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Gene Swimmer

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Article abstract

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This paper aims at empirically addressing the issue of whether promotions of female clerical employees are less likely, when educational and other qualifications are held constant.

Since the early 1970's, the issue of employment discrimination against women has been in the forefront of government policy at the federal and provincial level. Although discrimination can occur with regard to hiring, compensation or opportunities subsequent to hiring, this paper focusses on possible barriers to promotion. In 1983, the Government of Canada instituted a mandatory program of affirmative action aimed at increasing the representation of women (as well as other disadvantaged groups) in the upper echelons of the public service. The Province of Ontario established a program of numerical targets for women in its civil service in 1980 (Agocs, 1986).

Affirmative Action programs have come under attack for instituting defacto quotas for various groups, which amount to «compensatory discrimination». Critics charge that the unequal achievement by a group (i.e. women) is not necessarily evidence of discrimination against that group (Winn, 1985; Block and Walker, 1982). Rather than being the result of intentional or unintentional barriers to employment, female achievement may be caused by lower qualifications and/or different tastes. Even if these inferior credentials resulted from discrimination in education or family responsibilities, it would be unfair to penalize an employer for society's failures. In addition, it has been alleged that affirmative action programs for women are really aimed at the middle and upper class and, as such, may actually worsen the income distribution.

* SWIMMER, G., School of Public Administration, Carleton University, Ottawa, Ontario.

The purpose of this paper is to empirically address the issue of whether promotions of female clerical employees are less likely, when educational and other qualifications are held constant. Despite its obvious empirical importance, there have been relatively few studies which have gone beyond comparing average promotion rates by gender. Using data from a sample of U.S. firms, Olson and Becker (1983) found that the likelihood of a female being promoted was significantly lower than for a male with the same measurable qualities. Cannings (1988) found a similar result with respect to managerial promotions for a Canadian private sector employer. This study draws upon a particularly rich data set for public sector clerical employees, which tracks promotions over a three year period.

The next section develops a model for the probability of promotion. The data set is then described and the model is estimated. The paper concludes with a discussion of results.

THE MODEL

Generally speaking, employers will promote the individual in a specific job competition, whose expected future productivity in the job is highest[1]. Therefore, an individual's probability of promotion in a specific time period [P(Prom)] should be an increasing function of expected productivity [E(Prod)] and the number of competitions applied for [Ncomp]. In the extreme, a person who does not apply for promotions has zero probability of promotion. Even among those who apply, as the frequency of participation in promotion competitions increases, the probability of being the applicant with the highest expected productivity ought to increase:

$$P(Prom)_i = f\,[E(Prod)_i, Ncomp_i]$$

Expected productivity is a function of a vector of measurable qualifications such as education and experience (X) and non-measurable qualifications such as innate ability and job specific training (u):

$$P(Prom)_i = g\,[X_i, u_i, Ncomp_i]$$

Now suppose that the employer discriminates against females, either intentionally or through systemic barriers. In other words, the expected productivity of a female must be greater by an amount D, than an otherwise identical male, to obtain the promotion. This could reduce the probability

1 This model is based on Olson and Becker (1983), pp. 627-629.

of females being promoted directly, and reduce the willingness of females to apply for competitions, indirectly reducing the probability of promotion for women[2]:

$$P(Prom)_i = g\ [X_i, D, u_i, Ncomp_i]$$

Lower observed promotion probabilities for female clerks can result from discrimination and/or lower values of u_i. Although it is possible that females, on average, have fewer non-measurable qualifications than males (i.e. less ability, or specific training), it is not particularly likely. Assuming the ability pool is normally distributed, there is no reason to believe that the average male clerk has greater intelligence than his female counterpart. The reverse is more plausible. If women previously faced discrimination in obtaining jobs above the clerical level, then the average intelligence of existing male clerks would probably be lower than that of females, because brighter males were promoted. In addition, it is difficult to imagine that specific training varies greatly among the clerical jobs included. Although the sources of lower female promotion rates cannot be determined definitively, this specific data set provides a large number of measurable employee characteristics including an evaluation of past work performance, leaving non-measurable qualifications at a minimum.

DESCRIPTION OF THE DATA

The data are drawn from a large public employer and cover the period of the earlier 1980's. Employer records were supplemented by a questionnaire sent to all employees (the overall response rate was almost 75%). The time frame for the dependent variable (whether one was promoted) and many of the explanatory variables (i.e. the number of promotions applied for) was the preceding three year period. Workers who did not apply for promotions in the period, automatically have a zero probability of promotion. For these reasons, only clerical employees who worked at least three years for this employer and applied for a promotion during the period were

2 Thirty one percent of the females in the sample did not apply for a promotion competition during the period, compared to only 25% of males. The lower application for females could also result from child bearing and their traditionally greater home work and child rearing responsibilities. All of these factors could reduce female motivation for promotions. See Winn, 1985, pp. 34-35.

included in the sample[3]. Finally, given this study's focus on possible gender-based discrimination, self identified disabled or native employees were excluded. Despite these restrictions, 1085 complete observations remained for analysis.

Based on employer records, it was possible to distinguish promotions from one clerical job to another from promotions which involved a jump from the clerical ranks into administrative occupations. As Table 1 indicates, promotions of the latter variety were substantially less frequent for both sexes. Thirty seven percent of males received a promotion in the previous three years, but only 13% were promoted out of the clerical ranks. The performance of female clerks (who make up about 70% of the sample) was quite different. Forty two percent of the females received a promotion of some kind, but only 9% were promoted to the administrative ranks. Therefore, the model will be run for two dependent variables: probability of any promotion, and probability of promotion out of the clerical ranks. This division is important, because it is possible that women received promotions within the clerical ranks as often as men, but were stereotyped as not being «administrator material». The regressions will be estimated using logit analysis (rather than ordinary least squares), because the dependent variables are dichotomous.

Table 1 also lists the set of personal characteristics and quality measures available for use as explanatory variables (means or proportions for males and females are also presented). Some of these variables were determined before the promotion time period, such as gender and prior work experience, so the line of causality from these variables to promotion probabilities is clear cut (if one exists). Other characteristics, such as education in progress, performance appraisal and in-house courses taken could change contemporaneously with promotions. As a result, the correlation of some variables with the promotion probability does not imply a straightforward causal relationship. For example, employees with excellent performance appraisals may simultaneously have had higher probabilities of being promoted *and* receiving in-house training (which could further enhance promotability). Our primary purpose is not to establish the exact determinants of promotion, but rather to hold as many measurable factors potentially related to promotion constant. In that way, non-measurable differences are minimized and as close to the pure gender effect can be obtained.

3 By eliminating individuals who never applied for promotion competitions, the possibility of 'self-selection bias' has been reduced (i.e. that those who do not apply are inferior in measurable and non-measurable qualities). Regressions were run including all employees with at least three years tenure, whether or not they were competition applicants. Results were quite similar to those presented in Table 2 and are available from the author. A simultaneous model of application choice and the probability of promotion was beyond the scope of this paper. For a discussion of the statistical problem see, Heckman (1979).

Table 1

Description and Summary Statistics of Variables

Variable Name	*Description*	*Mean or Proportion*	
		Males	*Females*
PROBPROM	Probability of any promotion in the period (1 = promotion, 0 = otherwise)	0,37	0,42
PRMJPROM	Probability of promotion to administrative rank in period (1 = promotion, 0 = otherwise)	0,13	0,09
EXPEREMP	Years of experience with employer	9,02	7,17*
EXPEROTH	Years of other work experience	3,85	4,06
NAPLCOMP	Number of promotion competitions applied for in period	3,23	2,77*
NACTPOS	Number of acting positions held in period	0,24	0,26
SCHOOLYR	Years of schooling	11,95	11,76*
NONUNDIP	1 = holds college or other non-university diploma, 0 = otherwise	0,23	0,30*
UNIVDEG	1 = holds university degree, 0 = otherwise	0,09	0,07
BUSSPEC	1 = college or non-univ. specialty in business, 0 = otherwise	0,01	0,06*
COMPSPEC	1 = college of non-univ. specialty in computers, 0 = otherwise	0,05	0,03
BSUNSPEC	1 = university specialty in business, 0 = otherwise	0,02	0,01
EDINPROG	1 = part-time education in progress, 0 = otherwise	0,16	0,14
NCOLCOUR	Number of part-time college/non-univ. courses taken in period	0,49	0,29*
NUNICOUR	Number of part-time university courses taken in period	0,22	0,14
NINHCOUR	Number of in-house courses taken in period	1,15	1,04
PERATE	Average of last two performance appraisals (five point scale)	2,59	2,81*
BILING	Bilingual proficiency index (three point scale)	1,28	1,24
MARITAL	1 = currently married, 0 = otherwise	0,63	0,60
CHILDREN	1 = have children, 0 = otherwise	0,49	0,46
FRANCOPH	1 = francophone mother tongue, 0 = otherwise	0,47	0,42
FEMALE	1 = female, 0 = male	—	—

* Significant difference in mean and/or proportion for a two-tail test at the 5% level.

A few descriptive statistics concerning personal characteristics are worth noting. With respect to average measurable qualities, there were few significant differences. Males had more experience with this employer (9 vs. 7,7 years) but slightly less work experience elsewhere (3,8 vs. 4,1 years). Average years of schooling were virtually equal for both groups (at 12 years), although men were significantly less likely to hold post secondary (non-university) diplomas (23% vs. 30%) and slightly more likely to hold university degrees (9% vs. 7%). Finally, females obtained higher performance appraisal ratings (2,8 vs. 2,6), but nonetheless applied for fewer job competitions (2,8 vs. 3,2 applications). In summary, there seem to be few differences in the average quality of male and female clerks, but average clerical employees were not promoted into administrative occupations. The regression results must be relied upon to identify any gender based differences in promotion.

EMPIRICAL RESULTS

Table 2 summarizes the logistic regression estimates for the probability of any promotion and the probability of promotion into the administrative ranks. For each dependent variable the model has been estimated three times: with all observations and a dichotomous variable for gender, and with separate regressions for males and females.

We begin with a discussion of the regressions which included the entire sample (columns 1 and 4 of Table 2). Females were at least as likely to receive a promotion in the three year period as males (the coefficient was positive but insignificant), *cet. par.*, but were significantly less likely to be promoted into administration. Taking the antilog of the regression coefficient for 'FEMALE', indicates that a female with mean values for qualifications had a probability of a major promotion ,03 less than an equally qualified male. To put this difference in context, one must remember that such promotions were a rare occurrence: only 10% of clerks were promoted into the administrative ranks.

Overall, the total sample regressions perform reasonably well. For both the 'all promotion' and 'major promotion' equations, the proportion of the dependent variable variation explained by the predicted values is 20 percent. External experience, acting positions, years of schooling, the numbers of post secondary and in-house courses, possessing a university business degree, performance appraisal and bilingual ability ratings were all significant indicators of success with respect to 'major promotions'. The significant correlates of success for 'all promotions' were acting positions, in-house courses and bilingual ability. Surprisingly, the 'all promotions'

Table 2

Regression Results for the Probability of Promotion

Independent Variable	*All Promotions = D.V. Regression Coefficient*			*Promotions to Admn. = D.V. Regression Coefficient*		
	All Cases	*Males*	*Females*	*All Cases*	*Males*	*Females*
CONSTANT	-0,644	-4,346	-0,023	-12,665	-21,391	-12,554
	(-0,53)	(-1,51)	(-0,02)	(-5,01)*	(-3,33)*	(-4,33)*
EXPEREMP	-0,211	-0,249	-0,207	0,119	-0,009	0,221
	(-4,66)*	(-3,10)*	(-3,50)*	(1,55)	(-0,06)	(2,20)*
EXPEREMP SQ.	0,005	0,005	0,005	-0,002	0,003	-0,006
	(3,03)*	(2,29)*	(2,23)*	(-0,78)	(0,62)	(-1,53)
EXPEROTH	0,023	0,078	-0,000	0,239	0,430	0,217
	(0,67)	(1,01)	(-0,00)	(3,11)*	(2,24)*	(2,31)*
EXPEROTH SQ.	-0,001	-0,005	0,000	-0,012	-0,024	-0,010
	(-0,90)	(-1,35)	(0,17)	(-2,53)*	(-1,98)*	(-1,80)
NAPLCOMP	-0,015	-0,023	-0,031	-0,090	-0,224	-0,056
	(-0,35)	(-0,25)	(-0,58)	(-1,14)	(-1,36)	(-0,56)
NACTPOS	1,099	1,153	1,168	0,916	1,515	0,784
	(7,05)*	(3,89)*	(6,07)*	(4,23)*	(3,62)*	(2,73)*
SCHOOLYR	0,094	0,292	0,088	0,541	0,949	0,545
	(1,09)	(1,42)	(0,89)	(3,01)*	(2,17)*	(2,55)*
NONUNDIP	0,043	-0,527	0,104	-0,001	0,855	-0,093
	(0,24)	(-1,08)	(0,52)	(-0,00)	(1,03)	(-0,25)
UNIVDEG	0,249	-0,026	0,316	0,307	-0,281	0,509
	(0,91)	(-0,05)	(0,95)	(0,79)	(-0,37)	(1,00)
BUSSPEC	-0,02	0,275	0,010	-0,291	-1,750	-0,246
	(-0,07)	(0,46)	(0,03)	(-0,54)	(-1,44)	(-0,35)
COMPSPEC	-0,414	0,478	-0,722	-0,114	-2,919	0,156
	(-0,99)	(0,61)	(-1,37)	(-0,15)	(-1,69)	(0,17)
BSUNSPEC	0,340	1,407	-0,198	1,705	4,554	1,245
	(0,54)	(1,25)	(-0,25)	(2,13)*	(3,06)*	(1,35)
EDINPROG	0,154	0,383	0,141	0,425	0,571	0,632
	(0,69)	(0,86)	(0,53)	(1,26)	(0,84)	(1,55)
NCOLCOUR	0,028	0,074	-0,027	0,193	0,082	0,243
	(0,42)	(0,68)	(-0,29)	(2,30)*	(0,50)	(2,18)*
NUNICOUR	0,091	0,147	0,051	0,229	0,627	0,107
	(0,97)	(0,91)	(0,44)	(1,96)*	(2,56)*	(0,74)
NINHCOUR	0,137	0,085	0,183	0,183	0,227	0,162
	(3,23)*	(1,07)	(3,51)*	(3,10)*	(1,95)	(2,18)*
PERATE	0,063	0,271	0,009	0,547	1,348	0,210
	(0,49)	(1,11)	(0,06)	(2,50)*	(2,96)*	(0,76)
BILING	0,491	0,774	0,373	1,221	2,036	1,178
	(2,70)*	(2,14)*	(1,70)	(4,10)*	(2,99)*	(3,17)*
MARITAL	0,286	0,874	0,232	0,242	1,409	-0,001
	(1,86)	(2,23)*	(1,32)	(0,89)	(2,01)*	(-0,00)
CHILDREN	-0,122	-0,731	0,029	-0,182	-0,499	-0,147
	(-0,80)	(-1,99)*	(0,16)	(-0,70)	(-0,84)	(-0,47)
FRANCOPH	-0,416	-0,903	-0,242	-0,548	-1,818	-0,214
	(-2,23)*	(-2,37)*	(-1,09)	(-1,44)	(-2,32)*	(-0,45)
FEMALE	0,165	-----	-----	-0,528	-----	-----
	(1,03)			(-2,03)*		
N	1085	309	776	1085	309	776
R SQ.**	0,20	0,19	0,18	0,20	0,40	0,20
CHI SQ	191,94	64,22	147,41	175,78	94,36	111,08
DF ***	27	26	26	27	26	26

T -value in parenthesis.

* Regression coefficient is significant for a two-tail test at the 5% level.

** R Square between the actual and predicted values of the dependent variables.

*** Five locational dummy variables were also included in the regression. The coefficients are not reported to maintain confidentiality.

regression indicates that increasing internal experience was a significant detriment to promotion, while external experience, performance appraisal ratings and all education variables were generally unrelated with promotion probabilities. These results suggest that many «promotions» occurring in this period were movements from junior to working levels in clerical jobs where promotion early in one's career is the rule, not the exception. Finally, contrary to expectations, the number of promotion competitions applied for was unrelated to the chances of success in major promotions and promotions generally[4].

The estimates in columns 1 and 4, only allow for a constant shift in the promotion probability by gender, while the separate regressions by sex allow for differences in slopes among the independent variables. There were no significant differences in the set of coefficients for the male vs. the female equations for the probability of any promotion (columns 2 and 3), based on an F test[5]. However, there were significant differences in the structure of the two equations for the probability of a major promotion (columns 5 and 6)[6].

For that reason, the predicted probabilities of a 'major promotion' were calculated for each individual, using the male and female equations. These average probabilities are summarized in Table 3. There is strong evidence that men and women were judged in different ways, with respect to promotions out of the clerical ranks. If females were subject to the major promotion equation for males, their average predicted probability of promotion would have been ,16, rather than its actual average (which is equal to the average prediction under the female equation) of ,09. Likewise, the average male in the sample would have had only a ,10 average chance of promotion, if subjected to the criteria implied by the female equation, rather than their actual average probability of ,13. A related finding is that the set of independent variables 'explains' 40% of the variation in the dependent variable for the male equation, while the same set of variables only 'explains' 20% of the variation in the female probability of promotion.

4 The number of competitions applied for is significantly related to promotion probabilities for the entire sample, including those clerks with no applications. This result is tautological, because one cannot be promoted, even from the junior to the working level, without a formal application.

5 The F tests were calculated by comparing the residual sum of squares for ordinary least squares regressions using the actual dichotomous promotion variable as the dependent and the predicted promotion probability from the logit equation as the independent variable. The calculated F = ,76 for 27,1031 degrees of freedom (based on the logit equation), which was far below the critical value, F = 1,36, at the 10% significance.

6 The calculated value of F = 4,34 with 27,1031 degrees of freedom. The critical value for F = 1,75, at the 1% significance level.

One can infer that females were not subject to the same quantifiable measures of merit as men, when major promotions were concerned. Whether female promotions were based more on non-measurable indices of merit than males, or were inherently more arbitrary decisions, cannot be determined.

Table 3

Average Predicted Probabilities of Promotion to the Administrative Ranks

Sample	*Male Equation*	*Female Equation*	*Difference (Male Eq. — Female Eq.)*
Males	,126	,098	,029 (309)*
Females	,161	,089	,072 (776)*

* Number of cases

CONCLUSION

This paper set out to determine whether there were differences in the promotion chances of male and female clerical employees, when measurable quality was accounted for. The results clearly demonstrate that, for this specific employer and time period, female clerks were not treated in the same way as their male counterparts with respect to promotions to junior levels of management. The regressions predict that if females had been subject to the male criteria, their success in obtaining these promotions would have been almost double its actual value (16% vs. 9%) and substantially higher than males' actual success (13%). The fact that the regressions ignore non-measurable aspects of quality is beside the point, unless females have lower levels of non-measurable quality than males, non-measurable qualities are inversely related to measurable qualities in females, and these non-measurable qualities are good substitutes for measurable quality. Given the number of quality factors that could be quantified, these arguments are tortured at best.

It is more reasonable to state that the regression results demonstrate different and tougher promotion criteria for female than male clerks. Regardless of the cause, the results indicate a *prima facie* case of discrimination in promotion. These results are of particular importance because most

discussion of affirmative action has centered on increasing the number of women in the upper levels of management. In actuality, the overwhelming majority of women employed in the public sector work in clerical jobs. It would be a shame if their fate were lost in the shuffle, amid employer pronouncements of success in promoting women into the senior management cadre.

REFERENCES

AGOCS, C., «Affirmative Action, Canadian Style: A Reconnaissance», *Canadian Public Policy,* Vol. XII, No. 1, 1986, pp. 148-162.

BLOCK, W. E. and M. A. WALKER, eds., *Discrimination, Affirmative Action and Equal Opportunity,* Vancouver, The Fraser Institute, 1982.

CANNINGS, Kathy, «Managerial Promotion: The Effects of Socialization, Specialization and Gender», *Industrial and Labor Relations Review,* Vol. 42, No. 1, 1988, pp. 77-88.

HECKMAN, James J., «Sample Selection Bias as a Specification Error», *Econometrica,* Vol. 47, No. 1, 1979, pp. 53-61.

OLSON, Craig A. and Brian E. BECKER, «Sex Discrimination in the Promotion Process», *Industrial and Labour Relations Review,* Vol. 36, No. 4, 1983, pp. 624-641.

WINN, Conrad, «Affirmative Action for Women: More Than a Case of Simple Justice», *Canadian Public Administration,* Vol. 28, No. 1, 1985, pp. 24-46.

Les disparités fondées sur le sexe dans la promotion des employés de bureau

L'objet de cet article est de déterminer de façon empirique si les employés de bureau de sexe féminin étaient moins susceptibles que les hommes occupant des postes de nature identique d'obtenir des promotions lorsque la scolarité et les autres qualifications mesurables étaient comparables.

On a mis en place le modèle suivant d'appréciation de la probabilité d'une promotion. Ainsi, prend-on pour acquis que les employeurs accordent, à l'occasion d'un concours spécifique, la promotion à la personne dont on espère tirer le meilleur rendement dans l'avenir. En conséquence, la probabilité d'une promotion pour une personne (au cours d'une période donnée) est fonction de la performance qu'on en attend et du nombre de postulants. Cette performance s'appuie sur un ensemble de

qualifications mesurables (scolarité) et de qualifications non mesurables (aptitudes). Si l'employeur fait de la discrimination contre les femmes, le rendement que l'on attend d'une personne de sexe féminin doit dépasser celui qu'on peut exiger d'un homme possédant une compétence équivalente pour que la femme obtienne la promotion. Par conséquent, les chances moindres d'être promu peuvent résulter soit de la discrimination, soit de qualifications moindres qu'on ne peut mesurer. Même si l'on ne peut établir clairement l'origine d'un taux de promotion plus faible chez le personnel féminin, l'ensemble des données recueillies présente un bon nombre des caractéristiques mesurables chez un travailleur, y compris l'évaluation de son rendement, laissant peu de qualifications non mesurables.

Les données proviennent des dossiers d'un important employeur du secteur public et elles permettent de tracer le suivi de la réussite des cas de promotion chez les employés de bureau au cours d'une période de trois ans. On distingue les promotions des employés de bureau à des fonctions administratives de l'ensemble des promotions de telle sorte que, dans le modèle, on a estimé séparément les promotions dites 'majeures' et les promotions 'en général' en tant que variable dépendante. Comme variables indépendantes, on a principalement retenu les années de scolarité, la catégorie de diplôme détenu, l'expérience de travail, tant dans l'entreprise qu'à l'extérieur, le nombre de cours post-secondaires suivis ou de cours de formation suivis dans l'entreprise même, le nombre de postes occupés antérieurement ainsi que l'évaluation du niveau de performance. Pour chaque variable dépendante, le modèle a été vérifié trois fois au moyen d'une analyse *logit:* avec l'ensemble de l'échantillon (1 085 observations) et la variable dichotomique fondée sur le sexe des travailleurs, et avec des régressions distinctes pour les hommes et les femmes.

Les résultats empiriques indiquent que, bien qu'il n'y ait aucune différence significative dans le rendement entre les sexes relativement aux promotions 'en général', il y avait beaucoup moins de chances que les femmes passent des emplois de bureau aux postes administratifs. Surtout, les régressions prédisent que, si les femmes avaient été soumises aux mêmes critères de promotions que les hommes, leurs possibilités d'obtenir une promotion 'majeure' auraient atteint 16% contrairement à un taux effectif de 9%, ce qui est substantiellement plus élevé que le taux effectif de réussite de 12% chez les hommes.

Ces constatations sont d'une grande importance parce que les débats touchant l'action positive visent à l'augmentation du nombre des femmes dans les sphères les plus hautes de la gestion. En réalité, une majorité écrasante des femmes travaillant dans le secteur public sont des employées de bureau. Ce serait une honte si elles perdaient la partie au moment où les employeurs se gargarisent de leurs succès dans la promotion des femmes au rang de cadres supérieurs.