

Is Gender Earnings Gap a Reality? Signals from Indian Labour Market

Sonu Madan¹ | *Indira Gandhi University, Meerpur, India*
 Surender Mor² | *BPS Women University, Khanpur Kalan, India*

Received 22.7.2021 (revision received 22.3.2022), Accepted (reviewed) 27.4.2022, Published 17.6.2022

Abstract

We examined the persistence of the gender earnings gap across diverged occupational groups and the workers owning diverged work status in India using the relevant information on 94 446 workers from the Periodic Labour Force Survey (2017–18). The marginal mean earning of workers is estimated using GLM: ANCOVA. The findings report the persistence of significant gender earnings gap across the occupational structure and work status of workers. The elimination of demotivating factors leading to the gender earnings gap, removal of gender discrimination, enhancing the self-esteem of females, raising productivity potential by augmenting the professional/vocational education and policies for increased female work participation is the need of the hour.

Keywords

Educational attainments, gender earnings gap, GLM: ANCOVA, occupational groups, work status

DOI

<https://doi.org/10.54694/stat.2021.19>

JEL code

J16, J24, J31

INTRODUCTION

Earning from work is a key indicator of a nation's economic well-being and has remained a challenge towards attaining decent working conditions and inclusive growth in India (Madan and Goel, 2019). The persistence of the gender earnings gap from work has been a common feature of the Indian labour market (Das, 2012). The gender earnings gap occurs when workers with the same educational attainment, expertise and work experience earn differently because of their gender, irrespective of their socio-economic characteristics (Poddar and Mukhopadhyay, 2019). Workers of different offspring are paid differently even within the same occupational groups despite possessing similar work profiles and skill levels. Female participation in the labour market is a gauge of productivity potential and growth of a nation and an informative indicator of the progress and status of females in society (Nazier, 2017). The current estimates drew attention towards

¹ Department of Economics, Indira Gandhi University, Meerpur, Rewari, Haryana 122 502, India. E-mail: sonu.economics@igu.ac.in, phone: (+91)8685911117.

² Department of Economics, BPS Women University, Khanpur Kalan, Sonipat, Haryana 131 305, India. E-mail: surendermor71@gmail.com, phone: (+91)9729185100.

54 percent of India's population in the working-age group (15–59 years), wherein females account for a significant proportion, i.e., 25 percent, signifying their relevance in the labour market (Agarwal, 2017).

Moreover, earning gap from work has been one of the key reasons for labour mobility across economic sectors and regions (Weeden, 1998; Stephen, 1998; Weichselbaumer and Winter, 2005; Livanos and Pouliakas, 2012). The gender earnings gap, as indicated from the female/male earnings ratio, is commonly witnessed to be less than one and is documented in several studies (Hampton and Heywood, 1993; Anker, 1997; Hoffner and Greene, 1997; Ashraf and Ashraf, 1998; Nor, 1998). The overall gender pay earning has widened between 1983 and 2004 by 0.03 log points in India, especially in specific services and industries, characterised by a high female employment rate (Dutta and Reilly, 2008).

Numerous research outcomes have been documented towards exploring the causes of the gender earnings gap. Labour productivity mainly depends on the educational attainments of workers, labour market conditions, occupation safety, business environment, public investment in infrastructure, advancement, and adoption of technology, etc. Therefore, education is one of the factors for productivity growth, and it may, in turn, lead to better wages, safe working conditions, wage security, increased profits, increase in revenue to Governments etc. Females tend to spend less years acquiring formal education, which affects their productivity and adversely affects their earnings. Kingdon (1998) empirically tested labour market discrimination against women using household-level data and revealed that women lack incentives to invest in schooling than boys and reap less return than boys in the labour market.

Similarly, Azam (2012) examined the evolution of wages based on individual-level earning data from the urban area from 1983–2004 and shows that the return of secondary and tertiary education has increased since 1990, resulting in wage inequality. Mohanty (2021) examined the gender earnings gap among workers with similar technical qualifications using employment data from the National sample survey 2011–12 in India and revealed that women lagged in attaining technical education and unemployment. The findings further attribute marriage, having children and low linkage with the labour market as significant factors for low monetary rewards for females compared to male workers. Kijima (2006) examined India's age gap and inequality since economic reforms (1991) and showed that earning inequality in the urban area had begun well before 1991. The study revealed that increased return to skills and increasing demand for skilled labour yield skill premium. The experience of developed nations also reveals that education and skills are immensely helpful in high growth and raising the wage level and living standard (Billard, 2017) besides promoting entrepreneurship by reducing the fear of failure (Mor, Madan, Chhikara, 2020). However, Gangel and Ziefle (2009) attributed motherhood and family responsibilities impact women earnings negatively instead of differences in human capital endowments.

1 GENDER EARNINGS GAP EXPLANATIONS

The worldwide average labour force participation rate stands at about 62 percent of the working-age population (approximately 3.3 billion individuals). Among all employed, 54 percent (1.8 billion) are wage/salaried workers³ (ILO, 2018a). For most workers, earning wages/salaries constitute a significant proportion of their total household income ranging from about 40 percent in low and middle-income countries to 60–80 percent in high-income economies (ILO, 2017) and have prominently been witnessed in European countries (de Pleijt and van Zanden, 2021). At the same time, all working people are not

³ The persons who worked in other farm or non-farm enterprises and received receiving piece wage or salary and paid apprentices, both full time and part-time in return regularly (i.e., not based on a daily or periodic renewal of work contract; NSO, 2019).

⁴ Self-employed workers operate their enterprises on their own account or with a few partners without hiring any labour during the reference period. They could have had unpaid helpers to assist them in the enterprise's activity (NSO, 2019).

paid employees; rather many are either self-employed/own-account workers⁴ or contributing to family businesses, especially in low and middle-income countries. More than 70 percent of workers, whose primary income derives from self-employment, are engaged in small-scale, unincorporated entrepreneurial activities. This indicates the need of exploring the gender earnings gap from all self-employment activities rather than from small businesses, as only a handful of studies have attempted to investigate the economic consequences of self-employment for male and female workers separately.

Occupational segregation and the gender earnings gap are found to be inversely correlated. Though there is a gender earnings gap in all occupational categories, a representation of females in the higher end of earning spectrum (legislators, senior officials, and managers) indicates that they are aware of their rights and face the lowest gender earnings gap. But at the same time, these constitute only one percent of the total female workers (ILO, 2018b), and majority of females are employed in low skilled occupations, are paid low wages, and have a lower probability of getting social security benefits compared to men. Male workers earn a premium for providing long hours in accordance with requirements. Earlier work in this line has considered differences in human capital accumulation of workforce by gender while making a preference for any occupation for livelihood.

There are two major theories of choosing self-employment as a carrier option over regular wage employment. One is the disadvantaged worker argument, and another is the class mobility hypothesis (Budig, 2006). The former claims the absence of an attractive mix of human capital and inability to obtain employment, whereas the latter argues for escapism for undesirable employment opportunities to choose self-employed to improve their economic situation. Moreover, compensating differentials argue that females with greater family responsibilities trade earnings from work in lieu of work time flexibility to meet family commitments and childcare. This also explains the reason for the return of female workers to non-professional self-employment. But it is less influential for interpreting females' return to professional self-employment (Budig, 2006).

1.2 Significance and scope of the study

In the developing era, females have increased their productivity-enhancing capabilities and have increased their employability across diverged occupations. At the same time, they also have emerged as self-employed workers in every occupation. Considering the view, the present study evolves around the exploring the persistence gender earning gap in general and tends to examine the same across broad occupational groups and also for self-employed workers and regular wage employees to get the concrete picture of the scenario. Though, the difference in educational attainments of workers has been an important force of earning from work, but certain studies do not support any skill-based reason for earning gap and have found the gender of workers taking the lead in this concern (Goldin, 2014; Miller, 2016). With this, differences in workers' education need to be neutralised to examine the gender earnings gap across broad occupational groups and work status of workers to capture the real effect of occupation work status on the gender earnings gap. The real contribution of the paper lies in examining the gender earning gap after neutralizing the effect of differences in educational attainments/skill level of workers. The paper deals with specific research questions such as: Is the impact of occupational segregation on earnings the same for female and male workers? Is the impact of work status on earnings of male and female workers in segregated occupations the same? The answers to these questions are critical for understanding the impact of making occupations and work status choices on gender economic equity. This helps to underline the importance and urgency of framing state policies and their strict implementation to ensure females' active participation in the workforce. In this backdrop, the present endeavour is a fresh attempt to provide crucial insights to policymakers for mainstreaming females into the workforce for efficient and effective utilisation of human resources for the socio-economic progress of India.

The paper unfolds as follows. Section 2 deals with the literature review and develop hypotheses of the study, while Section 3 pertains to the methodology employed during the study. Section 4 dedicates the main findings and discussion, whereas final section concludes the paper with suggestions.

2 LITERATURE REVIEW AND HYPOTHESIS FORMATION

2.1 Persistence of gender earnings gap

The gender earnings gap is a common feature of the labour market as there is unequal allocation of high paying jobs reflecting labour market segmentation by gender, particularly in civil services and unionised workplaces (Pendakur and Pendakur, 2007; Anderson, Hegewisch, Hayes, 2015). In response to compensating earning variation, female workers earn lesser, leading to wider gender earnings gap (Bonin et al., 2007; Azmat and Barbera, 2014). Female work participation has declined in urban areas despite having a wide spectrum of job opportunities, and the decline is more pronounced in the case of illiterate, lower caste, and economically poor females (Ara, 2016). One of the reasons for the gender earnings gap is the existence of wide gender-employment associations across societies, which causes a tipping point for males to work with occupations with too many females to safeguard their masculine identities (Akerlof and Kranton, 2000; George and Rachel, 2000). Earning of female workers would increase by about 10 percent if they were rewarded in the labour market on the same basis as for males (Lissenburgh, 2000). Moreover, the reluctance of male workers to associate with females at workplace (Goldin, 2013), holding bigot attitude towards appropriate roles of females at workplace results in lower female work participation (Pan, 2015), and male workers tend to earn more than their female counterparts (Madan and Mor, 2021). Further, because of classic compensating differential equilibrium (Rosen, 1986), females tend to place a higher value on temporal flexibility, whereas male workers earn premiums for providing long hours of work in workplaces that face higher costs of providing the amenity.

H_{01} : Gender does not form any basis for earnings gap in any society.

2.2 Gender earnings gap and occupation

The persistence of occupational segregation is a strong feature of the labour market. Occupation is found to explain larger variation in the wage-earning of the workforce from work (Cortes and Pan, 2017; Madan and Mor, 2020; Madan, 2019). Generally, high paid work opportunities are associated with managerial, professional, and technical related work, requiring higher cognitive, managerial and technical skills with high promotional prospects. Working as clerical support workers, skilled workers in agri-business, service workers can provide moderate earning for work and require skill-oriented education to perform routine official tasks. Lower-level occupation is associated with the secondary labour market, and workers face relatively flat earnings from work. The occupational choices of females depend upon family structure to accommodate family requirements and work (Yee, 2007; ILO, 2015).

Several studies witnessed more gender earnings gaps in higher-level managerial and professional occupational categories (Turner, Christern, Murphy, 2017). Female dominated occupations pay less than male-dominated occupations with similar attributes (Levanon, England, Allison, 2009; Blau and Kahn, 2017). The under-representation of females in male-dominated professions could account for the gender earnings gap as occupation and type of industry explain more than half of the variation in the gender earnings gap (Blau and Kahn, 2017). The separation of occupations based on gender is one of the most lasting socio-structural characteristics of the labour market and the German labour market. After witnessing increasing labour force participation still has a relatively worse labour market for female workers than male workers (Wiepcke, 2011). Different sectors of different occupations differ on a variety of attributes such as earnings stability, earning variance, injury, casualty risk, degree of competition, working hours etc., and gender differences in attitudes toward risk and competition could directly affect

the choice of occupation and, consequently, gender earnings gaps. Female workers are more risk-averse than their male counterparts, which is the reason for female over-representation in low-risk professions/occupations with lower earning variation.

H₀₂: Occupational diversity is not a reason of gender earnings gap.

2.3 Gender earnings gap and work status of workers

Work status of workers as self-employed or regular wage employees has been viewed as an important policy measure to move the unemployed labour force out of poverty. The earning of self-employed workers is seen as lesser than salaried employees with the same traits. In this line, Evans and Leighton (1989) hold that many self-employed workers are in small retail businesses and not growth-creating innovators for which they did not earn at par with salaried workers. Despite lower initial earnings compared to salaried workers, self-employed workers sustain their work (Hamilton, 2000). Expanding literature examines the causes of women's increased participation in self-employment (Budig, 2006). Young women do not prefer to work in Egypt's private sector due to the fear of sexual harassment at the workplace, the lack of signed work contracts besides the lower-earning and have long hours and hence do not contribute to pension plans owing to lack of job contracts. In contrast, the jobs in the public sector in Egypt are relatively women-friendly in terms of working hours, workplace gender propriety and the less hierarchical relations and hence preferred by the young women (Ghada, 2010).

H₀₃: Gender earnings gap does not differ for self-employed and regular wage/salaried workers.

3 RESEARCH METHODOLOGY

3.1 Database of the study

The study employs a database provided by the Periodic Labour Force Survey (PLFS) conducted by National Statistical Office (NSO) from July 2017 to June 2018. The information on selected indicators related to earning of the Indian workforce engaged in numerous economic activities in diverse occupations has been obtained. Purposefully, information on the monthly earning of 94 446 workers working in broad nine occupational as self-employed or and regular wage/salaried has been considered. Herein, information on the monthly earnings of 78 916 male and 15 530 female workers has been deemed to arrive at the gender earnings gap following the work status of workers in diverged occupations.

3.2 Specification of variables

The study attempts to explore the gender earnings gap of workers while considering their occupations and work status. Herein, the natural log of earning, measured in ₹ (INR), is considered the response variable and treated as a randomised continuous variable. The earning of workers may differ in accordance with the nature of work prescribed by diverged occupations. As a result, nine occupational groups have been considered under the International Standard Classification of Occupations-08 (ILO, 2012) to broadly explore earning variations across occupations. These nine broad occupational groups have been categorised as managers (A), professionals (B), technicians and associate professionals (C), clerical support workers (D), service and sales workers (E), skilled agricultural, forestry and fishery workers (F), craft and related trade workers (G), plant and machine operators and assemblers (H) and elementary workers (I) and are treated as a categorical variable. Similarly, two categories of workers have been considered to define the work status of workers, i.e., self-employed and regular wage/salaried workers. Hereby, work status also is a categorical variable. Further, educational attainments of workers may affect their earning potential, as workers with higher education generally get higher wages, regardless of gender and occupation. At this moment, controlling for years of education would help to improve the likelihood of finding a statistically significant interaction effect between wage, occupation and gender, if it exists. In this way, years of education is treated as a covariate to neutralise its effect while measuring the gender earnings

gap for self-employed and regular wage workers across diverged occupations. Thus, the mean difference in the earning of workers is measured in the presence of educational attainments of workers, considering it as a covariate. This also helps in reducing the error term, against which effects of variables/factors are considered under study.

3.3 Model specification and estimation techniques

The study employs GLM: ANCOVA, a special case of dummy variable regression, to estimate overall mean differences among groups in the presence of covariate(s) in the model (Culpepper, and Aguinis, 2011; Fields, 2016; Rasch, Verdooren, Pilz, 2019). While estimating the mean difference in the dependent variable among defined groups, a continuous variable may be an important explanatory variable contributing to the heterogeneity among defined groups. In this study, while estimating the gender gap in mean log earnings of workers across nine groups of occupations and two groups of work status, years of education have been considered an important variable for its effect on earning of workers. Herein, statistical control is required to explain variation in dependent variables across defined groups as independent variables. The analysis procedure employed for this statistical control is the analysis of covariance (ANCOVA).

3.4 Covariate

Educational attainments of workers, measured in years, are considered a covariate. Including education, a continuous variable, as a covariate reduces the error variance while capturing the effect of factors (occupation, work status and gender) on variation in mean earning. While estimating the gender earnings gap, the mean difference in the earning of the workforce from work is estimated for separate groups of workers as per their occupation and work status, years of education is considered a covariate. Now, estimated marginal means are adjusted for mean years of formal education of workers, i.e., 9 years of formal education. The rationale behind this adjustment process is to neutralise the effect of variations in the educational attainment of workers. If the mean years of education of any comparison groups are above average than that of another group (s) in comparison, then the mean score of that group on the dependent variable will be lowered and vice-versa. The degree to such adjustments on the mean score for any group depends on how far above or below average that group stands on the control variable, i.e., comparison group. Adjustment of mean scores on the dependent variable in this fashion provides the best estimates of various comparison groups as they had identical means on the control variable(s). Herein, workers' education is treated as a covariate to neutralise the effect of the mean earning gap of workers across diverged occupational groups and for different work statuses of workers.

4 RESULTS AND DISCUSSION

4.1 Persistence of gender earnings gap

The study found a significant variation in the estimated marginal mean earning by gender ($F_{1, 94409} = 1\ 660.583, p < 0.01$). The estimated marginal mean of log earning of male workers, i.e., 9.356 (₹ 11 568), is witnessed to be higher than their female counterparts, i.e., 8.800 (₹ 6 634.24), indicating a difference of Ln 0.556 in their mean earning (Table 1). It indicates that the earnings of male workers are 1.744 times more than that of female workers in general. The study found a significant earning gap of male and female workers regardless of their occupation and work status, which signals the prevalence of gender discrimination. As education/skill effect of all workers is neutralized, hereby gender can be considered as a basis of earning gap among workers. It's worth highlighting the research findings of Mor et al. (2020), which underlined those male managed ventures survive for a longer period than their female counterparts. An ample of studies have brought out the reasons for gender earnings gaps. Among many, gender differences in human capital endowments (Gangel and Ziefle, 2009), glass ceiling as well as sticky floors for female workers (Nazier, 2017), motherhood and family responsibilities (Presser, 1995; Casper and O'Connell,

1998; Bianchi, 2000), gender prejudices related to an occupational preference (Leuze and Strauß, 2016) have been some of the important reasons for the persistence of gender earnings gap. So far Indian labour market is concerned. Females require flexible working hours to handle household responsibilities such as childcare concerns and management of household tasks. High paying work opportunities with specific skill requirements and working hours are more rigid are considered less attractive for female workers. Despite lack of financial resources, females choose not to work with organizations with rigid working hours in India. *With this, 1st maintained hypothesis of the absence of the gender earnings gap can be rejected.*

Table 1 Mean earning gap by gender of workers

Sr. No	Gender of worker	Log _e 'X' ^b	Mean earning difference	Antilog _e 'X' ^c
(i)	Male workers	9.356 ^a	.556 [*]	1.744
(ii)	Female workers	8.800 ^a	-.556 [*]	

The effect of linearly independent pairwise comparisons among the estimated marginal means: F test

	Sum of Squares	DOF	Mean Square	F
Contrast	694.385	1	694.385	1 660.583*
Error	39 477.818	94 409	0.418	

Notes: Response variable: Ln (earning of workers in ₹); ^a indicates that covariates appearing in the model are evaluated at 9 years of formal education. ^{*} indicates significant at 0.01 level of significance; ^b natural Log of mean monthly earning of workers; ^c antilog of mean monthly earning gap by gender.

Source: Author's calculations

4.2 Prevalence of gender earnings gap across occupations

Table 2 provides the mean log earnings of workers by occupation. Segregated factorial analysis about occupation indicates that the grand mean of log earnings for all workers are found to be 9.078 (₹ 8 760.42), ranging from 9.408 (₹ 12 185) for managers to 8.779 (₹ 6 496.37) for craft and related trade workers. There is a significant variation in the estimated marginal mean earning of workers among various occupational groups as indicated by $F_{8, 94409} = 313.471, p < 0.01$.

Table 2 clearly indicates a significant earning gap among workers in diverged occupations. So far as occupational group A is concerned, the mean earning of workers is significantly higher than the workers in other occupations except for workers in occupational group D (clerical support workers). Similarly, the mean earning gap of workers in occupational group B is less than those working with occupational group A but greater than those in other occupational categories. This difference is found significant for all workers except for those working in group D. Similarly, the mean earnings of workers in occupational group C is less than those working with occupational group A, group B and group D but greater than those in other occupational categories.

So far as the mean earning gap of workers in occupational group D is concerned, the mean earning of workers for this occupational group is significantly less than those working with occupational group A, group B and group C but greater than those in other occupational categories. Similarly, the mean earning gap of occupational group E is significantly less than those working with occupational group A, group B, group C and group D but greater than those in other occupational categories. The mean earning gap of occupational group F is significantly less than those in other occupational categories, except for workers working with occupational group G. At the same time, the mean earning gap of occupational group G is significantly less than those in all other occupational groups.

Table 2 Mean earning of workers across occupations

Number of occupational groups	Name of occupational groups	Mean earning of workers
A	Managers	9.408 ^a
B	Professionals	9.294 ^a
C	Technicians and associate professionals	9.133 ^a
D	Clerical support workers	9.387 ^a
E	Service and sales workers	9.014 ^a
F	Skilled agricultural, forestry and fishery workers	8.901 ^a
G	Craft and related trade workers	8.779 ^a
H	Plant & machine operators and assemblers	8.952 ^a
I	Elementary workers	8.834 ^a
	Grand mean	9.078^a

The effect of linearly independent pairwise comparisons among the estimated marginal means: F test

	Sum of squares	DOF	Mean square	F
Contrast	1 048.643	8	131.080	313.471 [*]
Error	39 477.818	94 409	0.418	

Notes: Response variable: Ln (earning of workers in ₹); ^a indicates that covariates appearing in the model are evaluated at 9 years of formal education; ^{*} indicates significant at 0.01 level of significance.

Source: Author's calculations

The mean earning of workers working with occupational group H and group I is significantly less than those in other occupational groups except the mean earning of workers in occupational group H (Table 3). It clarifies that the mean earning of workers in diverged occupational groups differ significantly.

Table 3 Mean difference in the log monthly earning of workers of specified occupational group with other occupational groups

Occupational groups	Occupational groups								
	1	2	3	4	5	6	7	8	9
A	–	.113 [*]	.275 [*]	.021	.394 [*]	.506 [*]	.628 [*]	.456 [*]	.574 [*]
B	–.113 [*]	–	.162 [*]	–.092	.280 [*]	.393 [*]	.515 [*]	.342 [*]	.461 [*]
C	–.275 [*]	–.162 [*]	–	–.254 [*]	.119 [*]	.231 [*]	.354 [*]	.181 [*]	.299 [*]
D	–.021	.092	.254 [*]	–	.373 [*]	.485 [*]	.608 [*]	.435 [*]	.553 [*]
E	–.394 [*]	–.280 [*]	–.119 [*]	–.373 [*]	–	.112 [*]	.235 [*]	.062	.180 [*]
F	–.506 [*]	–.393 [*]	–.231 [*]	–.485 [*]	–.112 [*]	–	.122 [*]	–.050	.068
G	–.628 [*]	–.515 [*]	–.354 [*]	–.608 [*]	–.235 [*]	–.122 [*]	–	–.173 [*]	–.055 [*]
H	–.456 [*]	–.342 [*]	–.181 [*]	–.435 [*]	–.062	–.050	.173 [*]	–	.118 [*]
I	–.574 [*]	–.461 [*]	–.299 [*]	–.553 [*]	–.180 [*]	–.068	.055 [*]	–.118 [*]	–

Note: ^{*} significant at 1 percent levels of significance.

Source: Author's calculations

Herein, the occupational earnings gap, as indicated in the present study, is following the investigation by Cortes and Pan (2017), which explored that upper-tier work opportunities are typically associated with managerial, professional, technical professionals, whereas clerical support workers, skilled workers in agribusiness, service workers signify middle-level occupational categories. The defined work opportunities differ in cognitive, managerial and technical skills leading to earnings gap among workers, as indicated in the research findings of Turner et al. (2017).

Table 5 signifies the gender earnings gap across diverged occupations, work status and gender of workers. It makes clear that significant gender earnings gap exists across all occupational groups. A perusal of statistics in Table 5 clarifies that the gender earnings gap is witnessed to be maximum in occupational group G as the earnings of male workers are estimated to be 2.35 times more than that of female workers. In this same line, the gender earnings gap is high for workers in occupational group C (2.17 times) followed by group H (1.85 times), in favour of male workers. It is observed to be least for workers in occupational group D (1.13 times), preceded by occupational group E (1.64 times) and occupational group A (1.66 times).

Resultantly, it can be concluded that there exists significant gender earning gap of workers working with diverged occupational groups and education/skill of workers are not responsible as its effect is neutralized to drive out the effect of factor under consideration. The prevalence of the gender earnings gap across occupations, as brought up by this study, is consistent with the research findings of several studies. Certain studies have underlined the choice of occupational groups for work (Turner et al., 2017) on various parameters. Studies on labour market segmentation by gender (Georgellis and Wall, 2005; Pendakur and Pendakur, 2007; Levanon et al., 2009; Anderson et al., 2015; Madan, 2019) have underlined earning variations under gender dominating occupations. This makes clear that gender earning gaps across occupations in India is in line with other countries for which segregated skill requirement and work experience are the main reasons. Hence, our 2nd maintained hypothesis of type of occupation or occupational diversity is not the reason of wage-earning of workers across can be rejected.

4.3 Earnings gap and work status of workers

So far as the work status of workers is concerned, there exists significant variation in the estimated marginal means in the monthly earning of self-employed and wage/salaried workers as indicated by the value of F statistic ($F_{1, 94409} = 546.217$, $p < 0.01$), ranging from Ln (8.918) (₹ 7 465.14) for self-employed workers to Ln (9.238) (₹ 10 280.46) for regular salaried employees. The mean log earning of regular wage workers is significantly greater than own account workers indicating that the earning of regular wage earners is 1.377 times more than own-account workers (Table 4).

Table 4 Monthly mean earning gap from work by work-status of workers

Sr. No	Work status	$\text{Log}_e X^b$	Mean earning difference	Antilog _e X ^c
A	Self-employed workers	8.918 ^a	-.320 [†]	1.377
B	Regular wage/salaries employees	9.238 ^a	.320 [†]	

The effect of linearly independent pairwise comparisons among the estimated marginal means: F test

	Sum of squares	DOF	Mean square	F
Contrast	228.405	1	228.405	546.217*
Error	39 477.818	94 409	0.418	

Notes: Response variable: Ln (earning of workers in ₹); ^a indicates that covariates appearing in the model are evaluated at 9 years of formal education; [†] indicates significant at 0.01 level of significance; ^b natural Log of mean monthly earning of workers; ^c antilog of mean monthly earning gap by gender.

Source: Author's calculations

Several studies, herein, supported earnings gap in accordance with the work status of workers (Evans and Leighton, 1989; Hamilton, 2000). Moreover, divergence in work status has different requirements related to skill, finance, and scale of operation, leading to earning gap from work.

Though the gender earnings gap is a common feature for all workers, it is more prominent among self-employed workers than regular wage/salaried workers. Self-employed male workers earn 1.95 times more than female workers, whereas regular wage male workers earn 1.55 times than female workers, on average. This clarifies that the gender gap persists in the earnings of workers regardless of their work status. The perusal of statistics, in this concern, shows that the gender earnings gap for self-employed workers and regular salaried workers differ in accordance with occupational categories (Table 5). Numerous studies provide support for the gender earnings gap in this concern. Different occupations require different skill requisites, financial requirements, operation scale, and labour market endowments, leading to an earning gap among workers.

Most females choose to become self-employed due to childcare concerns, flexible working timings (Presser, 1995; Casper and O’Connell, 1998; Bianchi, 2000), and do not spend sufficient time on their work. Moreover, female self-employed workers tend to start with work wherein financial requirements are comparatively less (Georgellis and Wall, 2000b), leading to a gender earnings gap. Further, the dominance of male workers in gainful employment options is also one of the reasons for the gender earnings gap (Georgellis and Wall, 2000a).

Table 5 Gender earnings gap by occupation and work status

Broad occupational groups and description	Work status	Gender	$\log_e X$	Gender earnings gap	$\frac{1}{\log_e X}$	N
Managers (Category A) Chief executives, senior officials, legislators, administrative and commercial managers, production and specialised services managers, hospitality, retail and other services managers	Self-employed workers	Male	9.393	0.941	2.389	6 546
		Female	8.522			882
		Total	8.958			7 428
	Regular salaried/wage workers	Male	9.929	0.129	1.153	1 898
		Female	9.787			257
		Total	9.858			2 155
	Total	Male	9.661	0.757	1.660	8 444
		Female	9.154			1 139
		Total	9.408			9 583
	Professionals (Category B) Science and engineering professionals, health professionals, teaching professionals, business and administration professionals, information and communications technology professionals, legal, social and cultural professionals	Self-employed workers	Male	9.353	0.706	2.036
Female			8.642			279
Total			8.998			2 001
Regular salaried/wage workers		Male	9.773	0.365	1.439	3 710
		Female	9.409			1 917
		Total	9.591			5 627
Total		Male	9.563	0.308	1.713	5 432
		Female	9.025			2 196
		Total	9.294			7 628

Table 5 (continuation)

Broad occupational groups and description	Work status	Gender	*Log _e 'X	Gender earnings gap	**Antilog _e 'X	N
Technicians and associate professionals (Category C) Science and engineering associate professionals; health associate professionals; business and administration associate professionals; legal, social, cultural, and related associate professionals; information and communications technicians)	Self-employed workers	Male	9.387	0.866	2.512	797
		Female	8.466			118
		Total	8.927			915
	Regular salaried/wage workers	Male	9.656	0.647	1.887	4 005
		Female	9.021			2 420
		Total	9.339			6 425
	Total	Male	9.522	0.617	2.177	4 802
		Female	8.744			2 538
		Total	9.133			7 340
Clerical support workers (Category D) Occupation as general and keyboard clerks; customer services clerks; numerical and material recording clerks and other clerical support workers	Self-employed workers	Male	9.322	0.179	1.074	81
		Female	9.251			20
		Total	9.286			101
	Regular salaried/wage workers	Male	9.577	0.163	1.197	3 206
		Female	9.397			875
		Total	9.487			4 081
	Total	Male	9.449	0.163	1.133	3 287
		Female	9.324			895
		Total	9.387			4 182
Service and sales workers (Category E) Personal service workers; sales workers; personal care workers and protective services workers	Self-employed workers	Male	9.275	0.469	1.486	6 435
		Female	8.879			785
		Total	9.077			7 220
	Regular salaried/wage workers	Male	9.248	0.679	1.813	6 497
		Female	8.653			1 539
		Total	8.951			8 036
	Total	Male	9.262	0.607	1.642	12 932
		Female	8.766			2 324
		Total	9.014			15 256
Skilled agricultural, forestry and fishery workers (Category F) Market-oriented skilled agricultural workers; market-oriented skilled forestry, fishery, and hunting workers; subsistence farmers, fishers, hunters and gatherers	Self-employed workers	Male	9.001	0.651	1.775	19 762
		Female	8.427			2 341
		Total	8.714			22 103
	Regular salaried/wage workers	Male	9.337	0.564	1.644	339
		Female	8.840			42
		Total	9.089			381
	Total	Male	9.169	0.649	1.707	20 101
		Female	8.634			2 383
		Total	8.901			22 484

Table 5 (continuation)

Broad occupational groups and description	Work status	Gender	^a Log _e 'X	Gender earnings gap	^{**} Antilog _e 'X	N
Craft and related trade workers (Category G) Building and related trades workers, excluding electricians; metal, machinery and related trades workers; handicraft and printing workers; electrical and electronic trades workers; electronics and telecommunications installers and repairers; food processing, wood working, garment and other craft and related trades workers	Self-employed workers	Male	9.200	1.179	3.180	4 472
		Female	8.043			1 412
		Total	8.621			5 884
	Regular salaried/wage workers	Male	9.217	0.614	1.751	4 525
		Female	8.657			460
		Total	8.937			4 985
	Total	Male	9.208	1.059	2.358	8 997
		Female	8.350			1 872
		Total	8.779			10 869
Plant & machine operators and assemblers (Category H) Stationary plant and machine operators; assemblers; drivers and mobile plant operators	Self-employed workers	Male	9.247	0.827	2.199	3 153
		Female	8.459			68
		Total	8.853			3 221
	Regular salaried/wage workers	Male	9.111	0.477	1.742	5 093
		Female	8.556			153
		Total	9.051			5 246
	Total	Male	9.260	0.581	1.852	8 246
		Female	8.644			221
		Total	8.952			8 467
Elementary occupations (Category I) Cleaners and helpers; agricultural, forestry and fishery labourer; labourer in mining, construction, manufacturing, and transport; food preparation assistants; preparation assistants; street and related sales and service workers; refuse workers and other elementary workers	Self-employed workers	Male	9.105	0.637	1.738	2 905
		Female	8.552			285
		Total	8.828			3 190
	Regular salaried/wage workers	Male	9.118	0.677	1.745	3 770
		Female	8.561			1 677
		Total	8.839			5 447
	Total	Male	9.111	0.649	1.742	6 675
		Female	8.556			1 962
		Total	8.834			8 637
Total	Self-employed workers	Male	9.254	0.783	1.958	45 873
		Female	8.582			6 190
		Total	8.918			52 063
	Regular salaried/wage workers	Male	9.459	0.43	1.556	33 043
		Female	97			9 340
		Total	9.238			42 383
	Total	Male	9.356	0.504	1.744	78 916
		Female	8.800			15 530
		Total	9.078			94 446

Notes: Response variable: Ln (earning of workers in ₹); ^a indicates that covariates appearing in the model are evaluated at 9 years of formal education; ^b mean difference indicate earning gap of female and male workers (female earning – male earning); ^c natural Log of mean earning of workers; ^{**} antilog of mean earning gap by gender.

Source: Author's calculations

So far as the gender earnings gap among self-employed workers is concerned, it is witnessed to be highest for workers in occupational group G (by 3.18 times) followed by occupational group C (by 2.51 times), occupational group A (by 2.38 times) and occupational group B (by 2.03 times). Hereby, it is evident that the gender earnings gap is a common feature of the Indian labour market as witnessed in many countries of the world (Table 5). The gender earnings gap is least in occupational group C, preceded by occupational group D. Similarly, an examination of earnings of regular workers makes clear that the gender wage gap of regular wage/salaried workers is comparatively less than for self-employed workers. The gender earnings gap, in favour of male workers, is found to be highest for workers in broad occupational group C (1.88 times), followed by those in occupational group E (1.81 times). *This makes us refute 3rd hypothesis gender earning gap does not differ in between self-employed and regular salaried workers as gender earning gap is significantly more in salaried workers than self-employed.*

CONCLUSION AND SUGGESTIONS

The study highlights the fact that there exists a considerable earnings gap in the labour market. A significant part of gender earnings gap among workers has been explained in general and by occupational diversity and work status of workers working as a self-employed or regular wage worker. At the same time, the effect of educational attainments has been neutralised to fetch real earnings gap across occupations, work status and gender separately as education/skill provide a basis for earning gap of workers. However, the persistence of the gender earnings gap within occupational groups and within the same work status reflects the prevalence of the gender earnings gap. The study found significant gender earnings gap across occupations and the work status of workers. The occupational choices of females depend not only on future promotional and growth prospects but also on the family structure to accommodate family requirements and work. This makes females choose such occupations to work wherein they can accommodate their family requirements resulting in lesser earnings compared to their male counterparts. Working as self-employed or regular wage/salary workers is also a cause of earnings gap among workers. The earnings of self-employed is witnessed to be lesser than salaried employees. Females choose to become self-employed due to childcare concerns, movement constraints to work outside and other household responsibilities and require flexibility in working timings. At the same time, they cannot devote sufficient time towards their work and invest financial resources compared to their male counterparts, which results in a wider gender earnings gap for self-employed female workers.

Herein, the study recommends the removal of gender discrimination to raise the self-esteem of female aspirants, enabling them to contribute with more productivity. At the same time, it is important to raise the productivity potential of the female workforce. Herein, professional/vocational education is an important measure. Further, special provisions, e.g., easy finance, marketing, advertisement facilitating, need to be given to the self-employed, especially for female workers, in compensation for their unremunerative services rendered at home in '*bringing-up the civilisations*' for humanity. This helps in the promotion of entrepreneurship culture in society.

Furthermore, the gender earnings gap may reduce female workers' enthusiasm to put less effort, which constitutes half of the labour force. It might reduce the incentives to invest in female education and training, which may negatively affect productivity growth. Again, 'demotivational factors' leading to the gender earnings gap need to be eliminated to ensure equal monetary reward for workers with similar skills and attributes across occupations as these led to depression and social tensions. There are many factors such as family background, cultural differences, mode & type of schooling, managerial capabilities etc. of workers which may affect the earning potential of workers but lack of data/information on the same is the limitation of the study.

ACKNOWLEDGEMENTS

Unit level microdata has been obtained from the official website of the National Statistical Office (NSO), New Delhi, which is exempted from the individual consent of subjects.

References

- AGARWAL, M. (2017). *Skill Development in India: The Supply Side Story*. In: KAPUR, D., MEHTA, P. B. (eds.) *Navigating the Labyrinth: Perspectives on India's Higher Education*, Orient Blackswan.
- AKERLOF, G. A., KRANTON, R. E. (2000). Economics and Identity [online]. *The Quarterly Journal of Economics*, 115(3): 715–753. <<http://www.jstor.org/stable/2586894>>.
- ANDERSON, J., HEGEWISCH, A., HAYES, J. (2015). The Union Advantage for Women [online]. *Briefing Paper, IWPR #R409*, Washington, DC: Institute for Women's Policy Research. <[https://iwpr.org/wp-content/uploads/wpallimport/files/iwpr-export/publications/\(R409\)%20Union%20Advantage.pdf](https://iwpr.org/wp-content/uploads/wpallimport/files/iwpr-export/publications/(R409)%20Union%20Advantage.pdf)>.
- ANKER, R. (1997). Theories of occupational segregation by sex: an overview. *International Labour Review*, 136(3): 315–39.
- ARA, S. (2016). Gender and jobs: Evidence from urban labour market in India [online]. *The Indian Journal of Labour Economics*, 58: 377–403. <<https://doi.org/10.1007/s41027-016-0027-2>>.
- ASHRAF, J., ASHRAF, B. (1998). Earnings in Karachi: Does gender make a difference [online]. *Pakistan Economic and Social Review*, 36(1): 33–46. <<https://www.jstor.org/stable/25825167>>.
- AZAM, M. (2012). Changes in Wage Structure in Urban India, 1983–2004: a Quantile Regression Decomposition [online]. *World Development*, 40(6): 1135–1150. <<https://doi.org/10.1016/j.worlddev.2012.02.002>>.
- AZMAT, G., BARBERA, P. (2014). Gender and the labor market: What have we learned from field and lab experiments? [online]. *Labor Economics*, 30: 32–40. <<https://doi.org/10.1016/j.labeco.2014.06.005>>.
- BIANCHI, S. M. (2000). Maternal employment and time with children: dramatic change or surprising continuity? [online]. *Demography*, 37(4): 401–414. <<https://doi.org/10.1353/dem.2000.0001>>.
- BILLARD, L. (2017). Study of salary differentials by gender and discipline [online]. *Statistics and Public Policy*, 4(1): 1–14. <<https://doi.org/10.1080/2330443X.2017.1317223>>.
- BLAU, F. D., LAWRENCE, M. K. (2014). The gender wage gap: Extent, trends, and explanations. [online]. *Journal of Economic Literature*, 55(3): 789–865. <<https://doi.org/10.1257/jel.20160995>>.
- BONIN, H. et al. (2007). Cross sectional earnings risk and occupational sorting: The role of risk attitudes [online]. *Labor Economics*, 14(6): 926–937. <<https://doi.org/10.1016/j.labeco.2007.06.007>>.
- BUDIG, M. J. (2006). Gender, self-employment, and earnings [online]. *Gender and Society*, 20(6): 725–753. <<https://doi.org/10.1177/0891243206293232>>.
- CASPER, L. M., O'CONNELL, M. (1998). Work, income, the economy, and married fathers as childcare providers [online]. *Demography*, 35(4): 243–250. <<https://doi.org/10.2307/3004055>>.
- CORTES, P., PAN, J. (2017). Occupation and Gender. *IZA Discussion Paper*, No. 10672, IZA Institute of Labor Economics, Deutsche Post Foundation.
- CULPEPPER, S. A., AGUINIS, H. (2011). Using Analysis of Covariance (ANCOVA) with Fallible Covariates [online]. *Psychological Methods*, 16(2): 166–178. <<https://doi.org/10.1037/a0023355>>.
- DAS, P. (2012). Wage Inequality in India: Decomposition by Sector, Gender and Activity Status [online]. *Economic and Political Weekly*, 47(50): 58–64. <<http://www.jstor.org/stable/41720467>>.
- DE PLEIJT, A., VAN ZANDEN, J. L. (2021). Two worlds of female labour: Gender wage inequality in western Europe, 1300–1800 [online]. *Economic History Review*, 74(3): 611–638. <<https://doi.org/10.1111/ehr.13045>>.
- DUTTA, P., REILLY, B. (2008). The gender pay gap in an era of economic change: Evidence for India, 1983 to 2004. *Indian Journal of Labour Economics*, 51(3): 341–360.
- EVANS, D. S., LEIGHTON, L. S. (1989). Some empirical aspects of entrepreneurship [online]. *American Economic Review*, 79(3): 519–535. <<https://www.jstor.org/stable/1806861>>.
- FIELDS, A. (2016). *Discovering statistics using IBM SPSS Statistics*. Analysis of Covariance, ANCOVA (GLM 2), Sage Publications Ltd., Chapter 11.
- GANGEL, M., ZIEFLE, A. (2009). Motherhood, labor force behavior, and women's careers: an empirical assessment of the wage penalty for motherhood in Britain, Germany, and the United States [online]. *Demography*, 46(2): 341–369. <<https://doi.org/10.1353/dem.0.0056>>.
- GEORGE A. A., RACHEL, E. K. (2000). Economics and Identity [online]. *Quarterly Journal of Economics*, 115(3): 715–753. <<https://doi.org/10.1162/003355300554881>>.
- GEORGELLIS, Y., WALL, H. J. (2000a). What makes a region entrepreneurial? Evidence from Britain [online]. *Annals of Regional Science*, 34(3): 385–403. <<https://doi.org/10.1007/s001689900014>>.
- GEORGELLIS, Y., WALL, H. J. (2000b). Who are the self-employed? *Federal Reserve Bank of St. Louis Review*, 82(6): 15–23.

- GEORGELLIS, Y., WALL, H. J. (2005). Gender differences in self-employment [online]. *International Review of Applied Economics*, 19(3): 321–42. <<https://doi.org/10.1080/02692170500119854>>.
- GHADA, B. (2010). When there is ‘no Respect’ at Work: Job Quality Issues for Women in Egypt’s Private Sector [online]. *OIDA International Journal of Sustainable Development*, 1(1): 67–80. <<https://ssrn.com/abstract=1661196>>.
- GOLDIN, C. (2014). A grand gender convergence: its last chapter [online]. *American Economic Review*, 104(4): 1091–1119. <<https://doi.org/10.1257/aer.104.4.1091>>.
- GOLDIN, C. (2013). A Pollution Theory of Discrimination: Male and Female Differences in Occupations and Earnings. In: *Human Capital and History: the American Record*, University of Chicago Press.
- HAMILTON, B. H. (2000). Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of Political Economy*, 108(3): 604–631.
- HAMPTON, M. B., HEYWOOD, J. S. (1993). Do workers accurately perceive gender wage discrimination? [online]. *Industrial and Labor Relations Review*, 47(1): 35–49. <<https://doi.org/10.1177/001979399304700103>>.
- HOFFNER, E., GREENE, M. (1997). Gender discrimination in the public and private sectors: a sample selectivity approach [online]. *Journal of Socio-Economics*, 25(1): 105–114. <[https://doi.org/10.1016/S1053-5357\(96\)90056-6](https://doi.org/10.1016/S1053-5357(96)90056-6)>.
- ILO. (2012). *International Standard Classification of Occupations*. Geneva, Vol. 1.
- ILO. (2015). *Global Wage Report. Wage and Income Inequality* [online]. Geneva. <https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_324678.pdf>.
- ILO. (2017). *Global Wage Report 2016/17: Wage inequality in the workplace* [online]. Geneva. <https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_537846.pdf>.
- ILO. (2018a). *India Wage Report–Wage policies for decent work and inclusive growth* [online]. Geneva. <https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/publication/wcms_638305.pdf>.
- ILO. (2018b). *Global Wage Report. What lies behind gender pay gaps* [online]. Geneva. <https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_650553.pdf>.
- KIJIMA, Y. (2006). Why did wage inequality increase? Evidence from urban India 1983–99 [online]. *Journal of Development Economics*, 81(1): 97–117. <<https://doi.org/10.1016/j.jdeveco.2005.04.008>>.
- KINGDON, G. G. (1998). Does the labour market explain lower female schooling in India? [online]. *Journal of Development Studies*, 35(1): 39–65. <<https://doi.org/10.1080/00220389808422554>>.
- LEUZE, K., STRAUSS, S. (2016). Why do occupations dominated by women pay less? How ‘female-typical’ work tasks and working-time arrangements affect the gender wage gap among higher education graduates [online]. *Work, Employment and Society*, 30(5): 802–820. <<https://doi.org/10.1177/0950017015624402>>.
- LEVANON, A., ENGLAND, P., ALLISON, P. D. (2009). Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950–2000 U.S. Census Data [online]. *Social Forces*, 88(2): 865–891. <<https://doi.org/10.1353/sof.0.0264>>.
- LISSENBURGH, S. (2000). Gender Discrimination in the Labour Market. *PSI Research Discussion Series*, Policy Studies Institute, UK.
- LIVANOS, I., POULIAKAS, K. (2012). Educational segregation and the gender wage gap in Greece [online]. *Journal of Economic Studies*, 39(5): 554–575. <<https://doi.org/10.1108/01443581211259473>>.
- MADAN, S. (2019). Wage differentials among workers: an empirical analysis of the manufacturing and service sectors [online]. *Indian Journal of Labour Economics*, 62(4): 731–47. <<https://doi.org/10.1007/s41027-019-00195-4>>.
- MADAN, S., GOEL, R. (2019). Outcomes of labour market for informal workers: an analysis of influential factors in Haryana. *Man and Development*, 41(2): 51–70.
- MADAN, S., MOR, S. (2020). Skill and wage-earning potential: Evidence from Indian labour market [online]. *Statistika: Statistics and Economy Journal*, 100(4): 245–260. <https://www.czso.cz/documents/10180/125507861/32019720q4_392-407_madan_analyses.pdf/a5c58983-5310-4c78-89e0-b6c10a069129?version=1.1>.
- MADAN, S., MOR, S. (2021). Do occupation, work status and gender cause variations in wages: Case of Indian labour market [online]. *International Journal of Economic Policy in Emerging Economies*. <<https://doi.org/10.1504/IJEP.2021.10040188>>.
- MOR, S., MADAN, S., CHIKHARA, R. (2020). The risk-seeking propensity of Indian entrepreneurs: a study using GEM data [online]. *Strategic Change*, 29(3): 311–319. <<https://doi.org/10.1002/jsc.2330>>.
- MILLER, C. C. (2016). As Women take over a male-dominated field, the pay drops [online]. *New York Times*, March 18. <<https://www.nytimes.com/2016/03/20/upshot/as-women-take-over-a-male-dominated-field-the-pay-drops.html>>.
- MOHANTY, S. (2021). A distributional analysis of the gender wage gap among technical degree and diploma holders in urban India [online]. *International Journal of Educational Development*, 80: 102322. <<https://doi.org/10.1016/j.ijedudev.2020.102322>>.
- MOR, S., MADAN, S., ARCHER, G. R., ASHTA, A. (2020). Survival of the smallest: a study of microenterprises in Haryana, India [online]. *Millennial Asia*, 11(1): 57–78. <<https://doi.org/10.1177/0976399619900609>>.
- NAZIER, H. (2017). The conditional gender wage gap in Egypt: premium or penalty? Topics in Middle Eastern and African Economies. *Proceedings of Middle East Economic Association*, 19(2): 67–95.
- NOR, L. M. (1998). An overview of gender earning differentials in peninsular Malaysia. *Journal of Economics and Management*, 6(1): 23–49.

- NSO. (2019). *Periodic Labour Force Survey (PLFS), 2017–18, Unit level Data*. Ministry of Statistics and Programme Implementation, National Statistical Office, Government of India.
- PAN, J. (2015). Gender Segregation in Occupations: the Role of Tipping and Social Interactions. *Journal of Labor Economics*, 33(2): 365–408.
- PENDAKUR, K., PENDAKUR, R. (2007). Minority earnings disparity across the distribution [online]. *Canadian Public Policy*, 33(1): 41–61. <<https://doi.org/10.3138/cpp.v33.1.041>>.
- PODDAR, S., MUKHOPADHYAY, I. (2019). Gender Wage Gap: Some Recent Evidence from India [online]. *J. Quant. Econ.*, 17: 121–151. <<https://doi.org/10.1007/s40953-018-0124-9>>.
- PRESSER, H. B. (1995). Job, family, and gender: Determinants of non-standard work schedules among employed Americans in 1991 [online]. *Demography*, 32(4): 577–598. <<https://doi.org/10.2307/2061676>>.
- RASCH, D., VERDOOREN, R., PILZ, J. (2019). *Applied statistics: Theory and problem solutions with R* [online]. John Wiley and Sons, Ltd., Chapter 9. <<https://doi.org/10.1002/9781119551584>>.
- ROSEN, S. (1986). The Theory of Equalising Differences [online]. In: ASHENFELTER, O., LAYARD, R. (eds.) *The Handbook of Labour Economics*. University of Chicago, Amsterdam: Elsevier-North Holland, 1: 641–92. <[https://doi.org/10.1016/S1573-4463\(86\)01015-5](https://doi.org/10.1016/S1573-4463(86)01015-5)>.
- STEPHEN, M. (1998). Recent shifts in wage inequality and the wage returns to education in Britain. *National Institute Economic Review*, 166(1): 87–95.
- TURNER, T., CHRISTERN, C., MURPHY C. (2017). Occupations, age and gender: Men and Women's earnings in the Irish labour market [online]. *Economic and Industrial Democracy*, 38(2): 1–20. <<https://doi.org/10.1177/0143831X17704910>>.
- WEEDEN, K. A. (1998). Revisiting occupational sex segregation in the United States, 1910–1990: results from a log-linear approach [online]. *Demography*, 35(4): 475–487. <<https://doi.org/10.2307/3004015>>.
- WEICHSELBAUMER, D., WINTER, E. R. (2005). A meta-analysis of the gender wage gap [online]. *Journal of Economic Surveys*, 9(3): 479–511. <<https://doi.org/10.1111/j.0950-0804.2005.00256.x>>.
- WIEPCKE, C. (2011). Gender-specific job choices-implications for career education as part of economic education [online]. *Int. J. of Pluralism and Economics Education*, 2: 355–368. <<https://doi.org/10.1504/IJPEE.2011.046023>>.
- YEE, K. M. (2007). Work orientation and wives' employment careers [online]. *Work and Occupations*, 34(4): 430–462. <<https://doi.org/10.1177/0730888407307200>>.