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Human Capital, Discrimination, and the Gender Wage Gap in Bangladesh

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Summary. — This paper investigates changes in the gender wage gap in Bangladesh over the period 1999–2009. The gap in average wages between men and women decreased by 31% over this period. This paper shows that a key driver of this change was an improvement in female educational qualifications. It also demonstrates that the gender wage gap across the wage distribution narrowed much more at the lower end of the wage distribution than at the upper end. It attributes this mainly to a decline in discrimination against women. Implications for policies aimed at more equal access to education and enforcement of equal pay legislation in Bangladesh are also identified.
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Key words — discrimination, gender, wage gap, Bangladesh

1. INTRODUCTION

The government of Bangladesh in the 1990s embarked on an economic liberalization program known as the New Economic Policy. Bangladesh has subsequently experienced stable and high economic growth: the average GDP annual growth rate was 6%, and poverty rates declined by about 17% during the decade 1999–2009. [1] This transition has had striking effects in the labor market, with more women rapidly becoming incorporated into the labor force. The absolute number of female workers aged 15 years and above grew from 4.8 million in 1999 to 7 million in 2009, while that for male workers over the same period has increased from 30 million in 1999 to 35 million in 2009 (BBS, 2002, 2011). [2] Driving forces behind this increase are the improvement in educational attainment of women, more favorable attitudes toward female employment, and better job opportunities for females in the rapidly growing sectors of the economy. Yet women suffer from relatively poor working conditions because they particularly hold low-skilled jobs across different industries, and earn less compared to men for similar work. This earnings disadvantage, which is estimated in econometric studies to be in the range of 20–50%, persists even after controlling for education and other labor market characteristics (Ahmed & Maitra, 2010; Akter, 2005; Asadullah, 2006; Hossain & Tisdell, 2005; Kapsos, 2008; Salway, Rahman, & Jesmin, 2003). It appears, therefore, that from a policy viewpoint the gain in women's employment in Bangladesh has to be weighed against lower job quality and wages.

Economists have since the early 1990s studied the gender wage differentials intensively, attempting to explain why women are denied equal wages. While some economists point to the significantly lower level of human capital of female workers relative to that of male workers (Hossain & Tisdell, 2005), others find that labor market discrimination against women explains a substantial part of the gender wage gap (Ahmed & Maitra, 2010; Akter, 2005; Kapsos, 2008). Most early studies focused on a single point in time. It is only in two recent studies that changes in the gender wage gap have been documented (Ahmed & Maitra, 2011; Al-Samarrai, 2007). Yet these two studies examined gaps during 2000–05 and, as Zhang, Han, Liu, and Zhao (2008) observed for China, cannot provide insight into trends over time owing to the impact of short-term fluctuations. This paper aims to address this void in the literature by examining changes in gender wage gaps in Bangladesh over the longer period of 1999–2009. Given that gender equality is one of the eight UN millennium development goals, useful lessons about the changes in gender equality–inequality in wages as we liberalize can be learned from the country like Bangladesh.

This study focuses on the aggregate labor market, although it does extend its analysis to the manufacturing sector. [3] This sector is among those most affected by Bangladesh's 1990s economic reforms. This study focuses on the period 1999–2009, using a framework integrating gender differences in human capital characteristics (the *endowment effect*) and labor market discrimination against women (the *discrimination effect*). [4] Discrimination in this context refers to individuals with identical human capital characteristics or productive endowments being paid differently based on their gender status. [5] This study is primarily concerned with the discrimination effect, which is the gender gap that persists even after the differences in endowments have been controlled for. It is of special interest owing to the market-based economic reforms implemented in Bangladesh in recent decades. A shift to increased reliance on market forces can punish discriminatory wage-setting behavior and thus reduce the gender wage gap (Becker, 1957). Recent experience in developed countries in which the gender wage gap has generally declined provides broad support for this argument (Jolliffe & Campos, 2005). Yet the reverse can also happen. Deregulation can provide firms and managers with more autonomy, and thus they can pay female employees in accordance with their discriminatory

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preferences. These preferences can disadvantage women, with the gender wage gap increasing in favor of men. This idea is supported by Gustafsson and Li (2000) and Ng (2007), who found that following market-based reforms in China, the larger proportion of the overall earnings gap cannot be explained by the different productivity characteristics, suggesting that discrimination may be the primary reason. What happens to the gender wage gap in liberalizing economies will ultimately depend on the relative strength of these two forces, together with institutional arrangements (such as laws and regulations promoting gender equality at work), and the labor market choices of men and women in the new economic environment. Ultimately, how the gender wage gap changed in Bangladesh during 1999–2009 is an empirical issue.

This paper contributes to the literature in three further respects. First, to our knowledge, this is the only study that examines changes in the gender wage gap in Bangladesh by decomposing wage differentials between men and women into the above-mentioned endowment and discrimination effects. As the gender wage gap may vary across the wage distribution (Albrecht, Bjorkluud, & Vroman, 2003; Arulampalam *et al.*, 2007; Machado & Mata, 2005), we perform decompositions both at the mean and at quantiles. [6] Second, most of the studies on the gender wage differential in Bangladesh have been conducted for wage employees, taking no account of whether these employees work full- or part-time. In contrast, Ahmed and Maitra (2010) suggested that it was important to be cognizant of the types of employment in order to avoid potential estimation biases resulting from the different wage structures faced by full-time and part-time wage employees. This study attempts to provide further information on the gender wage gap in Bangladesh through separate study of the full-time wage employees. In so doing it avoids these biases. Since the selection of full-time wage employment cannot be assumed to be random, our analysis takes into account the probability of full-time employment. There is already some evidence of sample selection bias for wage employees at the mean (see, for example Ahmed & Maitra, 2010), but it was not always statistically significant at other points of the wage distribution (this issue is discussed in subsequent section). We therefore present decomposition results, adjusted for sample selection bias at the mean. Third, we use a large-scale database – the Labour Force Survey datasets for 1999, 2005 and 2009 – which contains a wealth of information down to region or district level. This dataset provides more detailed information on each individual's wage, gender, location, and socio-economic and family characteristics than is available from the Bangladesh Household Income and Expenditure Survey (HIES) data used in Al-Samarrai (2007).

Three decomposition methods are used in this paper. We start by conducting the standard Oaxaca–Blinder decomposition at the mean for 1999, 2005, and 2009, adjusted for sample selection bias. We then perform decomposition at selected quantiles using an Oaxaca–Blinder type decomposition approach based on Recentered Influence Function (RIF) regressions developed by Firpo, Fortin, and Lemieux (2009) for 1999, 2005, and 2009. Finally, we use the method proposed by Wellington (1993) to extend the single-period Oaxaca–Blinder approach to decompose changes in the gender wage gap during 1999–2009, both at the mean and at quantiles, again explicitly accounting for selectivity bias at the mean.

The remaining sections of the paper are as follows. Section 2 discusses the estimation framework. Section 3 describes the relevant data and outlines labor market characteristics and wages of men and women. Section 4 presents our empirical findings and Section 5 concludes the paper.

2. EMPIRICAL FRAMEWORK

As previously stated, the focus of our analysis is full-time workers. These workers might not, however, be a random subset of all workers, but differ in terms of observables and unobservables (e.g., relative productivity in the labor market and home activities, and attitudes and aspirations toward full-time work) from those who work part-time, or not employed. One way to correct this selection bias is to employ the standard Heckman's (1979) two-step technique. In the first stage, we estimate the inverse Mill's ratio (denoted by λ) from a probit equation determining full-time participation in the labor market (choosing to become a full-time wage employee). This is done by estimating the following equation, separately for men and women:

$$I_{ijt} = Z'_{ijt}\gamma_{jt} + \mu_{ijt} \quad i = 1,\ldots,n; \;\; j = m,f; \;\; t = 1999,2005,2009 \qquad (1)$$

where i denotes the individual; j the gender group (male or female) and t the survey year (1999, 2005 or 2009). I_{ijt} is a dummy variable denoting full-time employment status ($I = 1$ if the individual is a full-time wage employee and 0 all others (including part-time wage employees and non-participants) (see also Kidd & Viney, 1991). Z is a vector of determinants of full-time employment and $\mu_{ijt} \sim$ IIDN(0,1). Estimation of Eqn. (1) allows us to compute the inverse Mill's ratio, which is then added as an additional regressor in wage equations given by Eqn. (2). Although the identification of the selection equation (Eqn. 1) comes from the non-linearity of the inverse Mill's ratio, this variable is often highly correlated with the remaining covariates in the wage equation (Eqn. 2). We therefore incorporate a set of variables in Z that belong to the selection equation but not in the wage equation (see sub-section 3(a) for the description of these variables).

In the second stage, an augmented (log) hourly wage equation is estimated for each year, separately for men and women: [7]

$$lnw_{ijt} = X'_{ijt}\beta_{jt} + \lambda_{ijt}\theta_{jt} + \varepsilon_{ijt}; \; i = 1,\ldots,n; \; j = m,f; \; t = 1999,2005,2009 \qquad (2)$$

Here lnw_{ijt} is the (log) of hourly wages; X_{ijt} is the vector of explanatory variables (set of individual characteristics) that affect the wages received and $\varepsilon_{ijt} \sim N(0,\sigma^2)$. θ_{jt} is the estimated coefficient of λ_{ijt} from the extended wage regression where λ_{ijt} is included as an additional explanatory variable. Eqn. (2) is estimated using the ordinary least square (OLS) method.

(a) *Oaxaca–Blinder decomposition*

As a first attempt to formally identify the underlying causes of the gender wage gap, we perform an Oaxaca–Blinder decomposition at the mean. We define D_t as the difference in the expected value of male and female wages in period t (raw difference) obtained by estimating Eqn. (2) separately for males and females. D_t can be decomposed into the component of the raw difference attributable to differences in observed characteristics or endowments and to differences in coefficients. We can then write:

$$\begin{aligned} D_t &= \overline{lnw}_{mt} - \overline{lnw}_{ft} \\ &= \left(\overline{X}_{mt} - \overline{X}_{ft}\right)'\hat{\beta}_{mt} + \overline{X}'_{ft}\left(\hat{\beta}_{mt} - \hat{\beta}_{ft}\right) + \left(\hat{\theta}_{mt}\bar{\lambda}_{mt} - \hat{\theta}_{ft}\bar{\lambda}_{ft}\right) \end{aligned} \qquad (3)$$

where $\hat{\beta}_{jt}$ is the estimated value of β_{jt}. The first term in the right hand side of Eqn. (3), $\left(\overline{X}_{mt} - \overline{X}_{ft}\right)'\hat{\beta}_{mt}$, is the explained

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