. Thus we want to test the second hypothesis that "*Is the education effect homogeneous across social castes in India to reduce the gender wage gap in specific sectors*?"

For this we propose to use Blinder Oxaca decomposition on unit level data of PLFS 19-20 published by NSSO.

SECTION V

Conclusion

In this research paper we intend on showing how relevant is education in influencing the wage gap in gender, segregated caste-wise. We have talked about the gender wage gap that prevails in India and the factors that might lead to it. We have analyzed the gender wage gap sector-wise: in public and private sector, and in the primary, secondary and tertiary sectors. In a nation like India, the causes of the gender wage gap are a little more complex and can be related to structural as well as social factors: sometimes, girls are forced to leave school earlier as compared to boys or are prevented from attending school altogether. Many women are forbidden from working by their families, despite being highly educated. When women do enter the workforce, they frequently have to take time off to care for their newborns, their children, and even other family members-this contributes to the overall earnings of women falling well behind those of men. In context of India, papers have showed that poor economic and social development of the region has had a negative impact on female labour force participation rate. The labour force participation rate of India has been compared to that of other developing and developed regions of the world. It was seen that difference in skill and education is not the only reason for the prevailing wage gap, but for the same level of education and skill women are paid less than their male counterparts. It has something to do with a worker being a woman- that she gets paid less just because of her gender. This is the gender wage discrimination, the measurement of which has led us to employ the methodology of Blinder-Oaxaca. Globalization and economic reforms which were expected to increase the employment opportunities for women, failed to do so as technological changes restricted the participation among poorly educated females who did not have the required skill to participate in job positions which required sophisticated knowledge to use new technology and they were restricted to informal sector jobs which did not require much skill and education. In fact, if globalization did lead to an increased labour force participation of women, their participation primarily increased in low paying menial jobs in lower rungs of employment. The same patriarchal mindset which upholds the belief that women will be primarily responsible for managing the home and raising children, hinders women from building up their human capital at the same rate as males, which leads to discrimination in hiring in the formal sector, and it has a continuous

hamstringing effect as women advance in their professions. However, successive generations of Indian women have increased their involvement in the labour force relative to their predecessors due to the overall increase in level of education and skill. For future analysis, we intend to explore certain policy implications that would help in reducing the gender wage gap prevailing in the country.

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