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Does the Public Sector Discriminate Against Women? Occupational Segregation Prior to Privatization in Egypt

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Abstract

This paper utilizes a joint (ordered probit) occupational attainment and wage determination model to examine the channels through which occupational segregation and pay discrimination affect the overall gender wage gap in different sectors of ownership in Egypt. Using a large data set drawn from a survey of Egyptian establishments in the organized sector, the model estimates confirm that gender-based pay discrimination is small in the government sector in Egypt and quite high by international comparisons in the private sector. Yet, even prior to the large-scale privatization in 1990s, occupational segregation was quite prevalent in state owned enterprises, amounting to half of the discrimination component. These findings highlight that any expected disproportionate impact of economic liberalization on women is more likely to come from civil service reform as opposed to privatisation of public enterprises in Egypt.

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1 Introduction

Job segregation and wage discrimination play a major role in discouraging women in the MENA region as well as other regions across the globe. Although, in the MENA region, this problem is also often combined with social norms which reinforce the segregation of women in a few "suitable occupations" that also tend to be low-waged. This also affects the reservation wage, which is the cut-off point at which individuals decide that work is preferable than other ways to use their time (World Bank, 2004). Women now comprise about one third of all industrial sector workers in developing countries (Joekes 1995). Evidence shows that increased competition from trade liberalization and privatization tends to increase the availability of paid jobs for women, particularly in export sectors. But certain factors, such as discrimination and gender inequalities in access to resources, may impede women's ability to benefit from competitive environments (Swamy, 2004).

In a large cross-country study, and using the ILO inquiry database, which is the most far ranging survey of wages around the world, Remco Oostendorp (2009) examines the impact of globalization on gender wage gaps. Using Oaxaca-Blinder decomposition techniques, Oostendorp demonstrates that occupational and residual wage gaps can be viewed as useful proxies for gender wage discrimination. When using regression analysis, findings showed that occupational gender wage gaps tend to decrease with increasing globalization, and with trade and foreign direct investment in richer countries. As for poorer countries,

development has to reach a certain threshold before gender wage gaps close with further economic growth.

Previous studies of gender-based wage differentials in the Middle East and North Africa region remain limited in number and mostly relied on decomposition methods into explained and unexplained coefficients. Conducting economic research on Libya, Manfor and Arabsheibani (2002) decomposed the earning differentials of the country, to find that the explained characteristics composed 32.5 %, while the unexplained coefficients reached 88.7%. With a methodology of research based on wage distribution, it was found that gender discrimination rates and wage distribution moved in opposite directions. This indicated a higher gender discrimination rate among low-paid workers. These findings coincide with Arabsheibani's (2000) study of male-female wage differentials among Egyptian graduates. This is certainly due to the fact that only 25 % of the wage differentials are due to gender discrimination among Egyptian graduates. By 2006, the median wage for Egyptian females working in the formal private sector was 24% lower than that of their male counterparts, reaching 50% in the informal sector (World Bank, 2006). Drawing attention to gender differences in human capital presents part of the problem that should be addressed. Assaad and Arntz (2005) emphasized that rewarding females for their attributes is key to narrowing gender wage gaps in Egypt. Said (2002) presents evidence that such gender inequalities have increased in the 1990s. Using ELMPS data, this study gives an insight as to how women earn a lot less than men with differences in education and experience across sectors and occupations taken in to account. Assaad and Barsoum (2007) point attention to women's restricted geographic mobility, and have described working conditions in some occupations of the private sector as dissuading for women to pursue them. Using cross-section data and regression analysis, to analyze gender wage gaps, the World Bank Report on Egypt stresses that gender differentials in human endowment, as women are found to be clustered in limited

education specializations, be studied thoroughly in order to combat underestimation of gender wage differentials in the labour market.

This paper considers the estimation of gender-based wage differentials between the public and private sector labour market in Egypt prior to large scale privatization of public enterprises. Its point of departure from the existing literature on gender gaps in Egypt is that it does not assume that all occupational differences as justifiable. Instead, by of endogenising occupational attainment behaviour in calculating the gender gap, the findings of this paper suggest that occupational segregation plays a large role in explaining gender gaps in both public enterprises and private sector in Egypt. As such it uncovers the origins of gendered wage practices that from some of the literature presented above may still be present and even intensified due to liberalization and privatization in Egypt.

2 Estimation Strategy

The empirical analysis in this paper proceeds in two stages. First, wage equations were estimated for males and females in the government, public enterprise and private sectors. From these, standard decomposition methods were applied to both the government and public enterprise wage premiums and to gender-gaps in the three sectors. Second, a model of occupational attainment was estimated for males and females in the three sectors and applied to an alternative gender decomposition gap formula which does not assume that gender differences in occupational distributions are all economically justifiable

In the first stage, ordinary least squares were used to estimate separate wage equations for workers in the government (g), public enterprise (p) and private (r) sectors as follows:

$$\text{Ln}\,(w_{is}) = X_{is}\,\beta_s + u_s\,, \qquad (s = g, p, r) \tag{1}$$

where Ln (w_{is}) is log hourly wages of individual i in sector s and X is the vector of individual and job related characteristics seen to be of relevance for wage determination. This was estimated twice, once for males and once for females, yielding a system of six equations.

These are then compared to selectivity corrected wage estimates, where selection terms were derived from a model of sectoral choice of government or public enterprise employment relative to private employment. The model underlying this estimation is based on Lee's extension (1982 and 1983) of Heckman's selection model to the multinomial case.

$$\text{Ln}\,(w_{si}) = \beta_s X + \sigma_s \lambda_s + e_s, \qquad (s = g, p, r) \tag{2}$$

The correction for sector selection bias implemented on wage equations in this paper is based on a variant of the standard two stage selectivity model (studied by Heckman, 1979), with a multinomial logit selection rule (developed by Lee 1982 and 1983) which predicts the probability of selection in the three sectors of employment. As for the process of sectoral allocation of workers, it is postulated that an individual is observed working in a particular sector only if he or she both desires to be in that sector and can find employment in that sector. The unobserved propensity of individual i to work in sector s can be written as:

$$I^*_{s_i} = \gamma_s Z_i + \eta_s, \qquad (s = g,p,r) \tag{3}$$

where Z is the vector of variables that affect employee preferences for sectors or employer preference for workers, γ is vector of parameters to be estimated and η's are random disturbances assumed to have zero mean conditional on Z. I is a polychotomous variable with values g, p, r and $I = s$ if the worker is allocated to the s^{th} sector. This occurs if his or her unobserved propensity (determined by the individual or supply side factors and employer or demand side factors) is largest in that sector:

$$I_i = s \quad \text{if} \quad I^*_s > \text{Max}\, I^*_j \quad (j = g,p,r:\ j \neq s) \tag{4}$$

if we assume that η's are independently and identically distributed with type I extreme value distribution, then workers' sectoral allocation (equation system 4) can be analysed using the multinomial logit model, which yields the following probabilities of sectoral allocation:

$$P_{s_i} = \text{Prob}(I_i = s) = \frac{\exp(\gamma_s Z)}{\sum_{s = g, p, r} \exp(\gamma_s Z)}, \quad (s = g,p,r) \tag{5}$$

where P_{si} is the probability that individual i will be allocated to sector s. Note that only two sets of γ 's can be determined independently as the sum of probabilities equals 1. If we adopt $\gamma_r = 0$, then the parameter estimates in the sectoral allocation equation system (5) should be interpreted as the effect of a given characteristic on the probability of allocation to sector s relative to the probability of allocation to private sector (i.e. P_s / P_r). Now returning to the wage equation (equation system 1), Ln w_{si} is observed if individual ii is allocated to sector s. Taking the expectation of (1) conditional on the outcome of the sectoral allocation process yields:

$$E\left[\ln(w_{s_i}) | I_i = s \right] = \beta_s X_i + E(u_s | I_i = s), \qquad (s = g,p,r) \tag{6}$$

if $E(u_s | I_i = s) \neq 0$ this means that individuals in a given sector do not constitute a random subset of the population, but are non-randomly selected on basis of their unobserved characteristics. Using Lee's (1982) procedure to correct for selectivity, the conditional expectation in (6) above can be written as:

$$E(u_s | I_i = s) = \sigma_s \lambda_s, \quad (s = g,p,r) \tag{7}$$

Where

$$\lambda_s = \varphi \frac{[\Phi^{-1}(P_s)]}{P_s}, \qquad (s = g,p,r) \tag{8}$$

Φ and φ are standard univariate normal density and distribution functions, respectively. λ's are inverse Mill's ratios (sample selection terms) from the multinomial logit selection model. The parameters of the system of equations in

(1) can be estimated consistently by least square regression of log wages on X's and the λ's as additional regressors.

Given the parameter estimates from (1), public-private wage differentials can be evaluated at the mean of the sample, using Oaxaca's classical decomposition formula:

$$D_s = \overline{\ln(w_s)} - \overline{\ln(w_r)} = \frac{(\beta_s + \beta_r)(\bar{X}_s - \bar{X}_i)}{2} + \frac{(\beta_s - \beta_r)(\bar{X}_s + \bar{X}_i)}{2}, \quad (s = g, p) \qquad (9)$$

D_s refers to the wage differential between sector s and the private sector. $\overline{\ln(w)}$ refers to the mean of Ln wages.

The formula decomposes the wage differential into two main components. The first term, which is 'explained', is the part of the differential attributable to differences in observed characteristics of workers (X's). The second term, which is "unexplained," is the part of the differential resulting from differences in the pay structure, or in returns to the characteristics.

$$D_f = \overline{\ln(w_n)} - \overline{\ln(w_f)} = \frac{(\beta_m + \beta_f)(\bar{X}_m - \bar{X}_f)}{2} + \frac{(\beta_m - \beta_f)(\bar{X}_m + \bar{X}_f)}{2} \qquad (10)$$

here the unexplained component (second term on the right hand side) is broadly taken to refer to gender-based discrimination.

The inclusion of different job characteristics, especially occupations, in wage regressions treats the distribution across jobs by gender as if it is all justifiable. This ignores the literature on occupational attainment, which suggests that occupational distribution may derive in part from discriminatory factors. In particular, several studies have shown much of the discrimination against women (or other minority groups) is due to the crowding of these groups into a small number of occupations where wages and chances for promotion are low. Thus the above measure may, in fact, underestimate the true magnitude of overall discrimination that women face in the labour market. To arrive at a measure of job discrimination, one would need to fully incorporate the process of occupational attainment in the calculation of gender-based wage differentials.

Thus, the second stage of the empirical analysis in this paper estimates a behavioral model of occupational attainment that can predict the distribution of females across occupations if they were treated in the same manner as males. This facilitates decomposing the gender gap into justifiable and unjustifiable components and to further decompose these into intra-occupational and inter-occupational components.

Moreover, in order to be able to make statements about vertical mobility across occupations, the ordered probit model is used to estimate the pattern of occupational attainment. The ordered probit model uses prior information of a ranking (say according to average income) among occupations, whereas unordered models (such as the multinomial logit ones) ignore this information. It also yields a more tractable likelihood function and a smaller set of parameter estimates than those derived from unordered models (Miller and Volker, 1985). According to this model, the conditional probability that an individual will be observed in occupation j is given by:

$$\hat{p}_{ij} = \Phi(\hat{\mu}_j - \hat{a}V_i) - \Phi(\hat{\mu}_{j-1} - \hat{a}V_i) \qquad (11)$$

where Φ represents that standard normal cumulative density function, $\hat{a}$ the estimated coefficients, μ the estimated separation points and V the vector of individual level characteristics that are seen to be determinants of occupational choice.

Separate wage equations for males and females for each occupation group (j) are then estimated across the three sectors:

$$\text{Ln}\,(w_{ij}) = X_{ij}\,\beta_j + u_{ij}\,, \qquad (j = 1,\ldots,k) \qquad (12)$$

predictions from equation (5) combined with parameter estimates from equation (6) can then be used in a modified decomposition of the gender gap which expresses it as the sum of intra-occupational and inter-occupational wage components, as follows:

Intraoccupational =

$$\sum_i p_i^f (\hat{\beta}_i^m \bar{X}_i^m - \hat{\beta}_i^f \bar{X}_i^f) = \sum_i p_i^f \hat{\beta}_i^m (\bar{X}_i^m - \bar{X}_i^f) + \sum_i p_i^f (\hat{\beta}_i^m - \hat{\beta}_i^f) \bar{X}_i^f \quad (13)$$

(J) (D)

Interoccupational =

$$\sum_j \hat{\beta}_j^m \bar{X}_j^m (p_j^m - p_j^f) = \sum_j \hat{\beta}_j^m \bar{X}_j^m (p_j^m - \hat{p}_j^f) + \sum_j \hat{\beta}_j^m \bar{X}_j^m (\hat{p}_j^f - p_j^f) \quad (14)$$

(J) (D)

p_j^m (p_j^f) the proportion of male (female) workforce employed in the jth occupation, $\hat{p}_j^f$ is the simulated distribution of females across occupations using the male coefficients. This allows for a further decomposition of both intra- and inter-occupational components into those that are either justifiable wage differences (J) or discriminatory wage factors (D).

3 Data and Wage Equation Estimation Results

The establishment survey conducted by the Egyptian Central Agency for Public Mobilisation and Statistics on the eve of the launch of 1991 privatization programs, covered 160 establishments in the organised sector with questionnaires directed on the individual level to workers in each establishment. Before correcting for differences in attributes, the average log hourly wage data show that for males, average wages are highest in the private sector and for females, wages are highest in the public enterprise sector. The average gender wage gap is most compressed in the public enterprise sector (only 9%), followed by the government (17%) and is much higher in the private sector (113%). These averages, however, are not informative about the actual sector and gender differentials as they do not account for differences in individual and job characteristics. In order to obtain such differentials, we begin by applying the sample selection procedure and estimating wage equation (1) in the model above. Two reduced form multinomial

logit equations for selection in the government and public enterprises relative to the private sector were estimated separately for males and the sample selection statistics were computed. Six earnings equations for males and females in each sector were then estimated with the relevant selection terms as regressors.

Table 1 presents the selectivity corrected wage equation estimates which show that the specification follows convention with a variety of human capital, demographic and job characteristics variables.

Control variables for whether employees obtained a higher degree after appointment, whether the contract is of a temporary nature, occupation, and sector of economic activity were also included. Chow tests on the equality of coefficients across sectors and gender confirm that estimating separate equations for each is a superior specification. The returns to various characteristics across sectors, particularly experience and education, are broadly similar to previous results (Shaban et al, 1993 and Assaad, 1997) that highlight the importance of experience and educational attainment for remuneration in the government. The weighted least square results (using sampling weights) show that the experience-wage profile has the usual concave shape in all three sectors but rises at different rates in each case. Returns to experience are higher in the private sector for both males and females. They are similar in public enterprises and the government for males, but are higher in the government for females. Rewards for tenure (or on the job experience) are higher in the private sector for males and in the public enterprise sector for females. Returns to education increase by level of attainment in the public sector for both males and females. They are generally highest in the public enterprise sector for males and in the government for females, especially after the secondary level of schooling.

The results of applying the classical decomposition formula are shown in Table 2. The unexplained component, usually attributable to discrimination, is indeed small in the public sector (12% of female wages in the government and 7% of female wages in the public enterprise sector).

Table 1: Ordinary Least Square and Selectivity Corrected Wage Equation Estimates for Males and Females

	Males			**Females**		
Variable	Govern.	Public.Ent	Private.E	Govern.	Public.En.	Private. En.
Constant	-0.258	-0.074	-0.926	-1.290	-0.515	-2.048
Experience	0.032	0.040	0.031	0.357	0.044	0.074
Experience2	-0.0003	0.0080	-0.0003	-0.0004	-0.0006	-0.0005
Tenure	0.005	0.008	0.008	0.000	0.217	-0.016
Educational level						
Primary School	0.179	0.441	0.094		-0.250	-0.233
Preparatory School	0.128	0.120	0.136	0.323	0.238	-0.087
Secondary School	0.043	0.334	0.441	0.340	0.308	-0.133
Two Year College	0.007	0.402	0.424	0.419	0.363	-0.147
University	0.297	0.540	1.022	0.701	0.575	0.484
Higher degree after appointment	0.115	0.135	0.124	0.195	0.0003	-0.074
Region						
Lower Egypt	0.258	-0.339	-0.180	-0.010	-0.267	-0.213
Upper Egypt	-0.280	-0.115	-0.190	-0.047	0.070	0.944
Job Characteristics						
Job Group:						
Specialized	-0.375	-0.371	-0.527	-0.141	-0.504	0.968
Technical	-0.271	-0.350	-0.685	-0.135	-0.539	0.535
Clerical	-0.351	-0.489	-0.677	-0.120	-0.634	1.025
Skilled Manual	-0.172	-0.379	-0.819	-0.419	-0.375	0.431
Unskilled Manual	-0.400	-0.396	-0.976		-0.426	0.048
Activity:Industry	0.539	-0.353	0.402		-0.151	0.517
Services	0.501	-0.157	0.334	0.241	0.380	0.378
Selection Term	-0.425	0.077	0.742	-0.117	0.024	0.366
Adjusted R2	**0.61**	**0.55**	**0.50**	**0.62**	**0.72**	**0.60**
Sample Size	**1400**	**3586**	**2474**	**701**	**562**	**655**

Source: CAPMAS, 1990 Establishment Survey.

Table 2: Decomposition of Male-female pay Differentials

Variable Name	Government		Public enterprise		Private	
	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Experience	0.270	-0.284	0.155	-0.058	0.339	-0.450
Experience squared	-0.111	0.073	-0.089	0.078	-0.005	0.055
Tenure	0.015	0.093	0.048	-0.183	-0.002	0.163
Educational level						
Primary School	0.001	0.001	-0.002	0.013	-0.018	0.007
Preparatory School	-0.001	-0.006	-0.008	-0.009	-0.001	0.001
Secondary	-0.074	-0.055	-0.049	0.010	-0.001	0.095
Two Year College	-0.015	-0.014	-0.012	0.002	-0.011	0.011
University	0.002	-0.048	-0.043	0.001	0.053	0.044
Higher degree after appointment	-0.022	-0.008	-0.001	0.005	0.015	0.006
Region						
Lower Egypt	0.006	0.078	-0.009	-0.017	-0.032	-0.057
Upper Egypt	-0.027	-0.039	-0.001	-0.025	0.016	-0.035
Job Characteristics						
Job Group: Specialized	0.011	-0.098	0.057	0.020	0.019	-0.486
Technical	-0.023	-0.019	-0.040	0.016	-0.002	-0.180
Clerical	0.079	-0.078	0.127	0.025	-0.002	-0.354
Skilled Manual	-0.030	0.013	-0.079	-0.004	0.017	-0.398
Unskilled Manual	-0.024	-0.039	-0.022	0.001	-0.004	-0.159
Activity:Industry	0.000	0.000	0.001	-0.142	0.028	-0.040
Services	-0.013	0.244	0.003	-0.120	-0.031	-0.007
Total of Characteristics	0.044	-0.186	0.034	-0.387	0.379	-1.784
Constant Term		0.298		0.454		2.110

Total Pay Differential	0.044	0.113	0.034	0.067	0.379	0.326
Implied Discrimination Coeficient (%)		11.9%		6.9%		38.6%

Source: CAPMAS, 1990 Establishment Survey.

A large part of the differential is explained by the more favourable distribution of men with regards to observable characteristics: men have more overall and job specific experience than women in both segments of the public sector. Although there is evidence of some positive discrimination in favour of women in terms of return to several characteristics, a pure rent element as captured in the constant term is still paid to men.

In the private sector, higher levels of overall experience give males the most obvious advantage. They also have a slightly more favourable education distribution and are concentrated in more specialised and skilled manual jobs than females. However, the largest component of the differential is due to pay discrimination (amounting to 39% of female pay in the private sector). Notably, returns to occupation (or job rank) were higher for females than males in the private sector. This implies that if occupational attainment was not taken into account, the gender gap would have been larger.

4 Occupational Attainment and the Gender Gap

In order to investigate the effect of gender on predicted occupational distributions, we turn to estimating a model of occupational attainment. Following the approach advocated by Greenhalgh and Steward (1985) and Miller (1987), we estimate an ordered probit model to predict the probability that an individual will be employed in one of six occupational job groups: (1) management, (2) specialised, (3) technical, (4) clerical (5) skilled manual, and (6) unskilled manual, postulated to be a function of the person's educational attainment, labour market

experience and region of residence. Incorporating information on the ranking of occupations into the estimation procedure permits for explicit statements to be made concerning vertical mobility. Thus, a positive coefficient indicates a high probability of being located in a more prestigious occupation. The estimates of the model presented in Table 3 show that education and labour market experience are both associated with an increase in the probability of being located in more highly ranked occupations. The impact of education on occupational ranking is stronger in the public sector than in the private sector for both males and females.

The estimates in Table 3 are used to simulate the occupational distribution for females using the male equation estimates to show the occupational redistribution that females would obtain if their attributes were rewarded in the same manner as those of their male counterparts. Table 4 presents this simulation alongside actual male and female distributions. Two segregation indices were reported to compare the effects of the redistribution on occupational segregation. Both measure the degree of segregation and range from 0 to 1 (Brown, Moon and Zoloth, 1980). A zero value indicates equal proportions of men and women in each occupation, while a value of one reflects total segregation of the sexes. The Duncan dissimilarity index represents the proportion of either men or women who would have to be transferred from one occupation to another in order to obtain equal proportions across all occupations. The segregation index is a measure of association between occupation and sex, with a higher degree of association indicating segregation by sex across occupations.

These results can be used to decompose the gender differentials by incorporating the behavioural model of occupational status as presented in Table 5. Gender-based discrimination is actually lowest in the government. Most of the gender gap in the government (93%) is justifiable in terms of productivity related differences that favour men. The actual level of intra-occupational pay discrimination is low, around 5% of female wages. Occupational segregation actually works in favour of female wages in the government.

Table 3: Estimation of the Ordered Model of Occupational Attainment

Variable	MALES			FEMALES		
	Govern.	**Public en.**	**Private**	**Govern.**	**Public en.**	**Priva-te**
Experience	0.049	0.044	0.052	-0.014	0.055	0.054
Experience2	-0.0003	-0.0003	-0.0004	0.0015	-0.0005	-0.0003
Educational level						
Primary School	1.378	0.579	0.218	1.643	0.168	0.704
Preparatory School	2.539	1.519	0.757	2.746	1.024	0.319
Secondary School	3.836	3.016	2.177	3.250	3.348	1.798
Two Year College	3.906	3.208	2.491	3.724	3.721	2.250
University	6.755	5.735	4.390	6.384	6.463	3.860
Region						
Lower Egypt	-0.064	0.313	0.277	-1.272	0.013	0.193
Upper Egypt	-0.045	0.224	0.132	0.174	0.952	0.072
Ancillary Parameters						
First Separation Point	1.088	-0.588	0.585	-0.588	-1.433	-0.184
Second Separation Point	2.401	2.557	2.015	2.557	2.265	1.880
Third Separation Point	4.175	3.103	2.808	3.100	4.598	2.909
Fourth Separation Point	5.412	4.616	3.763	4.620	4.929	3.474
Fifth Separation Point	8.901	7.342	6.238	7.340	8.999	6.650
Log Likelihood	**-1086.27**	**-2329.36**	**-2496.29**	**-384.19**	**-291.85**	**-634.44**
Sample Size	**1391**	**3541**	**2403**	**697**	**529**	**631**

Source: CAPMAS, 1990 Establishment Survey.

Notes: The dependent variable is occupational / job group ordered in an ascending order by average wage. The ancillary parameters are the various separation points (threshold levels) in the ordered probit model.

Table 4: Predicted and Actual Occupational Distributions

Job Group	Managerial	Specialized	Technical	Clerical	Skilled Manual	Unskilled Manual	Duncan's Index of dissimilarity v's actual male	Segregation index v's acutal male
	A. Government							
Actual Distributions								
Male (P^m)	0.02	0.33	0.16	0.22	0.13	0.14		
Female (P^f)	0.00	0.34	0.06	0.57	0.04	0.03	0.34	0.21
Predicted Female Distribution Using Male Coeficients	0.02	0.35	0.28	0.29	0.04	0.03	0.20	0.09
	B. Public Enterprise							
Actual Distributions								
Male (P^m)	0.02	0.20	0.14	0.14	0.38	0.13		
Female (P^f)	0.01	0.31	0.05	0.44	0.17	0.02	0.41	0.24
Predicted Female Distribution Using Male Coeficients	0.03	0.26	0.30	0.10	0.29	0.02	0.22	0.13
	C. Private							
Actual Distributions								
Male (P^m)	0.05	0.27	0.16	0.11	0.30	0.12		
Female (P^f)	0.00	0.24	0.10	0.17	0.43	0.05	0.20	0.10
Predicted Female Distribution Using Male Coeficients	0.05	0.31	0.13	0.13	0.16	0.24	0.17	0.03

Source: CAPMAS, 1990 Establishment Survey.

Note: Duncan's Index of Dissimilarity = 0.5 S $|P_{mi} - P_{wi}|$ where P_{mi} and P_{wi} are the proportion of females and males respectively in the i^{th} job group. Segregation Index = S $T_i (P_i - P)^2/TP(1-P)$ where P_i is the proportion of females and Ti is the total number in the i^{th} job group.

Table 5: Intra-occupational-Inter-occupational Decomposition of Gender Wage Gaps

Total Gender Gap (log hourly wage)	**Government**	**Public Enterprise**	**Private**
	0.15	0.09	0.75
Intra Occupational	0.19	0.13	0.44
Justified	0.14	0.06	0.05
Discrimination	0.05	0.07	0.39
Inter Occupational	-0.04	-0.04	0.32
Justified	0.00	-0.11	0.02
Segregation	-0.04	0.07	0.30
Proportion of Total Gap			
Justified Intra Occupational	0.91	0.63	0.06
Justified Inter Occupational	0.02	-1.16	0.03
Intra Occupational Discrimination	0.33	0.74	0.52
Inter Occupational Segregation	-0.26	0.78	0.40
Unjustified Component as Proportion of Total Gap	0.07	1.52	0.92
Percent of Female Hourly Wage			
(1) Justified Intra Occupational	14.5%	6.0%	4.8%
(2) Justified Inter Occupational	0.3%	-10.1%	2.0%
(3) Intra Occupational Discrimination	5.1%	7.1%	47.4%
(4) Inter Occupational Segregation	-3.8%	7.5%	34.7%
Unjustified Component as % of Female Hourly Wage (3+4)	1.3%	14.6%	82.1%

Source: Author Calculation based on 1990 Establishment Survey.

In the public enterprise sector, the unjustified component of the gender gap is higher than in the government (115% of female wages) and almost equally divided between intra-occupational and inter-occupational factors that work in favor of men. In the private sector, where the highest incidence of gender-based discrimination occurs, a very small proportion of the gender gap is justifiable (9%). The rest is due to the two forms of pay discrimination, with pay discrimination amounting for 47.4% and segregation for 34.7% of female wages.

These estimates are quite high by international standards as pay discrimination ranges between 14-36% in the private sectors in industrialized countries. It is estimated to be in the range of 9-28% in Costa Rica. Occupational segregation was less than 3% of the total unexplained gender gap in Costa Rica and 7% in the U.K. (Miller, 1987 and Gindling, 1992).

5 Conclusion

This paper uses data from a unique data set collected prior to the onset of large scale privatization of public enterprises in Egypt to estimate gender-based differentials between and within the public and private sector labour markets in Egypt. Earnings functions estimates and standard decomposition techniques confirm that that the component of the gender pay that is roughly attributable to gender-based pay discrimination is small in the public sector. In contrast, it is quite high by international comparisons in the private sector (amounting to 39% of female pay) and apparently takes place by paying a pure rent premium to men. The gender gap was further decomposed into components attributable to intra-occupational pay discrimination and inter-occupational segregation. This revealed that the unexplained component in the private sector is even higher (82% of female pay), with a large proportion (34.7% of female pay) attributable to segregation or entry barriers facing females in certain occupations. Inter-

occupational segregation is also substantial in the public enterprise sector but amounts to a smaller percentage of female hourly wages. In the government sector, there is evidence of some small pay discrimination against women within occupations, but inter-occupational segregation in fact works for female pay so that the total unexplained gap is almost non-existent.

Given the favourable treatment of women in the government, it is likely that the burden of privatisation and civil service downsizing may fall disproportionately on women and may negatively affect their already low participation rates unless effort is made to reduce the extent of gender-based discrimination in the private sector. Inter-occupational segregation accounts for a substantial portion of the unexplained gender wage gap in the private sector, therefore anti-discrimination legislation or policy measures should not only be directed at promotion of equal pay within an occupation, but also at promoting a more equal distribution of sexes across the various occupations. As gender integration of occupations is a very slow process that is also shaped by changes in social values, a more immediate policy response to improving opportunities and participation of women in the private sector can be to encourage investment in the more ‘feminised’ types of jobs in which women face less entry barriers.

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