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WAGE DIFFERENCES BY GENDER: EVIDENCE FROM RECENTLY GRADUATED MBAS[†]

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I. INTRODUCTION

It is a well-known fact that in the United Kingdom, male workers earn on average higher wages than female workers (see Chiplin and Sloane (1976), Greenhalgh (1980), Wright and Ermisch (1991), Gregg and Machin (1993), among others). Some of this difference can be attributed to women being employed in lower-wage occupations, rather than differences in pay for workers in identical occupations (see Blau (1996), among others). Furthermore, researchers have found that differences in work history patterns and educational attainment between men and women can explain part of the difference in wages (see Stewart and Greenhalgh (1984), among others). Finally, some researchers have found that treatment within occupation is gender-neutral, but differences in pay occur because of different access to promotion (Jones and Makepeace (1996), Lazear and Rosen (1990)).

As occupational and human capital differences are intrinsically difficult to measure, it is difficult to disentangle the proportion of the wage gap that is due to these differences from the proportion due to other reasons or to discrimination. By using a dataset of relatively homogeneous individuals that includes very detailed information on individual characteristics, we hope to circumvent some of these measurement problems. Specifically, we propose to test for wage differences in a population of individuals with very similar occupations, very similar educational backgrounds, and limited work histories.

This study analyzes outgoing salaries of recent graduates of London Business School (LBS). The individuals have all graduated with a Master's in Business Administration degree from the same business school and are all entering employment at approximately the same level immediately after completing their degree. We focus on differences in starting wages paid to women graduates relative to men graduates who start work in the United Kingdom.

Most previous tests for gender differences in pay in the United Kingdom have been performed either on large economy-wide datasets or on datasets

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from individual firms.[1] In economy-wide datasets, controlling for differences in individual characteristics or occupational differences can be difficult. The concern remains that unobservable educational or experience variables that are correlated with gender and influence wages can bias the estimates. Studies using data from individual firms can lack generality and controlling for individual characteristics can remain difficult. In this study, by using data on individuals with similar backgrounds who are entering different firms at the same level and about which quite a lot is known concerning individual characteristics, we add to the literature on gender differences in pay.

This paper proceeds as follows. In section II we explain our approach to wage differentials and discrimination. In section III we discuss the data. In section IV we present the empirical results and in section V discuss sample selection issues. Section VI interprets our findings and concludes the analysis.

II. WAGE DIFFERENTIALS AND DISCRIMINATION

The starting point for this analysis is that in long-run equilibrium with perfect labour mobility and perfect competition, wages should reflect the characteristics of the worker that influence quality of labour services, along with compensating differentials based on the nature of the work. If one assumes that the potential of men and women was equal at birth, then if men and women are employed in the same occupation and have identical backgrounds and characteristics, wages should be identical. However, if in Becker's terms, an employer has a taste for discrimination against a particular type of employee, he acts 'as if he incurs non-pecuniary, psychic costs of employment by working with them . . .' (Becker, 1957). This taste for discrimination can result in lower wages for the discriminated-against employee.

The approach used in this paper to test for differences in wages is to use a single compensation equation with gender included as a variable.[2] The estimation equation is as follows:

$$\ln salary_i = \alpha + \beta * female_i + \mathbf{characteristics}_i * \gamma + \mathrm{sec}/\mathbf{func}_i * \delta + \mathbf{year}_i * \theta + \varepsilon_i, \quad (1)$$

[1] A notable recent exception is a study by McNabb and Wass (1997) on male-female salary differences in British universities. Exceptions in the US are Rapaport (1995) and Wood, Corcoran, and Courant (1993). Rapaport focuses on teachers in two California public-school districts who are paid according to non-discretionary contracts. Wood, Corcoran, and Courant study pay differences in graduates of the University of Michigan law school, fifteen years after completing their degrees.

[2] A single compensation equation implicitly assumes a supply and demand model for labor from which the reduced form equation can be derived. We do not estimate separate male and female earnings equations as suggested by Oaxaca (1973) and Blinder (1973) primarily because of the size of the dataset, specifically the relatively small number of women in the sample that is used for estimation.

where $salary_i$ is the yearly starting salary of individual i, $female_i$ is a dummy variable equal to one if the individual is female and zero if male, $\mathbf{characteristics}_i$ is a vector of variables representing an individual's characteristics that could influence job performance which are described in detail below, $\text{sec}/\mathbf{func}_i$ is a vector of dummy variables controlling for sector and job functions of individual i (compensating differentials), $\mathbf{year}_i$ is a vector of three year dummy variables representing the year of graduation of individual i, and ε_i is an error term for individual i.

A serious econometric issue with this approach is that some characteristics that influence wages and may be correlated with gender are unobservable. Ideally, one would like to find a variable that is correlated with gender but can be excluded from the wage equations and use it as an instrumental variable for gender. Alternatively, we attempt to include as many characteristics as possible in the compensation equations. The possibility remains, however, that variables that influence wages and are correlated with gender have been excluded, and therefore the results must be interpreted with caution. Below, we describe in detail the data and the explanatory variables used in the wage equations.

III. THE DATA

(i) The Sample

We know about the work a student undertakes after finishing the MBA through survey forms distributed and collected by the Career Management Centre at the LBS. Forms are generally collected before the students leave in early July. Thus, we know their employment situation at a point in time. The forms are occasionally updated if the student receives employment over the summer. However, after August, the forms are not updated further. The response rate for these survey forms is quite good. Over the four years of the sample, 80 percent of the women and 76 percent of the men responded. From the original application forms, we have background information on both respondents and non-respondents. Of the respondents, 72 percent of the women and 82 percent of the men had accepted a job by July or August. The sample is detailed by year in Table 1.

As the primary focus of this paper is to look at discrimination in the UK labour market, from this sample we select those students who accepted positions where they would be working in the UK and be paid in sterling.[3] Our decision to focus on the UK labour market results from a strong interest in measuring wage differences in the UK, and secondly from the difficulty of comparing wages across countries. Of those who accepted jobs, over the four years 1992–1995, 71 percent of the women and 63 percent of the men work in the UK and are paid in sterling. The final sample that we use to

[3]We do not use the few individuals that work in the UK but quote their salary in another currency because it is most likely they are only temporarily placed here.

TABLE 1
Students Graduating from London Business School

	Women					*Men*				
	1992	*1993*	*1994*	*1995*	*Total*	*1992*	*1993*	*1994*	*1995*	*Total*
All students	46	43	37	47	173	132	163	146	127	568
Students with status unknown	16	6	6	7	35	34	29	33	37	133
Students still seeking work	0	19	10	10	39	4	33	21	18	76
Students with post-MBA jobs	30	18	21	30	99	94	101	92	72	359
. . . and working in the UK	21	9	16	24	69	54	63	63	46	226
. . . and reporting salary	18	7	15	24	64	48	60	58	43	209
. . . and reporting pre-MBA salary	17	7	15	22	61	46	59	56	39	200
. . . and with observations on marital status, gmat scores, experience, job locations within England, race, and previous degree	15	5	13	20	53	40	55	51	35	181

examine discrimination is determined by those 234 individuals for whom we have observations on all of the relevant variables.[4] We look in detail at sample selection issues in Section V of this paper.

(ii) Individual Characteristics and Compensating Differentials

For unbiased estimation, all individual characteristics that might influence wage and are correlated with gender must be included as explanatory variables in the estimation equation. A detailed description of the individual characteristics that are included in the regression equation follows.

Marital status, race, and age

Firstly, we control for the marital status of an individual by interacting marital status with gender. A common presumption is that married men may adopt a more ambitious attitude toward work and married women a less ambitious attitude toward work as a result of marital status. Indeed, Greenhalgh (1980) found the unexplained differential between single and married women to be 12 percent (single women are paid 12 percent more than married women), and the unexplained differential between single and married men to be 10 percent (married men are paid 10 percent more than single men). The marital variable is less than a perfect control in that we observe marital status only as individuals enter, and not as they exit, the MBA program.

Secondly, we control for the ethnic origin of an individual by using a dummy variable equal to one if the individual is non-white. Stewart (1983) estimated earnings differentials between non-white and white workers to be between 9 percent and 17 percent, but found that between 75 percent and 100 percent of these differentials could be explained by occupational attainment. We construct the race variable by observing white or non-white by the pictures of applicants that were submitted with the application form. We define non-white as a person who is identifiable through their pictures as black or Asian, and define the remainder of the sample as white.[5] The age variable is the log of the individual's age at the time of graduation. A common preconception by career management advisors is that it is more difficult for older graduates to find jobs upon graduation.

Educational performance

Variables measuring educational performance are the log of the Graduate Management Admission Test (GMAT) score, separated into verbal and quantitative performance, the log of the average grade achieved at London

[4] A few observations are lost to individuals with jobs who returned survey forms but did not fill out the salary question. Most of these individuals either started a new company or returned to a family firm which made it difficult to determine salary. In some cases the respondent indicated that they were still negotiating over the salary. Further observations are lost due to missing observations on explanatory variables.

[5] Stewart (1983) grouped his respondents in essentially the same manner.

Business School, and whether or not the individual has already achieved a masters degree or above upon entry into the school. The rationale for including GMAT scores separated into the verbal and quantitative sections is first, that many employers claim they want quantitatively adept employees; however, as GMAT scores are not known by the employers, it may be difficult to gauge the quantitative ability (other than by previous degree) of the individual. Furthermore, since verbal scores may be correlated with an individual's ability to express himself, these individuals may perform better during the selection and interview process. Since language ability is correlated with GMAT performance, we also include a dummy variable equal to one if English is an individual's first language, and zero if not.

Experience

The log of the number of years of work experience is included as an explanatory variable. Note that all individuals must have at least some post-undergraduate work experience in order to be admitted to LBS.[6] Other measures of the type of experience received prior to entry are a dummy variable equal to one if an individual has previously worked in the UK and zero if otherwise, and a further dummy variable equal to one if an individual has previously worked in London and zero if otherwise. Employers may value international experience or experience of having worked in a very large and cosmopolitan city. In order to distinguish this variable from simple differences in a student's nationality, we also include dummy variables as to whether a student is a UK national, a continental European national, or a USA or Canada national. As a final measure of an individual's characteristics, we include the log of the incoming wage (also referred to as 'previous wage'). This variable may proxy for possible unmeasured individual characteristics that are correlated with wages.

While we do not have information on the quality of work experience prior to entering the MBA programme, there is no evidence that the type of experience differs between men and women. In particular, it is extremely unlikely that women chose jobs that entailed less human capital acquisition in the anticipation of childbearing, given that just a few years later the women in the sample chose to spend approximately £20,000 on the acquisition of human capital in the form of an MBA.[7] Furthermore, by all accounts, all students in the MBA programme are extremely career-oriented.

Table 2 provides summary statistics of all of the included characteristics.

Compensating differentials

Job function, sector of work, and location (London or outside London) are variables that are used as compensating differentials in the type and quality

[6]Of those graduates entering the workforce in the UK, despite the stated policy of LBS, one individual reported zero years of work experience. He was dropped from the sample.

[7]Goldin and Polacheck (1987) argue that women acquire less human capital due to anticipated child-bearing. If women generally have lower human capital, this would also increase the expected wage difference in the population as a whole.

TABLE 2
Summary Statistics

	Women				*Men*			
	1992	*1993*	*1994*	*1995*	*1992*	*1993*	*1994*	*1995*
Out-going salary	36980 (6088)	37800 (5263)	38731 (6978)	41750 (8253)	39019 (11103)	40089 (10025)	40145 (6858)	45723 (10642)
Married	0.267 (0.458)	0.000 (0.000)	0.308 (0.480)	0.050 (0.224)	0.300 (0.464)	0.273 (0.449)	0.255 (0.440)	0.229 (0.426)
Non-white	0.067 (0.258)	0.000 (0.000)	0.077 (0.277)	0.100 (0.308)	0.000 (0.000)	0.091 (0.290)	0.118 (0.325)	0.229 (0.426)
Previous salary	22099 (7398)	22826 (7624)	17277 (10091)	25526 (6453)	25139 (10586)	23858 (9715)	23458 (14405)	23367 (11145)
English as a first language	0.867 (0.352)	1.000 (0.000)	0.769 (0.439)	0.800 (0.410)	0.875 (0.335)	0.855 (0.356)	0.627 (0.488)	0.629 (0.490)
GMAT-Verbal	40.133 (5.423)	38.600 (8.444)	39.077 (5.139)	38.500 (5.277)	39.550 (10.241)	36.800 (5.961)	35.353 (5.885)	35.600 (6.363)
GMAT-Quantitative	39.467 (5.655)	34.000 (6.200)	36.000 (2.944)	38.500 (6.940)	41.600 (10.305)	39.582 (4.775)	41.471 (5.594)	40.971 (5.602)
MBA average grade	72.794 (3.622)	60.586 (6.967)	59.396 (2.589)	66.261 (3.867)	72.966 (3.575)	59.941 (4.485)	58.947 (3.515)	64.933 (4.472)
Master or Ph.D. degree	0.200 (0.414)	0.200 (0.447)	0.077 (0.277)	0.000 (0.000)	0.050 (0.221)	0.091 (0.290)	0.10 (0.30)	0.114 (0.323)

continued overleaf

TABLE 2
(continued)

	Women				*Men*			
	1992	*1993*	*1994*	*1995*	*1992*	*1993*	*1994*	*1995*
Experience	5.489 (2.122)	4.400 (2.510)	3.308 (1.437)	5.050 (2.874)	5.208 (2.660)	4.818 (2.660)	4.373 (2.068)	5.343 (2.838)
Age	30.800 (2.077)	29.600 (2.608)	28.000 (2.449)	29.700 (2.273)	30.225 (2.315)	29.909 (2.824)	29.725 (1.866)	29.914 (2.344)
UK national	0.733 (0.458)	0.400 (0.548)	0.231 (0.439)	0.650 (0.489)	0.675 (0.474)	0.564 (0.501)	0.353 (0.483)	0.343 (0.482)
European national	0.133 (0.352)	0.200 (0.447)	0.308 (0.480)	0.050 (0.224)	0.100 (0.304)	0.091 (0.290)	0.216 (0.415)	0.229 (0.426)
USA or Canada national	0.067 (0.258)	0.400 (0.548)	0.154 (0.276)	0.150 (0.366)	0.100 (0.304)	0.164 (0.373)	0.196 (0.401)	0.143 (0.355)
Previous job in U.K.	0.867 (0.352)	0.800 (0.447)	0.615 (0.506)	0.650 (0.489)	0.725 (0.542)	0.673 (0.474)	0.510 (0.505)	0.514 (0.507)
Previous Job in London	0.667 (0.488)	0.600 (0.548)	0.385 (0.506)	0.450 (0.510)	0.350 (0.483)	0.345 (0.480)	0.235 (0.428)	0.286 (0.458)
Out-going job in London	0.733 (0.458)	1.000 (0.000)	0.538 (0.519)	0.800 (0.410)	0.650 (0.483)	0.636 (0.485)	0.745 (0.440)	0.743 (0.443)
No. of observations	15	5	13	20	40	55	51	35

of work. Overall, it appears as if women and men enter very similar job functions and sectors. The only sectors where differences may be present are consulting and finance. 37 percent of women entered the consulting sector as opposed to 29 percent of men. 31 percent of men entered the financial sector as opposed to 26 percent of women. These are both high-paying sectors. As individuals may have a preference for working in London or outside London (which could be correlated with gender), we felt that it was also important to control for specific location.

IV. EMPIRICAL RESULTS

The ordinary least squares estimates of equation 1 are presented in Table 3.[8] The coefficient on the female dummy variable indicates that when differences in individual characteristics as well as differences in job sector and function are included, female graduates are paid on average 8.6 percent less than male graduates.

In columns 2 through 5, other specifications of the regression equations are presented. In column 2, information on previous salary is excluded from the equations. This specification is performed for two reasons. First, information on previous salaries is often quite rare, and to the extent that this variable proxies for unmeasured characteristics that influence wage and are correlated with gender, this specification is presented to indicate the bias that may be present if previous salaries are excluded from the regression equations. Secondly, the argument could be made that including previous salary actually biases the extent of discrimination downward, in the sense that some discrimination may already be reflected in the incoming salaries. The evidence supports this argument as excluding the previous salary variable increases the coefficient on gender to 9.3 percent.[9]

Blinder (1973) argued that job function and occupation should be excluded from wage equations comparing male and female workers. The basis of the argument was that compensating differentials can be confused with discrimination if one cannot measure the pleasantness of the work. Although this argument should not apply to this sample, we perform the estimations in column 3 excluding job function and sector dummy variables. In this specification, the coefficient on gender decreases to 7.9 percent.

In column 4 we ask the simple question of whether women graduates of London Business School are paid less than male graduates in the same job. The only covariates that are included are year dummies and sector and

[8]The errors in Table 3 are estimated using a heteroskedasticity-consistent covariance matrix estimator, corrected for small sample bias. Davidson and MacKinnon (1993) refer to this estimator as HC_2 (p. 554).

[9]We also tried a variety of specifications in which the log of the incoming salary was used as a dependent variable. In all cases the coefficient on gender was negative but statistically insignificant.

TABLE 3
Compensation Equations
Dependent variable: ln(outgoing salary)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Female	−0.0863	−0.0928	−0.0792	−0.0831	−0.0676
	(0.0386)	(0.0386)	(0.0382)	(0.0373)	(0.0291)
Married male	0.0115	0.0083	−0.0008	−0.0029	
	(0.0323)	(0.0330)	(0.0347)	(0.0355)	
Married female	0.0544	0.0530	0.0260	0.0164	
	(0.0590)	(0.0600)	(0.0662)	(0.0680)	
Non-white	0.0053	−0.0226	0.0048	−0.0221	
	(0.0571)	(0.0576)	(0.0628)	(0.0610)	
ln(previous salary)	0.0461		0.0434		
	(0.0197)		(0.0217)		
English as a	−0.0440	−0.0475	−0.0389	−0.0414	
first language	(0.0449)	(0.0455)	(0.0463)	(0.0461)	
ln(GMAT-verbal)	0.0727	0.0683	0.0575	0.0620	
	(0.0849)	(0.0870)	(0.0863)	(0.0881)	
ln(GMAT-	−0.0787	−0.0883	−0.1387	−0.1505	
quantitative)	(0.1122)	(0.1136)	(0.1120)	(0.1129)	
ln(MBA average	0.2620	0.2610	0.3761	0.3204	
grade)	(0.1974)	(0.2010)	(0.2086)	(0.2109)	
Masters or Ph.D.	0.0555	0.0527	0.0619	0.0581	
degree	(0.0371)	(0.0374)	(0.0403)	(0.0421)	
ln(experience)	0.0589	0.0631	0.0597	0.0593	
	(0.0331)	(0.0353)	(0.0376)	(0.0389)	
ln(age)	−0.3595	−0.3280	−0.3077	−0.2633	
	(0.2141)	(0.2287)	(0.2475)	(0.2537)	
U.K. national	0.0364	0.0480	0.0600	0.0652	
	(0.0474)	(0.0463)	(0.0467)	(0.0465)	
European national	−0.0113	−0.0041	−0.0014	−0.0008	
	(0.0415)	(0.0424)	(0.0466)	(0.0470)	
U.S. or Canada national	0.0760	0.0943	0.1094	0.1178	
	(0.0624)	(0.0619)	(0.0608)	(0.0608)	
Previous job in U.K.	−0.0888	−0.0748	−0.0831	−0.0710	
	(0.0405)	(0.0398)	(0.0411)	(0.0400)	
Previous job in London	0.0399	0.0423	0.0521	0.0559	
	(0.0323)	(0.0326)	(0.0327)	(0.0326)	
Out-going job in	−0.0445	−0.0391	0.0267		
London	(0.0305)	(0.0315)	(0.0278)		
Job and sector	14	14			14
dummies	(5.18)	(4.81)			(5.41)
Year dummies	3	3	3	3	3
	(5.12)	(5.33)	(4.92)	(5.12)	(5.06)
R^2	0.3617	0.3472	0.1657	0.1478	0.2842

Note:
Each regression contains a constant. There are 234 observations in each regression.

function dummies. We find that on average, women are paid 6.8 percent less than men, not controlling for individual ability.

In column 5 we test for simple difference in mean salaries between men and women, conditioning on the year dummies. We find that this difference is not quite significant. The estimated errors indicate a significance level of approximately 7 percent.

Jones and Makepeace (1996) and Lazear and Rosen (1990) argue that it is necessary for females to exhibit higher qualifications than men in order to be chosen for an identical job with an identical salary. The above estimation results are not inconsistent with this assertion. Furthermore, from equation 1 a characteristics component ($\mathbf{characteristics}_i * \gamma$) can be separated from the rest of the salary equation. Using the results from column 1, the point estimates for the characteristics component ($\mathbf{characteristics}_i * \hat{\gamma}$) indicate that the mean female salary should be 2.3 percent more than the male salary (holding gender, sex/func and year constant).[10]

The effects of marital status, race and age on wages are as follows. Neither of the married coefficients is significant. This result is somewhat surprising given the strength of previous results documenting the effect of marriage on wages. This lack of significance may be a result of either marriage not being considered as significant a determinant of performance as it was for previous generations, occupational attainment not being controlled for properly in previous studies (this sample is much more homogeneous), or the result of employers not knowing the marital status of their employees when they are hired. While LBS advises students not to put marital status on their resume, it is possible that employers ascertain marital status during the interview. Finally, as fewer long-term couples marry, marriage may simply be less of an indicator of traditional male-female roles for employers today than marriage was in previous generations.

The variable 'non-white' is insignificant, which may be a result of occupational attainment being the primary factor in discrimination, as was suggested by Stewart (1983). The coefficient on age is negative, which is consistent with the preconceptions of career management advisors, but statistically insignificant (age and experience are also not jointly significant.)

The effects of educational performance on starting wages in this sample appear to be statistically insignificant. Because of the selection process of individuals into business school, these individuals have already exhibited a fairly high level of educational attainment and performance. Though statistically insignificant, the coefficients on grades and previous degree are positive, as would be expected. The coefficient on GMAT verbal is positive, as also would be expected, though somewhat surprisingly the coefficient on GMAT quantitative is negative.

[10]This difference must be interpreted with caution. The estimated coefficients on the characteristics variables are not jointly significant, and the predicted means are also not significantly different from one another.

Previous work experience does appear to enter significantly into the wage equation, though not through the years worked, but rather the location of the previous job. Employers appear to place a premium of about 9 percent on individuals who worked outside the UK prior to entering business school. Finally, the coefficients on nationality are not significant either separately or jointly, indicating that nationality does not appear to affect outgoing wages, once other characteristics have been controlled for.

The job function and sector dummies are jointly significant, as are the year dummy variables. Although the job function and sector dummies do appear to influence wages significantly, they appear to be uncorrelated with gender as their inclusion has no effect on the gender variable.

V. SAMPLE SELECTION

Sample selection is clearly an issue with this study, and at several levels. Firstly, the sample includes only those individuals who have accepted jobs, and completed and returned the questionnaire in full. If women are not only paid less, but are also less likely to be offered a job, then the unexplained differential could be understated. Alternatively, the unexplained differential could be overstated if women are more willing to search and therefore do not return the survey forms by July or August, but end up with higher paying jobs.

It is quite interesting that 40 percent of all men in the sample and 40 percent of all women in the sample reported getting jobs in the UK. However, overall only 13 percent of the men were seeking jobs when the surveys were completed, but 22 percent of the women were seeking jobs. The difference is primarily made up in workers who were employed in other countries. This may indicate that women are less likely to receive jobs overall, yet it does not appear that women are less likely to accept a job in the UK.

In Table 4, we compare the different samples. In both the male and female sample, those students who have jobs have higher grades, higher overall GMAT scores, and are more likely to have a Master's or a PhD degree. This tends to indicate that generally students with better qualifications are more likely to receive jobs early and indicates that it is unlikely that the amount of discrimination is overstated because of willingness to search.

A further sample selection issue can result from the fact that the propensity to return the survey form may be correlated with both salary attained and gender. Furthermore, reported salaries may either be inflated or deflated. While it is difficult to determine whether men or women are more likely to over or under-report, men and women do have very similar response rates (80 percent for women vs. 76 percent for men).

Finally, we have selected a sample of only those graduates accepting a job in the UK. The wage differential for this sample may be different from the wage differential for all graduates if the propensity to work abroad is

TABLE 4
Comparison of Summary Statistics between Samples

	Women				*Men*			
	employed in UK[b]	*employed elsewhere*	*still seeking work*	*no response*	*employed in UK*	*employed elsewhere*	*still seeking work*	*no response*
Out-going salary[a]	37905 (6595)	41957 (11117)			38997 (9108)	41723 (15093)		
Married	0.154 (0.364)	0.310 (0.471)	0.158 (0.370)	0.147 (0.359)	0.264 (0.442)	0.336 (0.474)	0.263 (0.443)	0.168 (0.375)
Non-white	0.091 (0.290)	0.179 (0.390)	0.162 (0.374)	0.300 (0.466)	0.108 (0.311)	0.315 (0.466)	0.183 (0.390)	0.364 (0.483)
Previous salary[a]	23339 (8383)	22087 (14160)	25798 (17080)	20412 (12791)	25179 (12067)	24188 (14644)	23772 (14098)	26019 (18193)
English as a first language	0.812 (0.394)	0.533 (0.507)	0.590 (0.498)	0.600 (0.497)	0.757 (0.430)	0.459 (0.500)	0.618 (0.489)	0.353 (0.480)
GMAT-Verbal	39.130 (5.428)	35.800 (6.733)	34.846 (8.071)	35.057 (6.226)	36.606 (7.625)	33.647 (9.406)	34.434 (6.646)	33.489 (8.036)
GMAT-Quantitative	37.623 (6.105)	38.600 (5.475)	36.385 (8.032)	38.057 (5.841)	40.681 (7.030)	41.105 (8.558)	41.145 (5.296)	40.346 (9.034)

continued overleaf

TABLE 4
(continued)

	Women				*Men*			
	employed in UK[b]	*employed elsewhere*	*still seeking work*	*no response*	*employed in UK*	*employed elsewhere*	*still seeking work*	*no response*
MBA average grade	65.697 (6.493)	63.938 (6.443)	60.597 (3.702)	61.981 (8.886)	63.803 (6.793)	63.489 (6.376)	60.835 (4.905)	61.477 (8.955)
Master or Ph.D. degree	0.101 (0.304)	0.067 (0.254)	0.077 (0.270)	0.029 (0.169)	0.111 (0.314)	0.135 (0.343)	0.079 (0.271)	0.098 (0.298)
Experience	4.867 (2.335)	4.289 (2.338)	3.949 (2.051)	4.783 (2.957)	4.831 (2.418)	4.440 (2.300)	4.908 (2.494)	5.144 (2.450)
Age	29.870 (2.502)	29.933 (3.107)	28.821 (2.187)	30.114 (3.027)	29.854 (2.281)	29.962 (2.398)	30.316 (2.758)	30.316 (2.764)
UK national	0.493 (0.504)	0.200 (0.407)	0.154 (0.366)	0.229 (0.426)	0.487 (0.501)	0.128 (0.335)	0.263 (0.443)	0.218 (0.414)
European national	0.130 (0.339)	0.133 (0.346)	0.231 (0.427)	0.143 (0.355)	0.146 (0.354)	0.180 (0.386)	0.158 (0.367)	0.135 (0.343)
USA or Canada national	0.232 (0.425)	0.233 (0.430)	0.333 (0.478)	0.229 (0.426)	0.150 (0.358)	0.165 (0.373)	0.303 (0.462)	0.188 (0.392)

Previous job in UK	0.652 (0.480)	0.300 (0.466)	0.333 (0.478)	0.457 (0.505)	0.580 (0.495)	0.301 (0.460)	0.461 (0.502)	0.346 (0.477)
Previous job in London	0.441 (0.500)	0.100 (0.305)	0.282 (0.456)	0.294 (0.462)	0.288 (0.454)	0.129 (0.336)	0.224 (0.419)	0.143 (0.351)
Out-going job in London	0.788 (0.412)	0.08[a] (0.277)			0.682 (0.467)	0.0385[a] (0.193)		
Observations	69	30	39	35	226	133	76	133
percent of total male sample					0.398	0.234	0.134	0.234
percent of total female sample	0.399	0.173	0.225	0.202				

[a]All outgoing and incoming salaries are deflated to 1992 levels.

[b]In the dataset, we define an individual as employed in the UK if they are both placed in the UK and paid in sterling. Hence a small number of individuals who are working in the UK but are not paid in sterling are included in the employed elsewhere sample.

correlated with ability and the propensity to work abroad is more highly correlated with ability for one sex than another. In particular, if women with higher ability go abroad leaving behind less able women relative to the male sample, even if the sample was identical to begin with, this could result in ability differences driving the results. However, from the summary statistics in Table 4, there appears to be very little differences in observable ability between men and women in the selected sample. Indeed, as discussed above, when measures of characteristics affecting ability are included in the regressions, this tends to increase rather than decrease the wage differentials.

VI. INTERPRETATION AND CONCLUSION

In this paper we find the unexplained differential in outgoing salaries of women and men graduates of London Business School to be about 8.6 percent. It is interesting to compare this difference with differences found in other recent studies conducted in the UK.

Wright and Ermisch (1991), using data collected in the *1980 Women and Employment Survey*, find that women's pay would be about 20 percent higher in the absence of discrimination. Gregg and Machin (1993), using data from the National Management Salary Surveys conducted from 1989 to 1992, find the unexplained differential between male and female executives to be on average 6–8 percent. Hence, our estimates appear low in relation to Wright and Ermisch's earlier study, but are similar to the results of Gregg and Machin's study using data from 1989 to 1992.

Several explanations can be explored as to why the differentials might be occurring. First, as women are on average 30 years of age upon graduation, employers are likely to be very concerned about the possibility of women taking maternity leave. Maternity leave can be expensive for firms both in terms of wage costs and in terms of other costs that are difficult to measure, such as losing an employee with firm-specific skills while that employee is on leave.[11]

Employers could alternatively be making a present value calculation based simply on the perception (whether true or not) that in the future, because of child-bearing and family responsibilities, women graduates will be less committed to their work than male graduates. Just as Goldin and Polachek (1987) argue that women acquire less human capital due to anticipated child-bearing, perhaps firms are less willing to invest in women due to anticipated child-bearing.

While employers may fear less commitment from women who have children, one study has shown that actual child-bearing does not explain

[11] Statutory maternity pay in the UK is 90 percent of earnings for the first 6 weeks, and then £54.55 for the remaining weeks, up to a further twelve weeks. Of this amount, 92% is recoverable for most employers. However, many employers offer 18 weeks of maternity leave at full pay, bearing a large amount of the cost themselves.

wage differences in all situations. Wood, Corcoran and Courant (1993) study the salaries of men and women graduates of the University of Michigan Law School, 15 years after graduation. The women in the sample were all at least 40 years of age and 40 percent of the women were childless and likely to remain so. Women with children earned no less than women without children, and women earned only 60 percent as much as men.

An alternative explanation involves the bargaining power of men in relation to women. As the final wage is often arrived at after bargaining between the employer and the graduate, male behaviour may indicate that men are better at claiming value in a bargaining situation than women. In the past, there have been numerous studies researching male behaviour in relation to female behaviour in a bargaining situation. While the results are mixed, Rubin and Brown (1975, p. 173) conclude that 'Women ... are highly sensitive and reactive to the interpersonal aspects of their relationship with the other. Males ... orient themselves not to the other, but to the impersonal task of maximizing their own earnings'. These different orientations can result in better negotiated outcomes for men than women. Women may also be less mobile on account of personal or family circumstances, which may weaken their bargaining position.

Finally, one must consider a Becker-type taste for discrimination to be a factor in driving the wage differences. Working with members of a specific gender, as well as profits, may enter an employer's utility function, resulting in different wages for women and men. As most employers recruiting MBAs are managers rather than owners, in accordance with principal-agent theory, these managers may be less concerned with profits than would actual owners and more likely to allow 'a taste for discrimination' to enter their utility functions. Current managers in male-dominated corporations may simply prefer associating with men, resulting in different hiring practices based on gender. Discrimination against women by even a very small minority of firms could lead to women having fewer alternatives (or alternatives at lower pay) than men, resulting in less bargaining power in a negotiation situation.

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REFERENCES

Blinder, A. S. (1973). 'Wage Discrimination: Reduced Form and Structural Estimates', *Journal of Human Resources*, Vol. 8, pp. 436–55.

Becker, G. S. (1957). *The Economics of Discrimination*, The University of Chicago Press, Chicago.

Blau, F. (1996). 'Where are we in the Economics of Gender? The Gender Pay Gap', NBER Working Paper No. 5664.
Chiplin, B. and Sloane, P. J. (1976). 'Personal Characteristics and Sex Differentials in professional Employment', *Economic Journal*, Vol. 86, pp. 729–45.
Davidson, R. and MacKinnon, J. (1993). *Estimation and Inference in Econometrics*. Oxford University Press, New York.
Goldin, C. and Polachek, S. (1987). 'Residual Differences by Sex: Perspectives on the Gender Gap in Earnings', *American Economic Review*, Vol. 77, pp. 143–51.
Greenhalgh, C. A. (1980). 'Male-Female Wage Differentials in Great Britain: Is Marriage an Equal Opportunity?', *Economic Journal*, Vol. 90, pp. 751–55.
Gregg, P. and Machin, S. (1993). 'Is the Glass Ceiling Cracking?: Gender Compensation Differentials and Access to Promotion Among UK Executives', UCL Discussion Papers in Economics No. 94-05.
Jones, D. R. and Makepeace, G. H. (1996). 'Equal Worth, Equal Opportunities: Pay and Promotion in an Internal Labour Market', *Economic Journal*, Vol. 106, pp. 401–9.
Lazear, E. and Rosen, S. (1990). 'Male-Female Wage Differentials in Job Ladders', *Journal of Labor Economics*, Vol. 8, pp. 106–23.
McNabb, R. and Wass, V. (1997). 'Male-Female Salary Differentials in British Universities', *Oxford Economic Papers*, Vol. 49, pp. 328–43.
Rapaport, C. (1995). 'Apparent Wage Discrimination When Wages are Determined by Nondiscriminatory Contracts', *American Economic Review*, Vol. 85, pp. 1263–77.
Rubin, J. Z. and Brown, B. R. (1975). *The Social Psychology of Bargaining and Negotiation*, Academic Press, New York.
Stewart, M. and Greenhalgh, C. (1984). 'Work History Patterns and the Occupational Attainment of Women', *Economic Journal*, Vol. 94, pp. 493–519.
Stewart, M. (1983). 'Racial Discrimination and Occupational Attainment in Britain', *Economic Journal*, Vol. 93, pp. 521–41.
Wood, R., Corcoran, M. and Courant, P. (1993). 'Pay Differences among the Highly Paid: The Male-Female Earnings Gap in Lawyers' Salaries', *Journal of Labor Economics*, Vol. 11, pp. 417–41.
Wright, R. E. and Ermisch, J. F. (1991). 'Gender Discrimination in the British Labour Market: A Reassessment', *Economic Journal*, Vol. 101, pp. 508–22.