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An Analysis of Wage Determinants and Gender Wage Inequality in the Daily Labor Market of Bangladesh: A Quantile Regression Approach

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RESEARCH ARTICLE

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Abstract

This study investigates wage determination and gender-based wage disparities in Bangladesh's daily labor market using HIES 2010 and 2016 datasets and OLS and Quantile Regression methods. Results reveal a substantial gender wage gap, with females earning 22.9% less than males in 2010, increasing to 62.2% in 2016. The gap lessens across quantiles, indicating a sticky floor effect in both years. Various determinants, including human capital and social factors, affect wages differently. Policy implications underscore the need for equal pay advocacy, shared familial responsibilities, and targeted interventions to rectify gender-based wage disparities. The study offers nuanced insights crucial for fostering an equitable daily labor market in Bangladesh.

Keywords: Wage determinants, Wage inequality, Gender wage gap, Daily labor market, Quantile regression

1. Introduction

Bangladesh has achieved impressive economic growth, exceeding 6%, and development over the past two decades, even during global uncertainty. Several pivotal factors have propelled this growth, including a robust demographic dividend, a robust export sector focused on readymade garments (RMG), resilient inflows of remittances, and a stable macroeconomic environment (World Bank, 2023). Notably, Bangladesh has made substantial strides in poverty reduction and enhancements in human development outcomes. Since its independence in 1971, the nation has transitioned from being among the world's most impoverished countries to attaining a lower-middle-income status. Furthermore, it is on track to graduate from the United Nations' Least Developed Countries (LDC) list in 2026 (World Bank, 2023). The poverty rate in Bangladesh has markedly decreased from 11.8% in 2010 to 5.0% in 2022. The country's per capita income experienced a positive trajectory, escalating from USD 2462 in 2021 to USD 2687 in 2022. Despite the initial impediment caused by the COVID-19 pandemic, leading to a deceleration in economic growth to 3.45% in 2020, Bangladesh rebounded admirably, achieving a growth rate of 7.10% in 2022 (World Bank, 2023). This resurgence was propelled by a confluence of factors, encompassing government-driven stimulus packages, substantial remittance inflows, robust export performance, augmented agricultural production, infrastructural development initiatives, and expansions within the manufacturing and service sectors.

However, despite Bangladesh's recent economic success, several challenges persist, including high unemployment, inequality, gender wage gaps, a lack of decent jobs, unprotected labor rights, high living costs, corruption, limited access to basic necessities for low-income households, and limited innovation and technological advancement (Mamun et al., 2023a). In order to comprehensively and durably tackle these challenges, it is imperative to conduct a thorough assessment of the influence of wage determinants, including human capital factors such as education and experience, alongside pertinent social factors like gender, religion, occupation, and economic activities, on individuals' income levels.

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Therefore, the primary objective of this study is to analyze wage determinants and gender wage inequality in Bangladesh's daily labor market. This study aims to address the existing gap in the literature, as discussed briefly in the literature review, by providing new insights through the application of appropriate econometric methodologies to the HIES data (HIES 2010 and HIES 2016). The study will specifically address the following research questions: (i) What are the primary determinants influencing wages in Bangladesh's daily labor market in 2010 and 2016? (ii) Do the wage determinants vary between 2010 and 2016? (iii) How do wages differ over the period based on social characteristics such as gender, age, marital status, religion, rural-urban divide, and other attributes (human capital) such as education, working hours, work location, and geographical regions? (iv) To what extent have human capital and social characteristics contributed to wage growth and inclusiveness in Bangladesh in 2010 and 2016? (v) Is there a gender wage gap caused by human capital and social factors, and how does it vary across wage distribution in 2010 and 2016?

The study aims to provide new insights into the issues of income inequality, poverty, and gender wage disparity in Bangladesh, which persist despite the increase in per capita income in the past few decades. The study intends to generate scientific knowledge and evidence on the determinants, inequality, and wage gaps. The study's findings are expected to inform relevant policy interventions to promote equitable income distribution and inclusive growth in Bangladesh.

The remainder of this study is structured as follows: The next section of this study will delve into the literature review, followed by the methodology employed. The subsequent section will elucidate the data. Following that, the results will be presented and discussed. Finally, the last section will offer conclusions and policy recommendations.

2. Literature review

Understanding the determinants of wages, including human capital and social factors, and addressing wage inequality in the labor market of less developed countries, has been the focus of numerous studies in economic literature. For instance, research consistently demonstrates a robust positive relationship between education and income, indicating that investing in education yields substantial returns (Asadullah, 2006b; Horie & Iwasaki, 2023; Mamun et al., 2021). Bhutoria (2016) conducted an insightful analysis, revealing that positive economic returns associated with formal education consistently outperformed alternative pathways at the individual level. These returns exhibited variability based on qualification, educational subject, age, experience, and gender. Psacharopoulos and Patrinos (2018) corroborated these findings, emphasizing the escalating global private returns to higher education. Simultaneously, social returns to schooling remained robust. Notably, women continued to reap higher average returns from their educational investments.

Further, human capital development has emerged as a pivotal driver of economic growth in Bangladesh, a notion substantiated by several empirical studies (Chowdhury et al., 2018; Mamun et al., 2023a; Sharif et al., 2013). According to Collin and Weil (2020) and Cram (2017), education is one of the key human capital indicators and contributes significantly to economic growth. Moreover, increasing human and physical capital can mitigate the gender wage gap, diminish income inequality, and facilitate a more equitable income distribution (Ruzik & Rokicka, 2010; Sehrawat & Singh, 2019; Shahpari & Davoudi, 2014; United Nations, 2016). In urban China, education and occupation are the main factors that influence the income level of households (Su & Heshmati, 2013). However, in the UK and Germany, there is a gender gap in income even among people with the same level of education, implying that education positively affects labor wages (Caliendo & Wittbrodt, 2022; Machin & Puhani, 2003; Theodoropoulos et al., 2022). In addition to education, workplace training contributes to increased labor productivity and subsequently results in elevated wages (Acemoglu & Pischke, 1999; Blundell et al., 1999). Several research investigations have identified instances where there is no notable correlation between income and education (Földvári & van Leeuwen, 2011; Ning, 2010), but these are rare cases and can be considered outliers.

Apart from human capital, social and spatial factors such as gender, rural-urban, and regional differences also cause wage inequality in many countries, which is a serious issue (Gharehgozli & Atal, 2020; Herrera et al., 2019; Liu et al., 2019; Mamun & Arfanuzzaman, 2020; Sauer et al., 2020; Zhang et al., 2016). Investments in human capital can enhance GDP growth and reduce inequality, while social factors can improve well-being and dignity (Levchenko et al., 2018; Saygili et al., 2018; United Nations, 2016). Therefore, Bangladesh requires a transformation in human capital development and inclusive socio-economic progress (General Economics Division, 2021). Bangladesh's seventh and eighth five-year plans acknowledged

the need for higher physical and human capital investments to foster innovation and technological progress and promote efficient and effective productive institutions. The 7th five-year plan (2016–2020) emphasized the empowerment of people as the core of its development strategy, as indicated by the document's subtitle: Accelerating Growth, Empowering Citizens. The 8th five-year plan (2021–2026) also focused on human and physical capital development, poverty reduction, innovation, and economic governance for achieving the developmental transformation that is envisioned in the Perspective Plan 2041, considering human capital as the fundamental determinant of long-run development. The National Education Policy of 2010 aimed to provide suitable education and training to a significant portion of the population residing in rural and urban areas while also expanding the reach of technical, vocational, and ICT education (Ministry of Education, 2010).

In recent years, Bangladesh has made substantial strides in educating its populace, resulting in an increase in literacy rates and a higher proportion of the workforce attaining secondary, higher secondary, and tertiary education levels. Against this backdrop, it becomes imperative to analyze the impact of education and pertinent social factors on household income and identify the determinants influencing household income. This analysis is crucial for making well-informed policy decisions at this juncture. Numerous studies have examined the influence of education on income, wage gap, and income inequality in Bangladesh and other countries worldwide (Ferdous, 2023; Hossain et al., 2015; Polacko, 2021; Rahman & Islam, 2013). However, few have explored the factors that affect wages, incorporating the impacts of human capital (education, working hours) and social factors (age, gender, religion, occupation, location, economic activity) on income, using the national Household Income and Expenditure Survey (HIES) data. This gap hinders the formulation of evidence-based policies in the domains of social welfare, human capital, and labor market development. Therefore, an empirical investigation of wage determinants and wage inequality in the labor market of Bangladesh is essential.

3. Methodology

3.1. OLS regression

This study aims to measure the unknown impact of a change in one variable on another variable using the ordinary least squares (OLS) regression method, a common technique in econometrics (Stock & Watson, 2003). The OLS method estimates the parameters of a linear function from a set of covariates by minimizing the sum of squared errors, $\sum_i \varepsilon_i^2$. The wage equation is derived from the Mincerian earning function (Mincer, 1958), which relates income to human capital and other factors. The following Equation represents the general wage function that is used in this study:

$$\ln W_i = X'_i\beta_i + \varepsilon_i,\ \ i = 1,2,3,\ldots,n,\ \ E(\varepsilon_{il}) = 0 \tag{1}$$

where, $\ln W_i$ denotes the natural logarithm of daily wages, and i denotes individuals. X is the vector of predictors, which include individual characteristics such as age (proxy of experience), education, daily working hours, daily others income, religion, marital status, chronic illness, field of economic activity, occupation, area, and region. The constant β includes intercept and slope parameters. The error term ε has a zero mean and a constant variance. However, Equation (1) can be rewritten for the gender to examine the predictors' parameters separately, which can be expressed as follows:

$$\ln W_{il} = X'_{il}\beta_{il} + \varepsilon_{il},\ i = 1,2,3,\ldots,n,\ l \in \{M,F\},\ E(\varepsilon_{il}) = 0 \tag{2}$$

where l denotes gender (male (M) or female (F)). In other words, the Equation for males is $\ln W_{iM} = X'_{iM}\beta_{iM} + \varepsilon_{iM}$, and females is $\ln W_{iF} = X'_{il}\beta_{iF} + \varepsilon_{iF}$. Equation (1) can be further reformulated by introducing a slope dummy variable to elucidate disparities in predictor slopes between genders:

$$\ln W_i = X'_i\beta_i + X'_i\beta_{iF} + \varepsilon_i \tag{3}$$

Here, the intercept and slope parameters for males are contained in β_i, while the intercept and slope parameters for females are contained in β_{iF}. By comparing the regression coefficients of males with those of females, Equation (3) determines the differences between the coefficients for each predictor level and identifies whether the wage gaps significantly differ. However, Equations (1)–(3) have been considered for the HIES 2010 and 2016 datasets.

3.2. Quantile regression (QR)

The Ordinary Least Squares (OLS) regression method is frequently employed to estimate an explained variable's conditional mean value based on the predictors' provided values. In contrast, quantile regression is employed to estimate the conditional values of various quantiles of interest for the explained variable. Quantile regression can be considered an extended version of the OLS regression method. The daily wage equation model in the

form of quantile regression, which has been developed based on the work of Koenker and Bassett (1978) and Buchinsky (1998), can be expressed as:

$$Q_q(\ln w_i|X_i) = X'_i\,\beta_q + \varepsilon_i \text{ for each } q \in (0,1) \quad (4)$$

The conditional quantile of $\ln w_i$ at q^{th} quantile is denoted as $Q_q(\ln w_i|X_i)$ where X_i is a vector of n*1 regressors or a set of covariates for each i. The log of daily wages is represented by $\ln w_i$ and β_q is the coefficient vector of unknown parameters needed to estimate the different q^{th} quantiles and ε_i represents the error term. However, the gender-specific conditional QR model also can be written as from equation (4), as follows:

$$Q_q(\ln w_{il}|X_{il}) = X'_{il}\,\beta_{lq} + \varepsilon_{il} \text{ for each } q \in (0,1),\ l \in \{M,F\} \quad (5)$$

where l is used to denote gender as either Male (M) or Female (F). In other words, the Equation for males is $Q_q(\ln w_{iM}|X_{iM}) = X'_{iM}\,\beta_{Mq} + \varepsilon_{iM}$, and for the females is $Q_q(\ln w_{iF}|X_{iF}) = X'_{iF}\,\beta_{lF} + \varepsilon_{iF}$. In quantile regression, standard errors can be obtained using bootstrapping methods. This study estimates the quantiles at q = 0.10, 0.25, 0.50, 0.75, and 0.90, where q = 0.50 represents the median or Least Absolute Deviations (LAD) regression. Additionally, the conditional quantile log wage function incorporating a slope dummy variable can be expressed as:

$$Q_q(\ln w_i|X_i) = X'_i\,\beta_q + X'_i\beta_{qF} + \varepsilon_i \quad (6)$$

The parameter vector β_q comprises intercept and slope parameters for males at different quantiles, while the parameter vector β_{qF} includes intercept and slope parameters for females at different quantiles. Equation (6) presents the estimated differences in coefficients between males and females at different quantiles for each predictor level and determines if the wage gaps are significantly different. Furthermore, Equations (4)–(6) have been applied to both the HIES 2010 and 2016 datasets. However, the estimation of the β_q parameter at the q^{th} quantile is obtained by solving the minimization problem:

$$Q\left(\beta_q\right) = \min \beta \sum_{i:w_i \geq x'_i\beta}^{N} q|\ln w_i - x'_i\beta_q| + \sum_{i:w_i < x'_i\beta}^{N} (1-q)|\ln w_i - x'_i\beta_q| \quad (7)$$

Where $0 < q < 1$

Quantile regression is preferred over least squares regression due to its robustness against heteroskedastic errors and outliers. Moreover, it is considered semiparametric as it avoids making assumptions about the parametric distribution of the error process. Hence, it provides an efficient means of characterizing the entire distribution and adds considerable value if the relationship between the regressand and regressors evolves across its conditional distribution (Martins & Pereira, 2004).

4. Data

4.1. Data and variables

The data for this study was derived from two rounds of the Household Income and Expenditure Survey (HIES 2010 and HIES 2016) conducted by the Bangladesh Bureau of Statistics (BBS). The HIES 2010 included a sample of 55,580 individuals from 12,240 households, with a gender distribution of 49.54% male and 50.46% female. Conversely, the HIES 2016 data covered 186,075 individuals (49.73% male and 50.27% female) from 46,080 households. Both surveys employed a two-stage stratified random sampling method (BBS, 2011). This research focused on individuals engaged in daily labor activities, aged between 5 and 70 years,[1] and excluded missing values from the selected variables. The final dataset for HIES 2010 consisted of 7099 valid observations, with 88.21% male and 11.79% female. Similarly, HIES 2016 comprised 14,384 observations, 94.07% male and 5.93% female.

The daily wage was the explained variable in this study. In contrast, the predictors included age (as a proxy for experience), additional income sources, daily working hours, gender, education level, religion, marital status, chronic illness, geographical area, economic activity sector, region, and occupation. The dataset, however, lacked crucial variables such as the number of children, work experience, and tenure in the current occupation. Despite this limitation, the dataset was nationally representative and suitable for conducting research and exploring the wage gap among daily laborers in Bangladesh.

Table 1 presents the summary statistics (for HIES 2010 and 2016) of the selected variables utilized in this study to analyze the raw gender disparities in the daily labor market. In 2010, the mean daily wage stood at Tk. 159.67 (Tk. 164.45 for males and Tk.

[1] The HIES 2010 dataset considered individuals who were five years or older for the analysis of economic activities.

123.84 for females), which more than doubled to Tk. 346.51 (Tk. 353.42 for males and Tk. 236.84 for females) in 2016. Likewise, the raw gender wage gap expanded from Tk. 40.62 (significant at the 1% level) in 2010 to Tk. 116.57 (significant at the 1% level) in 2016, almost tripling in magnitude.[2]

In addition to the daily wage, laborers also received additional income from other sources. However, the average daily income from other sources was Tk. 37.93 in 2010, with females' mean income significantly lower at Tk. 25.55, a decrease of more than 43% compared to Tk. 39.58 for males. Conversely, in 2016, the mean income from other sources rose to Tk. 217.90 (Tk. 219.35 for males and Tk. 194.90 for females), marking a fivefold increase compared to 2010. Furthermore, the raw gap in other income also nearly doubled from Tk. 14.03 in 2010 to Tk. 24.45 in 2016.

In 2010, the data revealed that the average daily working time was 8.51 h, with males logging significantly longer hours than females by approximately half an hour. Similarly, in 2016, the average working time slightly decreased to 8.36 h. Notably, males consistently worked approximately 1 h more than females in both years, contributing to their higher earnings. Additionally, the average year of age decreased from around 35 in 2010 to approximately 34 in 2016, indicating a younger demographic entering the job market. However, females had a notably higher average age (as a proxy for experience) in 2010 (35.89 years), suggesting greater experience than males. Conversely, in 2016, males exhibited a higher average age (33.89 years), indicating more experience in the daily labor market than females.

This study found a negative relationship between education level and labor participation rates in the daily labor market in 2010 and 2016, starting from the primary level in 2016. The participation rates for both males and females decrease as the education levels increase, along with the participation gaps. The variable "education" indicates that more than half of the male participants have no formal education. The same is true for 75% of the female participants, higher than the national average of 42.38% for males and 47.49% for females in 2010 (BBS, 2011). Moreover, in 2016, the participation rate of employees with no formal education decreased significantly in the case of both genders compared to 2010. On the contrary, males have higher participation rates than females across different education levels in both years. However, the overall participation rate is significantly lower than the national-level data reported by BBS (2011) and BBS (2016).

The variable "religion" reveals that among the Muslim respondents, the male participation rate in the daily labor market was significantly higher (12%) in 2010 and 2016. This difference can be explained by the predominant role of Islam as the main religion in Bangladesh. On the other hand, among the non-Muslim respondents (including Hinduism, Buddhism, Christianity, and others), the female participation rate in the daily labor market was significantly higher (12%) in both 2010 and 2016. Furthermore, the females have a significantly higher participation ratio when they have a chronic illness, while the males have a significant advantage over the females when they do not have a chronic illness in both years.

The data from the total sample reveals that most married males (75.4% in 2010 and 79.4% in 2016) and married females (58.2% in 2010 and 75.9% in 2016) have participated in the daily labor market in both years. Conversely, a smaller proportion of unmarried males (23.9% in 2010 and 2% in 2016) and unmarried females (12.1% in 2010 and 10.2% in 2016) have also engaged in daily labor, with a significant difference in favor of males at the 1% significance level. Among the widowed, divorced, or separated individuals, the participation rate of females exceeds that of males by 29% in 2010 and 13.3% in 2016. These results indicate that marital status influences labor force participation, either because of the economic responsibilities of married individuals towards their families or because of the positive effect of employment on marriage prospects (Mamun & Arfanuzzaman, 2020).

The sample data from HIES 2010 and 2016 reveals significant disparities in labor force participation rates between males and females across various sectors and regions. In both years, males and females exhibited higher participation rates in the non-agricultural sector than in the agricultural sector. However, the non-agricultural sector demonstrates a higher female participation rate (8% in 2010 and 1% in 2016) than males, while the agricultural sector shows a higher male participation rate (8% in 2010 and 0.6% in 2016) than females. Similarly, regarding geographic location, female participation rates were higher in urban areas (2.2%) than in rural areas in 2010, whereas male participation rates were higher in rural areas (2.2%) than urban areas. This study found the opposite trend in 2016. Moreover, an analysis of occupational segregation reveals that in 2010, the service and industrial

[2] The daily wage is the sum of all forms of daily earnings that they received in cash and in-kind.

Table 1. Summary statistics and raw gender wage gap of 2010 and 2016.

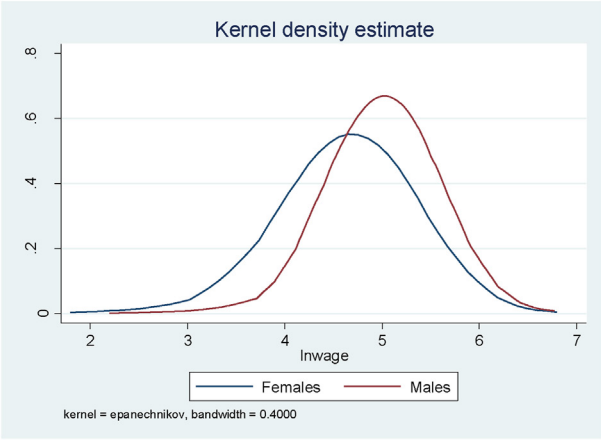
	2010				2016			
	Full	Male	Female	Difference (Male-Female) t-test	Full	Male	Female	Difference (Male-Female) t-test
Daily Wage	159.665	164.454	123.838	40.616***	346.512	353.416	236.843	116.573***
	(77.619)	(76.447)	(76.984)		(302.141)	(276.053)	(564.312)	
Age	34.996	34.877	35.889	−1.012*	33.801	33.880	32.554	1.326***
	(13.725)	(13.836)	(12.834)		(11.993)	(12.030)	(11.341)	
Daily Working Hours	8.507	8.561	8.110	0.451***	8.343	8.414	7.216	1.198***
	1.679	1.645	1.866		(1.928)	(1.888)	(2.191)	
Daily Others Income	37.928	39.582	25.554	14.028*	217.902	219.351	194.897	24.454***
	178.909	187.175	95.972		(999.012)	(1005.941)	(881.881)	
Gender								
Male	0.882	–	–	–	0.941	–	–	–
	(0.323)	–	–		(0.236)	–	–	
Female	0.118	–	–	–	0.059	–	–	–
	(0.323)	–	–		(0.236)	–	–	
Education:								
No classes passed	0.602	0.583	0.749	−0.167***	0.011	0.012	0.009	0.003
	(0.489)	(0.493)	(0.434)		(0.106)	(0.107)	(0.096)	
Primary	0.208	0.221	0.112	0.109***	0.603	0.605	0.573	0.032
	(0.406)	(0.415)	(0.316)		(0.489)	(0.489)	(0.495)	
High School	0.153	0.158	0.115	0.044***	0.312	0.310	0.351	−0.04
	(0.360)	(0.365)	(0.319)		(0.463)	(0.462)	(0.478)	
Above High School	0.036	0.038	0.024	0.014*	0.073	0.073	0.067	0.006
	(0.187)	(0.191)	(0.153)		(0.260)	(0.261)	(0.250)	
Religion:								
Muslim	0.866	0.880	0.761	0.119***	0.839	0.846	0.724	0.122***
	(0.341)	(0.325)	(0.427)		(0.368)	(0.361)	(0.447)	
Non-Muslim	0.134	0.120	0.239	−0.119***	0.161	0.154	0.276	−0.122***
	(0.341)	(0.325)	(0.427)		(0.368)	(0.361)	(0.447)	
Marital Status:								
Married	0.734	0.754	0.582	0.173***	0.792	0.794	0.759	0.035
	(0.442)	(0.430)	(0.494)		(0.406)	(0.404)	(0.428)	
Unmarried	0.225	0.239	0.121	0.118***	0.194	0.200	0.102	0.098***
	(0.417)	(0.426)	(0.326)		(0.395)	(0.400)	(0.303)	
Widowed/Divorced/Separated	0.041	0.007	0.297	−0.290***	0.014	0.006	0.139	−0.133***
	(0.199)	(0.084)	(0.457)		(0.117)	(0.078)	(0.347)	
Chronic Illness:								
Have Chronic Illness	0.189	0.184	0.225	−0.040**	0.190	0.187	0.233	−0.046*
	(0.392)	(0.388)	(0.014)		(0.392)	(0.390)	(0.423)	
No Chronic Illness	0.811	0.816	0.775	0.040**	0.810	0.813	0.767	0.046*
	(0.392)	(0.388)	(0.418)		(0.392)	(0.390)	(0.423)	
Field of Economic Activity:								
Agriculture	0.407	0.416	0.337	0.080***	0.425	0.425	0.419	0.006
	(0.491)	(0.493)	(0.473)		(0.494)	(0.494)	(0.494)	
Non-Agriculture	0.593	0.584	0.663	−0.080***	0.575	0.575	0.581	−0.01
	(0.491)	(0.493)	(0.473)		(0.494)	(0.494)	(0.494)	
Occupation:								
Service Sector	0.364	0.362	0.376	−0.014	0.374	0.379	0.303	0.076**
	(0.481)	(0.481)	(0.485)		(0.484)	(0.485)	(0.460)	
Agricultural Sector	0.414	0.426	0.321	0.105***	0.427	0.428	0.407	0.021
	(0.493)	(0.495)	(0.467)		(0.495)	(0.495)	(0.492)	
Industrial Sector	0.222	0.212	0.302	−0.091***	0.199	0.193	0.289	−0.096***
	(0.416)	(0.408)	(0.460)		(0.399)	(0.395)	(0.454)	
Area:								
Rural Area	0.676	0.678	0.656	0.022	0.738	0.735	0.792	−0.057*
	(0.468)	(0.467)	(0.475)		(0.439)	(0.441)	(0.406)	
Urban Area	0.324	0.322	0.344	−0.022	0.262	0.265	0.208	0.057*
	(0.468)	(0.467)	(0.475)		(0.440)	(0.441)	(0.406)	
Region:								

(*continued on next page*)

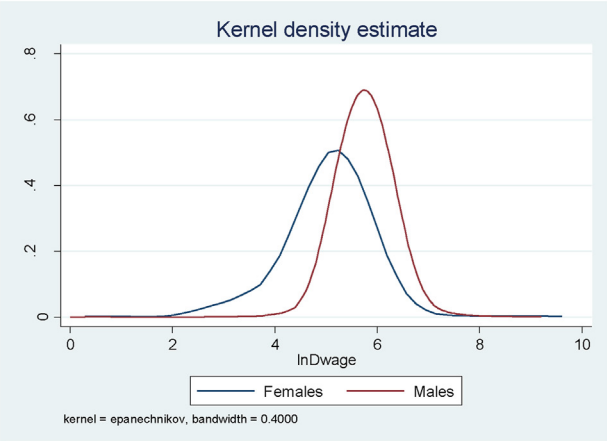
Table 1. (continued)

	2010				2016			
	Full	Male	Female	Difference (Male-Female) t-test	Full	Male	Female	Difference (Male-Female) t-test
Barisal	0.061	0.064	0.041	0.007**	0.089	0.090	0.069	0.021
	(0.240)	(0.245)	(0.041)		(0.285)	(0.286)	(0.254)	
Chittagong	0.171	0.178	0.122	0.056***	0.157	0.155	0.194	−0.04
	(0.377)	(0.382)	(0.327)		(0.364)	(0.362)	(0.396)	
Dhaka	0.231	0.233	0.217	0.015	0.154	0.158	0.090	0.068***
	(0.421)	(0.423)	(0.413)		(0.361)	(0.365)	(0.287)	
Khulna	0.175	0.172	0.198	−0.027	0.210	0.210	0.198	0.012
	(0.380)	(0.377)	(0.399)		(0.407)	(0.408)	(0.399)	
Mymensingh	–	–	–	–	0.045	0.046	0.037	0.009
	–	–	–		(0.208)	(0.209)	(0.190)	
Rajshahi	0.146	0.143	0.174	−0.032**	0.128	0.125	0.173	−0.05
	(0.353)	(0.350)	(0.380)		(0.334)	(0.331)	(0.379)	
Rangpur	0.127	0.128	0.125	0.002	0.146	0.144	0.178	−0.034*
	(0.333)	(0.334)	(0.331)		(0.353)	(0.351)	(0.383)	
Sylhet	0.088	0.083	0.122	−0.039***	0.071	0.071	0.060	0.011
	(0.283)	(0.276)	(0.327)		(0.256)	(0.257)	(0.237)	
Observations	7,099	6,262	837	7,099	14,383	13,529	854	14,383

Note: The difference is calculated as $\overline{X}_M - \overline{X}_F$, where $\overline{X}_M$ denotes the mean values of males and $\overline{X}_F$ denotes the mean value of females.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.



a: Kernel Density Estimates of Log Daily Wage Distribution by Gender in 2010



b: Kernel Density Estimates of Log Daily Wage Distribution by Gender in 2016

Fig. 1. Kernel density estimates of log daily wage distribution by gender in 2010 and 2016.

Table 2. Log daily wage and male-female wage gap in different quantiles of 2010 and 2016.

Quantile	2010			2016		
	Males	Females	Male-Female Wage Gap	Males	Females	Male-Female Wage Gap
0.10	4.605	3.912	0.693	5.298	3.912	1.386
0.25	4.787	4.248	0.539	5.521	4.605	0.916
0.50	5.011	4.605	0.406	5.704	5.136	0.568
0.75	5.298	5.011	0.287	5.991	5.521	0.470
0.90	5.521	5.298	0.223	6.215	5.858	0.357
Mean	5.004	4.64	0.365	5.752	5.047	0.704
Observations	6,262	837	7,099	13,529	854	14,383

sectors exhibited higher female participation rates (1.4% and 9.1%, respectively) than males. However, in 2016, this trend was only observed in the industrial sector (9.6%).

The variable region also highlights gender disparities in participation rates across various regions in 2010 and 2016. In 2010, the female participation rate was higher in Khulna, Rajshahi, and Sylhet, whereas in 2016, it was higher in Chittagong, Rajshahi, and Rangpur. Overall, the gender gaps in participation rates in the daily labor market are generally small but statistically significant.

4.2. Description of gender wage gap

The kernel density estimates of the logarithmic daily wages are depicted in Fig. 1(a,b), illustrating the gender wage distribution. Figures (a and b) highlight distinct differences in wage distribution patterns between genders. The null hypothesis of the two-sample Kolmogorov–Smirnov test is rejected for both datasets, indicating that the logarithmic daily wages for males and females are not drawn from the same distribution and do not conform to a normal distribution (p-value = 0.000).

The analysis of logarithmic daily wages for the years 2010 and 2016 is presented in Table 2, illustrating the male-female daily wage gap at various quantiles of interest. The results reveal that males consistently earn higher daily log wages than females across all quantiles and the mean in both 2010 and 2016. The pronounced wage gap at the lower end of the wage distribution is particularly notable, gradually diminishing as it progresses from the lower to upper quartiles, indicating a persistent "sticky floor" effect in both years. Furthermore, the mean wage gap is estimated at 0.380 log points in 2010, nearly doubling in magnitude by 2016. At the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} quantiles, the wage gaps are 0.713, 0.539, 0.405, 0.287, and 0.223 log points in 2010, respectively, and 1.386, 0.916, 0.568, 0.470, and 0.357 log points in 2016, respectively. These findings highlight significant gender inequalities in daily wages across both years, with males consistently earning more than females across various wage levels. Additionally, the wage gap substantially increased in 2016 compared to 2010, coinciding with a rise in wage levels.

5. Results and discussion

5.1. Estimates of OLS and quantile regression

Table 3 presents the results of the OLS and quantile regression analyses for 2010 and 2016. The OLS model demonstrates a good fit, with R-squared values of 0.26 in 2010 and 0.28 in 2016 (O'brien, 2007), and most predictors are statistically significant at the 1% level in both years. The main finding reveals a significant gender wage gap, with females earning 22.9% less daily than males in 2010, escalating to 62.2% in 2016, nearly three times higher. These wage gaps are significantly higher across all quantiles in 2016 compared to 2010, diminishing from lower to upper quantiles in both years, supporting the study's hypothesis. Fig. 2 depicts the declining trend of the wage gap from 2010 to 2016, showcasing a significant difference between the two years and implying the presence of a sticky floor effect. Moreover, predictors' estimated gaps remain unexplained, solely attributed to gender. These findings align with Rahman and Islam's (2003) research, which utilized three different HIES datasets (HIES 1989, 1995, & 2000), yielding similar evidence.

The coefficients of age and age-squared are statistically significant at the 1% level in both years across the mean and all quantiles of wage distribution, except for the 90^{th} quantile in 2010. Although age has a modest impact on wages, its effect is more pronounced in 2016. The mean return on an additional year of age is a daily wage increase of 1.29% in 2010 and 2.64% in 2016, with returns declining across lower to upper quantiles. However, positive age coefficients and negative age-squared coefficients in both years indicate that as workers get older, the impact of age diminishes, and vice versa. Similarly, the coefficient of working hours is statistically significant at the 1% level for the mean (5.89% in 2010 and 2.90% in 2016) and all quantiles of wage distribution. In 2010, the return on additional working hours was higher than in 2016, with a diminishing impact as it moved to upper quantiles, indicating a decreasing trend in both years. Conversely, the effect of other income is minimal yet positive and statistically significant at the mean and upper quantile in both years.

The level of education is a crucial determinant of an employee's income, as shown by previous studies (Asadullah, 2006b; Barmon et al., 2012; Mamun & Arfanuzzaman, 2020; Mamun et al., 2018). This study corroborates this finding by demonstrating that employees with high school and above high school levels of education have significantly higher mean wages (10.9% and 24.1%, respectively) and wages across all quantiles of the wage distribution than employees with no education in 2010. Additionally, wages demonstrate an ascending trend from lower to upper quantiles. However, regression coefficients suggest that only individuals with above

Table 3. OLS and quantile regression of log daily wage of 2010 and 2016.

	2010					
	OLS	Q10	Q25	Q50	Q75	Q90
Female	−0.229***	−0.362***	−0.296***	−0.190***	−0.129***	−0.117***
	(0.0222)	(0.0389)	(0.0234)	(0.0207)	(0.0195)	(0.0270)
Age	0.0129***	0.0203***	0.0113***	0.0135***	0.0110***	0.00659
	(0.00278)	(0.00556)	(0.00335)	(0.00296)	(0.00278)	(0.00387)
Age Square	−0.0158***	−0.0264***	−0.0149***	−0.0153***	−0.0121***	−0.00639
	(0.00336)	(0.00660)	(0.00397)	(0.00352)	(0.00330)	(0.00458)
Daily Working Hours	0.0589***	0.0772***	0.0563***	0.0405***	0.0402***	0.0385***
	(0.00419)	(0.00668)	(0.00402)	(0.00356)	(0.00335)	(0.00465)
Daily Other Income	0.0000949*	0.0000399	0.0000531	0.0000682*	0.000169***	0.000181***
	(0.0000430)	(0.0000619)	(0.0000373)	(0.0000330)	(0.0000310)	(0.0000430)
Education:						
Primary	0.0334*	0.0371	0.0133	0.0315*	0.0173	0.0169
	(0.0134)	(0.0289)	(0.0174)	(0.0154)	(0.0145)	(0.0201)
High School	0.109***	0.0696*	0.0735***	0.0876***	0.0964***	0.0953***
	(0.0151)	(0.0326)	(0.0196)	(0.0174)	(0.0163)	(0.0226)
Above High School	0.241***	0.137*	0.122***	0.198***	0.299***	0.384***
	(0.0342)	(0.0594)	(0.0358)	(0.0317)	(0.0298)	(0.0413)
Religion:						
Non-Muslim	−0.143***	−0.121***	−0.157***	−0.122***	−0.130***	−0.108***
	(0.0157)	(0.0329)	(0.0198)	(0.0175)	(0.0165)	(0.0228)
Marital Status:						
Unmarried	−0.0468*	−0.0663	−0.0495*	0.00491	0.00880	−0.0304
	(0.0194)	(0.0412)	(0.0248)	(0.0220)	(0.0206)	(0.0286)
Widowed/Divorced/Separated	−0.211***	−0.324***	−0.259***	−0.205***	−0.192***	−0.134**
	(0.0384)	(0.0626)	(0.0377)	(0.0334)	(0.0313)	(0.0435)
Chronic Illness:						
No Chronic Illness	0.0263	0.0419	0.00402	0.00252	0.0131	0.0430*
	(0.0135)	(0.0288)	(0.0174)	(0.0154)	(0.0144)	(0.0200)
Field of Economic Activity:						
Non Agriculture	0.0390	−0.0494	−0.0197	0.0433	0.105***	0.176***
	(0.0277)	(0.0525)	(0.0316)	(0.0280)	(0.0263)	(0.0365)
Occupation:						
Agricultural Sector	−0.00591	0.112*	0.0266	−0.0267	−0.0717**	−0.110**
	(0.0275)	(0.0528)	(0.0318)	(0.0281)	(0.0264)	(0.0367)
Industrial Sector	−0.0490**	−0.118***	−0.0584**	0.0123	0.00638	−0.00260
	(0.0164)	(0.0296)	(0.0178)	(0.0158)	(0.0148)	(0.0206)
Area:						
Urban Area	0.104***	0.0861***	0.106***	0.103***	0.0899***	0.0875***
	(0.0131)	(0.0259)	(0.0156)	(0.0138)	(0.0130)	(0.0180)
Region:						
Chittagong	0.106***	0.0973	0.00520	0.0729**	0.144***	0.144***
	(0.0234)	(0.0516)	(0.0310)	(0.0275)	(0.0258)	(0.0358)
Dhaka	−0.0609**	−0.0868	−0.141***	−0.112***	−0.0124	−0.0226
	(0.0229)	(0.0496)	(0.0299)	(0.0264)	(0.0248)	(0.0345)
Khulna	−0.274***	−0.235***	−0.331***	−0.326***	−0.261***	−0.258***
	(0.0233)	(0.0513)	(0.0309)	(0.0273)	(0.0257)	(0.0356)
Mymensingh	–	–	–	–	–	–
	–	–	–	–	–	–
Rajshahi	−0.285***	−0.222***	−0.351***	−0.320***	−0.210***	−0.179***
	(0.0244)	(0.0527)	(0.0317)	(0.0281)	(0.0264)	(0.0366)
Rangpur	−0.242***	−0.188***	−0.291***	−0.329***	−0.256***	−0.258***
	(0.0231)	(0.0537)	(0.0323)	(0.0286)	(0.0269)	(0.0373)
Sylhet	−0.231***	−0.199***	−0.350***	−0.258***	−0.179***	−0.124**
	(0.0273)	(0.0583)	(0.0351)	(0.0311)	(0.0292)	(0.0405)
Constant	4.331***	3.597***	4.313***	4.540***	4.695***	4.937***
	(0.0761)	(0.147)	(0.0887)	(0.0785)	(0.0737)	(0.102)
N	7099	7099	7099	7099	7099	7099
R-squared	0.264	–	–	–	–	–
Adjusted R-squared	0.262	–	–	–	–	–
Root MSE	0.422	–	–	–	–	–

Note: Standard errors in parentheses.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.*
OLS and quantile regression coefficients have been estimated using Equations (1) and (4).

2016					
OLS	Q10	Q25	Q50	Q75	Q90
−0.622***	−1.211***	−0.784***	−0.534***	−0.347***	−0.275***
(0.0280)	(0.0294)	(0.0178)	(0.0144)	(0.0153)	(0.0250)
0.0264***	0.0347***	0.0238***	0.0188***	0.0203***	0.0180***
(0.00222)	(0.00363)	(0.00220)	(0.00178)	(0.00188)	(0.00309)
−0.0298***	−0.0417***	−0.0279***	−0.0211***	−0.0219***	−0.0194***
(0.00264)	(0.00440)	(0.00267)	(0.00216)	(0.00228)	(0.00374)
0.0290***	0.0236***	0.0194***	0.0177***	0.0183***	0.0185***
(0.00270)	(0.00367)	(0.00222)	(0.00180)	(0.00190)	(0.00312)
0.0000166**	−0.00000546	0.00000811*	0.0000182***	0.0000222***	0.0000382***
(0.00000520)	(0.00000670)	(0.00000406)	(0.00000328)	(0.00000347)	(0.00000570)
Education:					
0.0197	−0.00811	−0.0254	−0.00475	0.0258	0.0388
(0.0256)	(0.0620)	(0.0376)	(0.0304)	(0.0321)	(0.0528)
0.0477	0.0160	−0.00116	0.0205	0.0679*	0.0896
(0.0261)	(0.0626)	(0.0379)	(0.0307)	(0.0324)	(0.0532)
0.153***	0.0218	0.0394	0.0623	0.125***	0.264***
(0.0305)	(0.0661)	(0.0400)	(0.0324)	(0.0342)	(0.0562)
Religion:					
−0.0737***	−0.137***	−0.0948***	−0.0655***	−0.0626***	−0.0356*
(0.0105)	(0.0183)	(0.0111)	(0.00899)	(0.00950)	(0.0156)
Marital Status:					
−0.0737***	−0.137***	−0.0948***	−0.0655***	−0.0626***	−0.0356*
(0.0105)	(0.0183)	(0.0111)	(0.00899)	(0.00950)	(0.0156)
−0.0903*	−0.00894	−0.0399	−0.0953***	−0.165***	−0.129**
(0.0429)	(0.0580)	(0.0351)	(0.0284)	(0.0300)	(0.0493)
Chronic Illness:					
0.0614***	0.0483**	0.0588***	0.0465***	0.0427***	0.0325*
(0.00997)	(0.0175)	(0.0106)	(0.00857)	(0.00905)	(0.0149)
Field of Economic Activity:					
0.0739***	0.0111	0.0536**	0.0998***	0.155***	0.158***
(0.0158)	(0.0297)	(0.0180)	(0.0146)	(0.0154)	(0.0253)
Occupation:					
−0.0706***	−0.0297	−0.0517**	−0.0625***	−0.0804***	−0.134***
(0.0161)	(0.0300)	(0.0182)	(0.0147)	(0.0155)	(0.0255)
−0.0452***	0.0243	0.0191	−0.0177*	−0.0613***	−0.102***
(0.0109)	(0.0184)	(0.0111)	(0.00901)	(0.00952)	(0.0156)
Area:					
0.0863***	0.0240	0.0576***	0.0812***	0.0942***	0.116***
(0.0101)	(0.0170)	(0.0103)	(0.00836)	(0.00883)	(0.0145)
Region:					
0.0861***	−0.0563*	0.0129	0.0745***	0.117***	0.144***
(0.0152)	(0.0280)	(0.0169)	(0.0137)	(0.0145)	(0.0238)
0.0333*	−0.0792**	−0.0370*	0.0307*	0.0603***	0.0905***
(0.0138)	(0.0279)	(0.0169)	(0.0137)	(0.0144)	(0.0237)
−0.239***	−0.369***	−0.297***	−0.221***	−0.175***	−0.174***
(0.0139)	(0.0266)	(0.0161)	(0.0130)	(0.0138)	(0.0226)
0.0635**	−0.158***	−0.0682**	0.0275	0.111***	0.248***
(0.0217)	(0.0382)	(0.0231)	(0.0187)	(0.0198)	(0.0324)
−0.238***	−0.377***	−0.331***	−0.256***	−0.190***	−0.106***
(0.0165)	(0.0288)	(0.0175)	(0.0141)	(0.0149)	(0.0245)
−0.287***	−0.357***	−0.335***	−0.280***	−0.263***	−0.233***
(0.0141)	(0.0283)	(0.0171)	(0.0139)	(0.0147)	(0.0241)
−0.0843***	−0.298***	−0.137***	−0.0720***	0.0121	0.00828
(0.0183)	(0.0335)	(0.0203)	(0.0164)	(0.0174)	(0.0285)
5.006***	4.725***	5.071***	5.265***	5.317***	5.530***
(0.0569)	(0.107)	(0.0649)	(0.0526)	(0.0556)	(0.0912)
14,383	14,383	14,383	14,383	14,383	14,383
0.279	–	–	–	–	–
0.277	–	–	–	–	–
0.439	–	–	–	–	–

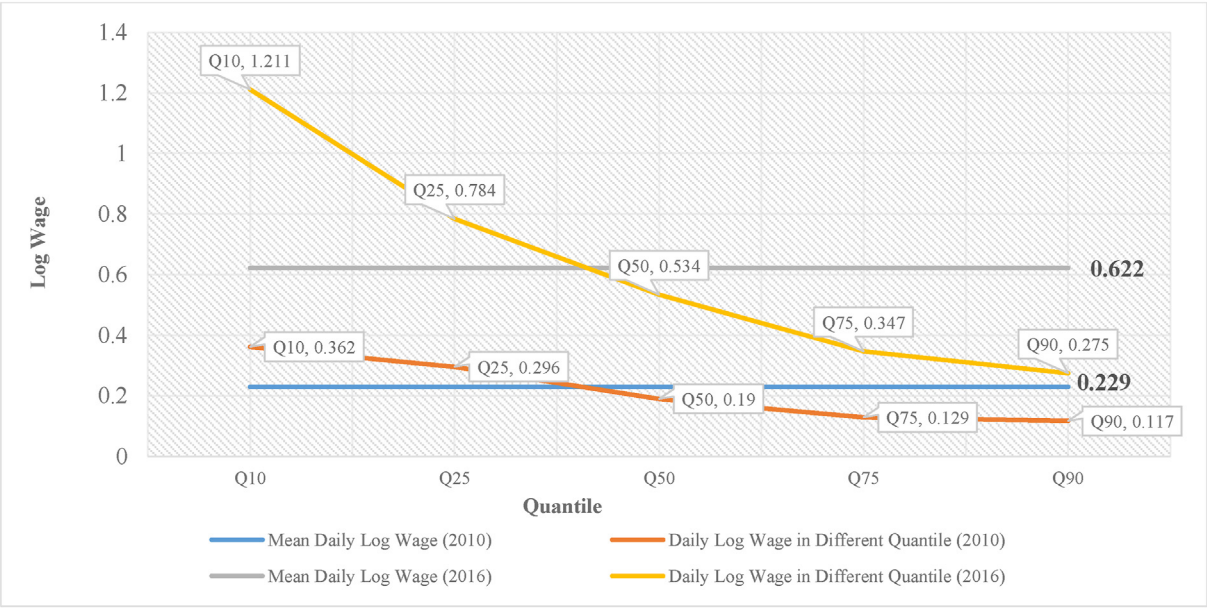


Fig. 2. Distribution of log wage at the mean and different quantile.

high school education exhibit significantly higher mean and quantile wages than those with lower education levels. In 2016, employees with above high school level education earned significantly more at the mean (15.3%) and 75th and 90th quantiles, albeit less than in 2010.

Regarding religion, non-Muslim employees earn significantly less than their Muslim counterparts at the mean (14.3% in 2010 and 7.37% in 2016) and all quantiles in both years, with a 1% level of statistical significance. The earnings gap between non-Muslims and Muslims narrowed in 2016, possibly due to decreased participation of non-Muslims in the daily labor market. This finding resonates with Al-Samarrai (2006), who observed a similar pattern across various employment types.

The results of this study reveal that marital status significantly influences employee wage distribution. Specifically, married employees exhibit higher wages than unmarried individuals or those with other marital statuses (such as widowed, divorced, or separated) in both years. At the mean level, unmarried employees earn 4.68% less (7.37% in 2016), and employees with other marital statuses earn 21.1% less (9.03% in 2016) than married employees in 2010. In 2010, the disparity was also significant across all quantiles for employees with other marital statuses, whereas in 2016, it was observed among unmarried employees, showcasing a declining trend from lower to upper quantiles. However, for unmarried employees in 2010 and those with other marital statuses in 2016, the difference is insignificant across all quantiles, indicating some variation in wage distribution.

Another factor influencing wage distribution is the presence or absence of chronic disease. The findings reveal that employees without chronic diseases earn more than those with chronic diseases in both years, although the difference is not statistically significant in 2010 except at the 90th quantile. This suggests that employees with chronic diseases may need more effort to support their families and cover healthcare expenses, particularly at the upper end of the wage distribution. While the difference becomes significant at the mean and all quantiles in 2016, it presents an opposite trend compared to 2010.

The results also highlight the differing impacts of economic activity fields and occupational sectors on wage distribution. In both years, employees in the non-agricultural sector earned higher wages than those in the agricultural sector, with significance observed at the 75th and 90th quantiles in 2010 and at the mean and 25th to 90th quantiles in 2016. This suggests that the non-agricultural sector offers better compensation for skilled and experienced workers. Conversely, employment in the service sector negatively affects wages in the industrial and agricultural sectors in both years. In 2010, the industrial sector exhibited lower wages than the service sector at the mean, 10th, and 25th quantiles, while the agricultural sector had lower wages at the 75th and 90th quantiles. In contrast, in 2016, employees in the agricultural and industrial sectors

earned significantly less at the mean and almost every quantile of the wage distribution, indicating that the service sector presents more opportunities for higher wages across the distribution.

The results of this study affirm existing literature indicating that urban employees receive higher wages than rural employees (Asadullah, 2006b; Mamun & Arfanuzzaman, 2020; Mamun et al., 2023a). At the mean level, urban employees earn 10.4% and 8.63% more than rural employees in 2010 and 2016, respectively, with significance observed across all quantiles except the 10th quantile in 2016. This suggests a persistent urban-rural wage gap throughout the wage distribution. Additionally, regional impacts on daily wages vary in both 2010 and 2016. In 2010, only employees in the Chittagong division earned more than those in the Barisal division, which was significant at the mean and median to upper quantiles. In 2016, similar findings occurred for the Chittagong, Dhaka, Mymensingh, and Sylhet divisions, either at the mean or at one of the quantiles. However, Al-Samarrai (2006) reported contrasting results for the area and region.

5.2. Estimates of gender-specific OLS, quantile regression, and gender wage gap

This study utilized OLS and quantile regression models to estimate wage equations separately for males and females using HIES 2010 and 2016 data sets. Additionally, slope dummy variable OLS and quantile regression models were employed to investigate gender wage gaps based on a binary variable (1 for females and 0 for males). The wage gaps were determined by comparing the coefficients of explanatory variables between males and females. Table 4 presents the results of the OLS and quantile regression analyses along with the estimated wage gaps for both years. The R-squared values indicate satisfactory model fits for the OLS models in 2010 and 2016 (O'brien, 2007).

Age is a proxy for experience, demonstrating a positive and statistically significant impact on wages for males across all quantiles in 2010 and 2016 but not for females. The discrepancy in age coefficients between genders reveals a significant negative bias against females, evident at the mean (2.36% in 2010 and 2.59% in 2016) and most quantiles in both years. These wage gaps diminish from lower to upper quantiles, reflecting Bangladesh's socio-cultural context, where women face increasing household and family responsibilities as they age, hindering career advancement (ADB, 2013). However, including age squared in regression models yields a significant adverse effect for males in both years, whereas it has an insignificant mixed effect for females. The positive age effect and negative age squared effect suggest that age's influence on wages wanes with increasing age and vice versa, while other factors become more salient in determining wage outcomes.

An additional working hour positively and significantly impacts daily wages for both genders at the mean and all quantiles in both years. However, the effect is more pronounced for females, suggesting a positive bias towards females in all estimates except the 10th quantile in 2010. Conversely, estimates derived from additional daily income from other sources consistently reveal negative bias against females in 2010, although none of the estimates are statistically significant. However, in 2016, the estimates show a statistically significant positive bias towards females.

Education stands out as a crucial determinant of an individual's income, a fact substantiated by prior research (Barmon et al., 2012; Mamun & Arfanuzzaman, 2020; Mamun et al., 2018, 2023b). Consistent with these findings, this study reveals that individuals with primary, high school, and above high school education earn higher wages than those without education in both years. This trend is evident across various quantiles of the wage distribution, with above-high-school education showing particularly notable effects in 2010. Furthermore, education plays a pivotal role in mitigating wage disparities. The estimated wage gaps indicate positive discrimination in favor of females across different education levels in both years. These results align with the findings of Martins and Pereira (2004), who conducted a similar analysis across sixteen developed countries.

The findings reveal a significant influence of religious affiliation on wage distribution in 2010 and 2016. Male Muslim individuals consistently earn higher wages compared to their non-Muslim counterparts, with significant differences observed at the mean (16% in 2010 and 8.19% in 2016) and across all quantiles, with a 1% significance level. Similarly, this trend holds true for females, although not always statistically significant. However, in 2010, non-Muslim females demonstrated a significant wage advantage over non-Muslim males, except for the 75th and 90th quantiles. Conversely, in 2016, non-Muslim females experienced negative discrimination, evidenced by significant differences at the mean and across quantiles from the 25th to the upper quantile.

Marital status significantly influences wages for both genders in both years. Married individuals, both males and females, earn higher wages than

Table 4. Gender-specific OLS and quantile regression of log daily wage and gender wage gap of 2010 and 2016.

(A)

	2010																	
	OLS			Q10			Q25			Q50			Q75			Q90		
	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap
Age	0.0165***	−0.00711	−0.0236*	0.0221***	−0.0177	−0.0397*	0.0135***	−0.0134	−0.0270*	0.0146***	0.00359	−0.0110	0.0135***	0.00503	−0.00850	0.00948*	0.000161	−0.00932
	(0.00285)	(0.00928)	(0.00962)	(0.00543)	(0.0211)	(0.0170)	(0.00348)	(0.0147)	(0.0108)	(0.00283)	(0.00904)	(0.00860)	(0.00286)	(0.0112)	(0.00849)	(0.00409)	(0.0113)	(0.0119)
Age Square	−0.0198***	0.00770	0.0275*	−0.0288***	0.0195	0.0483*	−0.0172***	0.0146	0.0319*	−0.0164***	−0.00591	0.0105	−0.0148***	−0.00745	0.00734	−0.00989*	−0.000586	0.00931
	(0.00345)	(0.0112)	(0.0116)	(0.00642)	(0.0257)	(0.0206)	(0.00411)	(0.0179)	(0.0132)	(0.00335)	(0.0110)	(0.0104)	(0.00338)	(0.0137)	(0.0103)	(0.00483)	(0.0137)	(0.0144)
Working Hours	0.0508***	0.101***	0.0503***	0.0714***	0.104***	0.0330	0.0477***	0.104***	0.0563***	0.0317***	0.110***	0.0783***	0.0367***	0.0712***	0.0345***	0.0371***	0.0665***	0.0293*
	(0.00435)	(0.0126)	(0.0133)	(0.00663)	(0.0223)	(0.0183)	(0.00425)	(0.0155)	(0.0117)	(0.00346)	(0.00957)	(0.00927)	(0.00349)	(0.0119)	(0.00916)	(0.00499)	(0.0119)	(0.0128)
Other Income	0.0000917*	0.0000424	−0.0000493	0.0000290	−0.000561	−0.000590	0.0000487	0.000275	0.000226	0.0000566	−0.0000557	−0.000112	0.000176***	0.0000318	−0.000144	0.000198***	0.000153	−0.0000443
	(0.0000448)	(0.000228)	(0.000230)	(0.0000575)	(0.000432)	(0.000333)	(0.0000369)	(0.000301)	(0.000213)	(0.0000300)	(0.000186)	(0.000169)	(0.0000303)	(0.000230)	(0.000167)	(0.0000433)	(0.000231)	(0.000233)
Education:																		
Primary	0.0219	0.121	0.0993	0.00881	0.203	0.194	0.0105	0.155	0.145*	0.0187	0.0720	0.0533	0.0110	0.0593	0.0484	0.0216	−0.0142	−0.0358
	(0.0135)	(0.0654)	(0.0661)	(0.0275)	(0.138)	(0.108)	(0.0176)	(0.0961)	(0.0693)	(0.0143)	(0.0592)	(0.0549)	(0.0145)	(0.0735)	(0.0543)	(0.0207)	(0.0737)	(0.0760)
High School	0.103***	0.100	−0.00314	0.0535	0.00579	−0.0477	0.0693***	0.137	0.0678	0.0747***	0.145*	0.0705	0.0809***	0.0911	0.0103	0.0893***	−0.00516	−0.0945
	(0.0151)	(0.0634)	(0.0645)	(0.0312)	(0.142)	(0.112)	(0.0200)	(0.0987)	(0.0718)	(0.0163)	(0.0608)	(0.0569)	(0.0164)	(0.0755)	(0.0562)	(0.0235)	(0.0758)	(0.0787)
Above High School	0.215***	0.492***	0.277*	0.114*	0.669*	0.556*	0.103**	0.468*	0.365**	0.195***	0.343**	0.148	0.250***	0.737***	0.460***	0.368***	0.782***	0.413**
	(0.0348)	(0.128)	(0.132)	(0.0566)	(0.274)	(0.216)	(0.0362)	(0.191)	(0.138)	(0.0295)	(0.118)	(0.109)	(0.0298)	(0.146)	(0.108)	(0.0426)	(0.147)	(0.151)
Religion:																		
Non-Muslim	−0.160***	−0.0446	0.116*	−0.163***	0.175	0.339***	−0.208***	−0.00959	0.198***	−0.119***	−0.0780	0.0406	−0.124***	−0.163**	−0.0383	−0.0996***	−0.185**	−0.0854
	(0.0170)	(0.0458)	(0.0484)	(0.0331)	(0.107)	(0.0884)	(0.0212)	(0.0747)	(0.0565)	(0.0172)	(0.0460)	(0.0448)	(0.0174)	(0.0571)	(0.0443)	(0.0249)	(0.0573)	(0.0619)
Marital Status:																		
Unmarried	−0.0363	−0.0689	−0.0327	−0.0497	−0.247	−0.198	−0.0349	−0.186	−0.151	0.000284	0.0469	0.0466	0.0159	0.0251	0.00914	−0.0238	−0.00655	0.0172
	(0.0195)	(0.0813)	(0.0828)	(0.0398)	(0.175)	(0.139)	(0.0255)	(0.122)	(0.0891)	(0.0208)	(0.0752)	(0.0706)	(0.0210)	(0.0934)	(0.0697)	(0.0300)	(0.0937)	(0.0976)
Widowed/Divorced/Separated	−0.158*	−0.172***	−0.0147	−0.224	−0.187	0.0370	−0.179*	−0.185**	−0.00661	−0.166*	−0.156***	0.0106	−0.0742	−0.141*	−0.0664	0.00585	−0.119*	−0.125
	(0.0800)	(0.0500)	(0.0942)	(0.126)	(0.103)	(0.155)	(0.0810)	(0.0715)	(0.0993)	(0.0659)	(0.0441)	(0.0787)	(0.0665)	(0.0547)	(0.0777)	(0.0951)	(0.0549)	(0.109)
Chronic Illness:																		
No Chronic Illness	0.0388**	−0.0546	−0.0934*	0.0593*	−0.0885	−0.148	0.0150	−0.0782	−0.0932	0.0108	−0.0508	−0.0616	0.0214	−0.0380	−0.0595	0.0418*	0.0106	−0.0312
	(0.0137)	(0.0456)	(0.0472)	(0.0283)	(0.101)	(0.0820)	(0.0181)	(0.0703)	(0.0525)	(0.0148)	(0.0433)	(0.0416)	(0.0149)	(0.0537)	(0.0411)	(0.0213)	(0.0539)	(0.0575)
Field of Economic Activity:																		
Non Agriculture	0.0243	0.134	0.109	−0.0465	0.145	0.191	−0.0291	0.0370	0.0660	0.0343	0.116	0.0819	0.0866**	0.176	0.0895	0.190***	0.246*	0.0565
	(0.0268)	(0.112)	(0.115)	(0.0516)	(0.184)	(0.149)	(0.0331)	(0.128)	(0.0956)	(0.0269)	(0.0788)	(0.0757)	(0.0272)	(0.0978)	(0.0748)	(0.0389)	(0.0982)	(0.105)
Occupation:																		
Agricultural Sector	−0.0424	0.222*	0.264*	0.110*	0.266	0.156	−0.00737	0.216	0.223*	−0.0573*	0.219**	0.276***	−0.108***	0.174	0.282***	−0.107**	0.128	0.234*
	(0.0267)	(0.111)	(0.114)	(0.0518)	(0.186)	(0.151)	(0.0332)	(0.130)	(0.0969)	(0.0270)	(0.0800)	(0.0767)	(0.0273)	(0.0993)	(0.0758)	(0.0390)	(0.0996)	(0.106)
Industrial Sector	−0.0399*	−0.0802	−0.0403	−0.0781**	−0.264*	−0.186*	−0.0473*	−0.161*	−0.114*	0.0242	−0.0762	−0.100*	0.00999	0.0166	0.00662	−0.0146	0.106	0.120*
	(0.0169)	(0.0536)	(0.0556)	(0.0291)	(0.104)	(0.0843)	(0.0186)	(0.0722)	(0.0539)	(0.0152)	(0.0445)	(0.0427)	(0.0153)	(0.0552)	(0.0422)	(0.0219)	(0.0554)	(0.0591)
Area:																		
Urban Area	0.0939***	0.140**	0.0456	0.102***	0.125	0.0229	0.104***	0.114	0.00993	0.0852***	0.142***	0.0571	0.0809***	0.154**	0.0735	0.0804***	0.124*	0.0436
	(0.0132)	(0.0475)	(0.0489)	(0.0253)	(0.0947)	(0.0765)	(0.0162)	(0.0659)	(0.0489)	(0.0132)	(0.0406)	(0.0388)	(0.0133)	(0.0504)	(0.0383)	(0.0191)	(0.0506)	(0.0536)
Region:																		
Chittagong	0.105***	0.0889	−0.0163	0.0583	0.201	0.143	0.0107	0.137	0.127	0.0880***	0.0398	−0.0482	0.140***	0.100	−0.0397	0.149***	0.0638	−0.0849
	(0.0234)	(0.115)	(0.116)	(0.0491)	(0.236)	(0.186)	(0.0314)	(0.164)	(0.119)	(0.0256)	(0.101)	(0.0943)	(0.0258)	(0.126)	(0.0932)	(0.0369)	(0.126)	(0.130)
Dhaka	−0.0715**	0.00712	0.0786	−0.113*	−0.000187	0.113	−0.134***	−0.0256	0.109	−0.112***	0.0156	0.127	−0.0330	0.0515	0.0846	−0.0194	−0.0586	−0.0392
	(0.0227)	(0.113)	(0.114)	(0.0473)	(0.222)	(0.176)	(0.0303)	(0.155)	(0.112)	(0.0247)	(0.0954)	(0.0890)	(0.0249)	(0.118)	(0.0879)	(0.0356)	(0.119)	(0.123)
Khulna	−0.286***	−0.217*	0.0688	−0.272***	0.102	0.374*	−0.336***	−0.184	0.152	−0.323***	−0.237*	0.0858	−0.270***	−0.286*	−0.0167	−0.264***	−0.395***	−0.131
	(0.0234)	(0.108)	(0.110)	(0.0492)	(0.223)	(0.177)	(0.0315)	(0.155)	(0.113)	(0.0257)	(0.0956)	(0.0895)	(0.0259)	(0.119)	(0.0884)	(0.0371)	(0.119)	(0.124)
Rajshahi	−0.259***	−0.446***	−0.188	−0.229***	−0.311	−0.0819	−0.319***	−0.351*	−0.0326	−0.301***	−0.417***	−0.115	−0.207***	−0.372**	−0.165	−0.157***	−0.466***	−0.309*
	(0.0242)	(0.113)	(0.115)	(0.0506)	(0.227)	(0.180)	(0.0324)	(0.158)	(0.115)	(0.0264)	(0.0974)	(0.0912)	(0.0266)	(0.121)	(0.0901)	(0.0381)	(0.121)	(0.126)
Rangpur	−0.236***	−0.331**	−0.0946	−0.222***	−0.0672	0.155	−0.286***	−0.310	−0.0247	−0.318***	−0.375***	−0.0572	−0.246***	−0.365**	−0.120	−0.254***	−0.489***	−0.236
	(0.0231)	(0.111)	(0.112)	(0.0514)	(0.241)	(0.190)	(0.0329)	(0.168)	(0.122)	(0.0268)	(0.103)	(0.0964)	(0.0270)	(0.128)	(0.0952)	(0.0387)	(0.129)	(0.133)
Sylhet	−0.211***	−0.367**	−0.157	−0.253***	−0.131	0.122	−0.328***	−0.341*	−0.0134	−0.206***	−0.458***	−0.252*	−0.161***	−0.365**	−0.204*	−0.107*	−0.436***	−0.329*
	(0.0280)	(0.119)	(0.121)	(0.0562)	(0.246)	(0.195)	(0.0360)	(0.171)	(0.125)	(0.0293)	(0.105)	(0.0989)	(0.0296)	(0.131)	(0.0978)	(0.0423)	(0.131)	(0.137)
Constant	4.350***	4.049***	−0.302	3.634***	3.454***	−0.180	4.349***	3.938***	−0.411	4.604***	3.854***	−0.750***	4.705***	4.365***	−0.340	4.883***	4.749***	−0.135
	(0.0779)	(0.263)	(0.272)	(0.144)	(0.550)	(0.443)	(0.0920)	(0.383)	(0.283)	(0.0749)	(0.236)	(0.225)	(0.0756)	(0.293)	(0.222)	(0.108)	(0.294)	(0.311)
N	6262	837	7099	6262	837	7099	6262	837	7099	6262	837	7099	6262	837	7099	6262	837	7099
R-squared	0.222	0.283	0.278	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Adjusted R-squared	0.220	0.265	0.274	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Root MSE	0.401	0.534	0.419	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(B)

	2016																	
	OLS			Q10			Q25			Q50			Q75			Q90		
	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap	Male	Female	Gap
Age	0.0287***	0.00281	−0.0259*	0.0347***	0.00290	−0.0318*	0.0246***	0.0115	−0.0131	0.0191***	0.00285	−0.0162*	0.0218***	0.00257	−0.0192*	0.0201***	−0.000727	−0.0209
	(0.00215)	(0.0132)	(0.0132)	(0.00332)	(0.0288)	(0.0143)	(0.00207)	(0.0204)	(0.00911)	(0.00171)	(0.0147)	(0.00751)	(0.00181)	(0.0109)	(0.00758)	(0.00308)	(0.0165)	(0.0124)
Age Square	−0.0329***	0.00375	0.0366*	−0.0423***	0.00152	0.0438*	−0.0288***	−0.00992	0.0189	−0.0215***	−0.00200	0.0195*	−0.0239***	−0.00135	0.0225*	−0.0221***	0.0116	0.0337*
	(0.00256)	(0.0171)	(0.0171)	(0.00402)	(0.0368)	(0.0182)	(0.00250)	(0.0261)	(0.0116)	(0.00207)	(0.0188)	(0.00954)	(0.00218)	(0.0139)	(0.00964)	(0.00373)	(0.0210)	(0.0158)
Daily Working Hours	0.0164***	0.128***	0.112***	0.0147***	0.146***	0.131***	0.0103***	0.133***	0.123***	0.0116***	0.141***	0.129***	0.0140***	0.0980***	0.0840***	0.0151***	0.0773***	0.0622***
	(0.00250)	(0.0152)	(0.0153)	(0.00340)	(0.0259)	(0.0130)	(0.00211)	(0.0184)	(0.00826)	(0.00175)	(0.0132)	(0.00680)	(0.00185)	(0.00977)	(0.00687)	(0.00315)	(0.0148)	(0.0112)
Daily Other Income	0.0000137**	0.0000915**	0.0000778*	−0.00000523	0.0000697	0.0000749*	0.00000741*	0.0000725	0.0000651***	0.0000156***	0.0000730*	0.0000574***	0.0000204***	0.000117***	0.0000966***	0.0000276***	0.000113**	0.0000855**
	(0.00000472)	(0.0000306)	(0.0000306)	(0.00000605)	(0.0000627)	(0.0000308)	(0.00000377)	(0.0000445)	(0.0000196)	(0.00000311)	(0.0000320)	(0.0000162)	(0.00000329)	(0.0000237)	(0.0000163)	(0.00000561)	(0.0000358)	(0.0000267)
Education:																		
Primary	0.0178	−0.0589	−0.0767	−0.00714	0.117	0.124	−0.00333	−0.225	−0.222	0.00790	−0.235	−0.0931	0.0263	0.0637	0.0374	0.0285	0.330	0.302
	(0.0233)	(0.214)	(0.213)	(0.0561)	(0.556)	(0.273)	(0.0349)	(0.394)	(0.174)	(0.0289)	(0.284)	(0.144)	(0.0305)	(0.210)	(0.145)	(0.0520)	(0.317)	(0.237)
High School	0.0473*	−0.0330	−0.0803	0.0180	0.0403	0.0223	0.0218	−0.185	−0.206	0.0294	−0.0950	0.0258	0.0638*	0.128	0.0641	0.0809	0.411	0.330
	(0.0238)	(0.217)	(0.216)	(0.0566)	(0.562)	(0.277)	(0.0352)	(0.398)	(0.176)	(0.0291)	(0.287)	(0.145)	(0.0308)	(0.212)	(0.147)	(0.0525)	(0.321)	(0.240)
Above High School	0.145***	0.244	0.0988	0.0109	0.212	0.201	0.0602	−0.0500	−0.110	0.0695*	0.0100	0.0907	0.121***	0.217	0.0958	0.272***	0.489	0.217
	(0.0286)	(0.232)	(0.231)	(0.0598)	(0.592)	(0.291)	(0.0372)	(0.419)	(0.185)	(0.0308)	(0.302)	(0.153)	(0.0325)	(0.223)	(0.154)	(0.0554)	(0.338)	(0.252)
Religion:																		
Non-Muslim	−0.0819***	−0.114*	−0.0318	−0.154***	−0.164	−0.0101	−0.0954***	−0.179	−0.0839*	−0.0647***	−0.153*	−0.0881*	−0.0535***	−0.188***	−0.135***	−0.0341*	−0.216**	−0.182**
	(0.0102)	(0.0554)	(0.0556)	(0.0169)	(0.133)	(0.0663)	(0.0105)	(0.0942)	(0.0423)	(0.00869)	(0.0679)	(0.0348)	(0.00918)	(0.0502)	(0.0352)	(0.0157)	(0.0759)	(0.0575)
Marital Status:																		
Unmarried	−0.0416**	−0.0609	−0.0194	−0.0671**	−0.0701	−0.00304	−0.0423**	0.0589	0.101	−0.0374**	−0.191	−0.154**	−0.00635	−0.109	−0.103	−0.0293	−0.0357	−0.00637
	(0.0137)	(0.100)	(0.0998)	(0.0224)	(0.229)	(0.113)	(0.0139)	(0.163)	(0.0718)	(0.0115)	(0.117)	(0.0592)	(0.0122)	(0.0865)	(0.0597)	(0.0207)	(0.131)	(0.0976)
Widowed/Divorced/Separated	−0.0828*	−0.0839	−0.00117	−0.0829	0.0212	0.104	−0.0756	−0.00993	0.0657	−0.0725	−0.158	−0.0768	−0.0756	−0.182**	−0.107	−0.0418	−0.155	−0.114
	(0.0400)	(0.0728)	(0.0823)	(0.0768)	(0.161)	(0.113)	(0.0478)	(0.114)	(0.0718)	(0.0395)	(0.0822)	(0.0592)	(0.0418)	(0.0607)	(0.0598)	(0.0712)	(0.0918)	(0.0977)
Chronic Illness:																		
No Chronic Illness	0.0544***	0.109	0.0545	0.0477**	−0.0184	−0.0661	0.0583***	0.0669	0.00861	0.0371***	0.0513	0.0142	0.0359***	0.0582	0.0223	0.0257	0.0755	0.0498
	(0.00935)	(0.0710)	(0.0707)	(0.0160)	(0.138)	(0.0682)	(0.00993)	(0.0975)	(0.0435)	(0.00821)	(0.0703)	(0.0358)	(0.00867)	(0.0519)	(0.0362)	(0.0148)	(0.0785)	(0.0591)
Field of Economic Activity:																		
Non Agriculture	0.0913***	−0.0301	−0.121	0.0353	−0.149	−0.184	0.0628***	−0.131	−0.194*	0.108***	0.0591	−0.0490	0.159***	−0.0426	−0.201**	0.172***	−0.179	−0.351***
	(0.0144)	(0.132)	(0.131)	(0.0271)	(0.244)	(0.121)	(0.0168)	(0.173)	(0.0770)	(0.0139)	(0.125)	(0.0634)	(0.0147)	(0.0922)	(0.0641)	(0.0251)	(0.139)	(0.105)
Occupation:																		
Agricultural Sector	−0.0898***	0.125	0.215	−0.0254	0.488	0.514***	−0.0617***	0.175	0.237**	−0.0664***	0.00286	0.0693	−0.0847***	−0.176	−0.0915	−0.124***	−0.322*	−0.197
	(0.0145)	(0.131)	(0.130)	(0.0273)	(0.250)	(0.124)	(0.0170)	(0.177)	(0.0788)	(0.0140)	(0.128)	(0.0649)	(0.0148)	(0.0944)	(0.0655)	(0.0253)	(0.143)	(0.107)
Industrial Sector	−0.0234*	−0.109	−0.0857	0.0496**	−0.0713	−0.121	0.0294**	−0.0398	−0.0692	−0.00574	−0.155*	−0.149***	−0.0483***	−0.173**	−0.125**	−0.0943***	−0.229**	−0.135*
	(0.0101)	(0.0716)	(0.0714)	(0.0168)	(0.145)	(0.0720)	(0.0105)	(0.103)	(0.0459)	(0.00865)	(0.0743)	(0.0378)	(0.00914)	(0.0548)	(0.0382)	(0.0156)	(0.0829)	(0.0624)
Area:																		
Urban Area	0.0718***	0.286***	0.214**	0.0142	0.301*	0.287***	0.0604***	0.308**	0.247***	0.0746***	0.138	0.0631	0.0847***	0.246***	0.161***	0.115***	0.245**	0.129*
	(0.00975)	(0.0696)	(0.0694)	(0.0155)	(0.147)	(0.0723)	(0.00963)	(0.104)	(0.0461)	(0.00796)	(0.0750)	(0.0380)	(0.00841)	(0.0554)	(0.0384)	(0.0143)	(0.0838)	(0.0627)
Region:																		
Chittagong	0.0693***	0.186	0.116	−0.0584*	0.537*	0.596***	−0.00781	0.334	0.342***	0.0626***	0.259*	0.197**	0.116***	0.252**	0.136*	0.142***	0.221	0.0794
	(0.0137)	(0.153)	(0.152)	(0.0254)	(0.249)	(0.122)	(0.0158)	(0.176)	(0.0780)	(0.0130)	(0.127)	(0.0643)	(0.0138)	(0.0938)	(0.0649)	(0.0235)	(0.142)	(0.106)
Dhaka	0.0281*	0.0318	0.00363	−0.0822**	0.250	0.333*	−0.0446**	0.246	0.290***	0.0213	0.243	0.221**	0.0627***	0.105	0.0421	0.0978***	0.0238	−0.0740
	(0.0121)	(0.155)	(0.153)	(0.0251)	(0.277)	(0.136)	(0.0156)	(0.196)	(0.0865)	(0.0129)	(0.142)	(0.0712)	(0.0137)	(0.105)	(0.0719)	(0.0233)	(0.158)	(0.118)
Khulna	−0.229***	−0.443**	−0.215	−0.368***	−0.284	0.0841	−0.296***	−0.247	0.0488	−0.221***	−0.157	0.0649	−0.167***	−0.268**	−0.101	−0.170***	−0.339*	−0.169
	(0.0120)	(0.151)	(0.150)	(0.0241)	(0.239)	(0.117)	(0.0150)	(0.169)	(0.0748)	(0.0124)	(0.122)	(0.0616)	(0.0131)	(0.0900)	(0.0622)	(0.0223)	(0.136)	(0.102)
Mymensingh	0.0595**	0.0704	0.0109	−0.173***	0.273	0.446**	−0.0715***	−0.0251	0.0415	0.0177	0.301	0.283**	0.115***	0.158	0.0435	0.237***	0.216	−0.0202
	(0.0202)	(0.199)	(0.197)	(0.0345)	(0.346)	(0.170)	(0.0215)	(0.245)	(0.108)	(0.0178)	(0.177)	(0.0894)	(0.0188)	(0.131)	(0.0902)	(0.0320)	(0.198)	(0.148)
Rajshahi	−0.219***	−0.382*	−0.163	−0.367***	−0.348	0.0195	−0.325***	−0.247	0.0776	−0.257***	−0.246*	0.0111	−0.177***	−0.177	0.0000403	−0.102***	−0.133	−0.0315
	(0.0145)	(0.152)	(0.151)	(0.0263)	(0.243)	(0.120)	(0.0163)	(0.172)	(0.0765)	(0.0135)	(0.124)	(0.0631)	(0.0143)	(0.0918)	(0.0637)	(0.0243)	(0.139)	(0.104)
Rangpur	−0.281***	−0.345*	−0.0640	−0.349***	0.0147	0.364**	−0.337***	−0.174	0.163*	−0.281***	−0.198	0.0832	−0.255***	−0.213*	0.0410	−0.235***	−0.304*	−0.0694
	(0.0123)	(0.150)	(0.149)	(0.0257)	(0.246)	(0.121)	(0.0160)	(0.174)	(0.0772)	(0.0132)	(0.126)	(0.0636)	(0.0140)	(0.0928)	(0.0643)	(0.0238)	(0.140)	(0.105)
Sylhet	−0.0922***	−0.113	−0.0205	−0.314***	−0.0283	0.285	−0.146***	−0.118	0.0275	−0.0815***	−0.140	−0.0587	0.0109	0.0899	0.0790	0.00599	−0.0508	−0.0568
	(0.0172)	(0.156)	(0.155)	(0.0303)	(0.310)	(0.152)	(0.0189)	(0.220)	(0.0970)	(0.0156)	(0.158)	(0.0800)	(0.0165)	(0.117)	(0.0807)	(0.0281)	(0.177)	(0.132)
Constant	5.080***	4.080***	5.080***	4.793***	2.774**	4.793***	5.115***	3.590***	5.115***	5.312***	4.243***	5.312***	5.328***	4.766***	5.328***	5.522***	5.070***	5.522***
	(0.0533)	(0.396)	(0.0534)	(0.0980)	(0.858)	(0.105)	(0.0610)	(0.608)	(0.0667)	(0.0504)	(0.438)	(0.0550)	(0.0533)	(0.324)	(0.0555)	(0.0908)	(0.490)	(0.0908)
N	13,529	854	14,383	13,529	854	14,383	13,529	854	14,383	13,529	854	14,383	13,529	854	14,383	13,529	854	14,383
R-sq	0.213	0.291	0.307	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
adj. R-sq	0.212	0.272	0.305	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rmse	0.406	0.720	0.431	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Note: Standard errors in parentheses.

*p < 0.05, **p < 0.01, ***p < 0.001.

The coefficients of gender-specific OLS and quantile regression have been estimated by using Equations (2) and (5).

Similarly, the slope dummy variable's coefficients for the OLS and quantile regression have been estimated using Equations (3) and (6).

unmarried individuals or those with other marital statuses (widowed, divorced, or separated), as observed across the mean and almost every quantile. However, the estimated gap suggests that females consistently experience more negative discrimination than males in most cases, although it is never statistically significant.

This study also found that the presence or absence of chronic illness affects wages differently for males and females in both 2010 and 2016. For males, having 'no chronic illness' positively impacts wages compared to the reference group, while for females, it has a negative effect, except at the 90th quantile in 2010. This suggests that some females may have to work harder to support their families and health expenses, regardless of their physical health. Conversely, in 2016, males earned significantly more than the reference group at the mean and every quantile except the 90th. Females showed a similar pattern except for the 10th quantile, which was insignificant in any estimation. However, the estimated wage gaps reveal that females faced negative discrimination in 2010 and positive discrimination in 2016, except at the 10th quantile, which was only significant at the mean (9.34% less) in 2010 and insignificant elsewhere in 2016.

This study revealed that employees in the non-agricultural sector generally earn higher wages than those in the agricultural sector in both years, except for males in the 10th and 25th quantiles in 2010. This positive trend was also observed for females in 2010, but a reversal occurred for females in 2016. In 2010, females had more significant wage gaps than males, whereas the opposite trend was evident in 2016, particularly in the upper quantiles.

The results from Table 4 indicate that in 2010 and 2016, males employed in the agricultural sector earned lower wages than those in the service sector, except at the 10th quantile. Conversely, for females, the trend was reversed. This difference was significant and positive across various quantiles, from the 25th to the 90th, in 2010, highlighting the wage disparity between the agricultural and service sectors for males. In 2016, while the gap remained positive, it was only significant up to the 75th quantile. Additionally, both males and females working in the industrial sector earned significantly less than those in the service sector in both years. Within the industrial sector, males had higher wages than females, indicating negative discrimination against females. This difference was significant at the mean and specific quantiles in 2010 and only at the upper quantile in 2016, underscoring the higher wage opportunities available for males in the industrial sector.

The findings of this study corroborate existing literature regarding the significant urban-rural wage gap in the daily labor market (Asadullah, 2006a; Mamun & Arfanuzzaman, 2020). The estimated results for 2010 and 2016 reveal that urban employees, both males and females, consistently earn higher wages than their rural counterparts across all quantiles of wage distributions. Interestingly, urban females exhibit more advantageous positions than urban males, resulting in positive wage gaps for females. This trend could potentially be attributed to factors such as higher educational attainment and increased demand for female workers in the urban daily labor market.

The results reveal non-uniform regional variation in wage distribution for both years. Estimated coefficients indicate higher and lower wages than the reference region (Barisal) in both years. This finding contradicts Al-Samarrai's (2006) study, which identified Barisal as having the highest wages among all regions. Furthermore, the results indicate that females experience positive and negative discrimination across the wage distribution, although these differences are largely insignificant. This suggests that the regional wage gap varies across the distribution and is influenced by factors such as education, occupation, and field of employment.

6. Conclusion and policy implications

This study examines wage determinants and wage inequality in Bangladesh's daily labor market in 2010 and 2016, specifically focusing on gender disparities across the wage distribution and mean. The study used HIES 2010 and 2016 data and applied OLS and quantile regression techniques to estimate the wage determinants and to evaluate predictors' effects on the wage gap between males and females. It adds value to the existing literature by thoroughly examining wage determinants and the gender wage gap in Bangladesh's daily labor market, an aspect often neglected in prior studies.

The study's key findings are as follows: Firstly, it highlights that wage determinants, including human capital and social factors, significantly influenced daily wages in 2010 and 2016, affecting both the mean and various quantiles of the wage distribution. Factors like education, age (as a proxy for experience), working hours, other income sources, occupation (service sector), and engagement in non-agricultural activities positively correlate with wages. Conversely, marital status (unmarried and others) and religion (non-Muslim) are negatively associated with wages. Secondly, the

study underscores the substantial and enduring gender-based wage disparity in the daily labor market, with females consistently earning less than males across nearly all predictors, at both mean and throughout the wage distribution. The gender wage gap was estimated at 22.9% in 2010 and increased to 62.2% in 2016, albeit declining from lower to upper quantiles, indicating a persistent pattern of wage inequality called the sticky floor effect. Thirdly, the wage gap varies across different predictor levels in both years, suggesting that certain factors have a greater or lesser impact on wage inequality depending on the wage quantile. For instance, education and working hours exhibit smaller wage gaps at lower quantiles but larger ones at higher quantiles, while age shows the opposite trend. Lastly, the study identifies factors that could mitigate the wage gap, such as adequate working hours, higher educational attainment, and reforms in minimum wage policies. These measures could bolster females' bargaining power and productivity in the daily labor market.

Based on these findings, the study suggests some policy implications for promoting gender equality in the daily labor market. One policy implication is to implement affirmative action policies that would ensure equal pay and working conditions for both males and females. Such policies would reduce the negative discrimination faced by females and increase their participation and representation in the daily labor market. Another policy implication is to encourage sharing family responsibilities among other family members, especially males. This would reduce the burden and opportunity cost of females, who often have to balance their work and family roles. A third policy implication is to extend the minimum wage reform beyond the RMG sector to other sectors, especially the informal sector, where most daily laborers are employed. This would increase the wages and welfare of both males and females and reduce the wage inequality caused by the labor market segmentation. These policy interventions would create a more equitable daily labor market and have broader implications for labor markets in Bangladesh.

Despite its contributions, this study has several limitations. Firstly, the analysis relies on two rounds of secondary datasets from HIES 2010 and 2016, which may constrain the depth of insights into certain variables in the current scenario. Future research could benefit from more recent data collection to validate and expand upon these findings. Secondly, the study primarily focuses on wages in the informal sector and may not fully capture income disparities in the formal sector. Future studies could explore the formal economy's role in shaping overall income inequality in Bangladesh. Thirdly, the study's scope is confined to specific time periods and geographical areas within Bangladesh, potentially limiting the generalizability of findings across different contexts.

There are several promising avenues for future research. Firstly, longitudinal studies could examine the long-term effects of educational interventions on income mobility and the intergenerational transmission of human capital. Secondly, evaluating the effectiveness of particular policy measures, such as targeted scholarships or vocational training programs, could offer practical insights for policymakers. Thirdly, investigating the intersectional dynamics among education, gender, and income inequality could reveal nuanced factors influencing wage disparities across diverse populations. Additionally, further research could explore the impact of specific policy interventions designed to mitigate income inequality, such as minimum wage policies or targeted social protection programs. Moreover, analyzing the intersectionality of gender, education, and income inequality would yield deeper insights into the complex dynamics shaping Bangladesh's socioeconomic landscape.

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Ethics statement

The author(s) declare that there are no conflicts of interest regarding the publication of this paper.

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