Product market imperfections, job content differences and gender employment discrimination at the management level: some evidence from the Canadian manufacturing sector in 1971 and 1981

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Abstract. This paper presents a regression model of the relative employment level of female managers using data for 1971 and 1981 on a forty-one industry sample drawn from the Canadian manufacturing sector. The object of the analysis is to test the neoclassical proposition that employment discrimination, here, against females, is fostered by imperfect product market conditions. In addition, the model allows for the open nature of the Canadian economy and for interindustry differences in the job and skill content of managerial occupations. The results support the neoclassical view and as well emphasize the importance of post-secondary education to the employment of females at the management level.

Imperfections dans le marché des produits, différences dans la nature des emplois, et discrimination selon le sexe dans les emplois au niveau de la gestion: résultats pour le secteur manufacturier canadien en 1971 et 1981. Ce mémoire présente un modèle de régression du taux relatif d'emploi des femmes gestionnaires en utilisant les données de 1971 et de 1981 pour un échantillon de 41 industries tiré du secteur manufacturier canadien. Le but de l'analyse est de vérifier la proposition dérivée de l'économie néo-classique selon laquelle la discrimination contre les femmes dans l'emploi serait facilitée par des conditions d'imperfection dans le marché des produits. De plus, le modèle permet de tenir compte de la nature ouverte de l'économie canadienne et des différences entre industries dans la nature des emplois managériels et dans les habiletés particulières que ces emplois réclament. Les résultats supportent la proposition néo-classique et soulignent l'importance de l'éducation post-secondaire pour l'emploi des femmes au niveau de la gestion.

I. INTRODUCTION

In the literature on employment discrimination there is an ongoing dispute over

the role played by imperfectly competitive product markets and the implications of this role for public policy (see, e.g., the summary in Ashenfelter and Hannan 1986, 150). The standard neoclassical position is that imperfect product markets are crucial because discrimination by employers results in rent dissipation and rents exist only under imperfectly competitive conditions. If discrimination is associated with the lack of competition in the product market, then ironically, anti-trust laws can make an important contribution to the preservation of human rights, a task that governments in North America have assigned almost exclusively to a variety of labour market initiatives.[1]

Based on the analytical prominence and policy implications[2] of the neoclassical view and the fact that existing empirical tests of the product market-employment discrimination relationship are ambiguous (see Becker 1957; Shepherd 1969; Shepherd and Levine 1973; Oster 1975; Luksetich 1979; Ashenfelter and Hannan 1986), the object of this paper is to examine empirically the relationship between imperfectly competitive market structures and gender employment discrimination at the 'management' level using Canadian manufacturing industries as observations. We focus on gender discrimination because of its widespread relevance;[3] on the 'management' subset of occupations because of the general belief that discrimination is endemic at the 'executive' level; and manufacturing industries because the data available for industries in the manufacturing sector are well suited to the testing of our regression model.

Apart from the fact that there is a notable absence of Canadian studies of the influence of the product market on gender employment discrimination, a particular advantage of our empirical model is that it specifically addresses some of the problems commonly associated with (mainly U.S.) interindustry studies of employment discrimination.[4] For example, concentration ratios, a major explanatory variable in these studies, only proxy the level of market power present in different industries and interindustry variation in this proxy relationship can vitiate the estimated effect of market power on employment practices. For Canada, a notable potential source of this kind of cross-industry variability is the different degree to which various industries are involved in the 'open' nature of the economy and, therefore, we allow for the contribution that several foreign sector variables make to the definition of market power.

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1 These labour market interventions are usually various forms of equal employment opportunity, affirmative action, and pay equity legislation. For useful reviews covering actions taken by several jurisdictions in Canada and the United States see, Bevan (1985), Coates (1986), and Labour Canada (1985).

2 It can be noted here that Block and Walker (1982 and 1985) employ the neoclassical model to argue against virtually all forms of policy intervention in response to the presence of discrimination.

3 For an overview of the problem in Canada see, Gunderson and Riddell (1988, chap. 23). It should be noted that gender discrimination was the subject of two Royal Commissions (Canada 1970, 1984); and the recommendations of the Abella Commission (Canada 1984) were endorsed by the Macdonald Commission (Canada 1985). In addition, various advisory groups have been formed, sections in government departments have been devoted to gender issues (e.g., the Women's Bureau in Labour Canada), and ministers have been made responsible for 'women's issues.'

4 For a statement of these weaknesses see, e.g., Ashenfelter and Hannan (1986, 151).

Similarly, the job and skill content of a given occupation or occupational group, here 'managers,' can differ across industries, with the result that the estimated relationship between market concentration and employment discrimination in the given occupation is biased. Again, we include in our estimating equation variables that proxy industry differences in the job and skill content of the management set of occupations.

Our major conclusions include the finding that the degree of competition in the product market, as measured by domestic and foreign sector factors, is a significant determinant of industry differences in the employment of female managers. Our results are also consistent with the view that the higher the level of managerial skill required in an industry, the less discrimination there is against the employment of female managers. The analysis underlying these conclusions is organized into three parts: II, the model is outlined; III, the empirical results are reported; and IV, conclusions are drawn.

II. THE MODEL

The analysis employs a regression model relating relative female employment at the 'management' level by industry to various explanatory variables including measures of product market imperfections appropriate for an open economy. It is a variant of a number of such single-equation inter- and intra-industry models (see References cited in I, para. 2), the chief differences, though not the only ones, being our incorporation of the foreign sector and an education mix variable. Specifically,

$$\text{FMAN} = \alpha_0 + \alpha_1 \text{CON4} + \alpha_2 \text{PROD} + \alpha_3 \text{WCD} + \alpha_4 \text{EDU} + \alpha_5 \text{URBAN}$$

$$+ \alpha_6 \text{IMP} + \alpha_7 \text{EXP} + \alpha_8 \text{FC} + \epsilon. \qquad (1)$$

In equation (1) FMAN is the relative number of female managers, CON4 is the four firm concentration ratio, PROD is a dummy variable representing producer goods industries, WCD is a dummy variable for the women's clothing industry, EDU is a measure of the relative number of university degree holders, URBAN is the proportion of the industry work force in metropolitan areas, IMP is a measure of import competition, EXP is a measure of export demand, FC is the degree of foreign control, and ϵ is the error term. The variables are defined more precisely in table 1 and the following points should be noted about the content and specification of the model.

1. The data
The model is estimated for the same cross-section sample of forty-one three-digit (1970 SIC) manufacturing industries (see Jones and Walsh 1989, table A1) in 1971 and 1981. The size of the sample is determined by the availability for both 1971 and 1981 of the data (see table 1) necessary to construct the variables in equation (1). The years 1971 and 1981 are the only years in which data to measure the dependent variable (FMAN) are available. We define 'managers' as the category

TABLE 1
Variable Definitions and Data Source

Variable	
FMAN =	female 'managers' as a percentage of total 'managers.' SOURCE: Statistics Canada, *1971 Census of Canada*, vol. 3, part 5, Bulletin 3.5-11, T.7 (Ottawa: 1975); *1981 Census of Canada*, vol. 1 National Series, T.2 (Ottawa: 1984)
CON4 =	four firm concentration ratio expressed in percentage form. SOURCE: Statistics Canada, *Industrial Organization and Concentration in the Manufacturing, Mining and Logging Industries, 1982* (Ottawa: Information Canada, 1986)
PROD =	a dummy variable whose value = 1 for producer or intermediate goods industries, and whose value = 0 for other industries. SOURCE: based on the classifications in J.C.H. Jones et al. (1977, 208)
WCD =	a dummy variable whose value is 1 for the women's clothing industry (SIC 244), and 0 otherwise
EDU =	number of males and females with a university degree as a percentage of 'managers' plus 'scientists' (SOC Major Groups 11 and 21, respectively). SOURCE: Statistics Canada, *1971 Census of Canada*, vol. 3, part 5, Bulletin 3.5-2 (Ottawa: 1975); *1981 Census of Canada*, vol. 1 National Series (Ottawa: 1984)
URBAN =	percentage of workforce resident in Census Metropolitan areas. SOURCE: *1971 Census of Canada*, vol. 3, part 4, Bulletin 3.4-5; *1981 Census of Canada*, vol. 2 Provincial Series
IMP =	imports as a percentage of Canadian market sales. SOURCE: Canada, Industry Trade and Commerce, *Manufacturing Trade and Measures 1966-81* (Ottawa: 1982)
EXP =	exports as a percentage of industry shipments. SOURCE: Same as IMP
FC =	percentage of industry shipments made by foreign controlled establishments. SOURCE: Statistics Canada *Domestic and Foreign Control of Manufacturing, Mining and Logging Establishments in Canada, 1981* (Ottawa: 1988)

'Managerial, Administrative and Related Occupations' in Major Group 11 of the *Standard Occupational Classification* (Canada (1971)).

2. The independent variables

For the purposes of exposition the coefficients in equation (1) can be divided into those measuring 'domestic' influences (α_1 to α_5) and those measuring 'foreign' influences (α_6 to α_8).

a. Domestic influences

In neoclassical models the relevance of product market imperfections to employment discrimination is predicated on the presence of utility maximizing employers at least some of whom include in their utility functions not only the usual preference for profits, but also a taste for discrimination. Given that equally productive females receive a lower wage than do males, the result of choosing to practice discrimination against females is that costs are higher than need be and profits are lower than need be. It follows that the more competitive is the product market, the lower the long-run tolerance of the industry to discriminating employers.

It can be added that the separation of ownership and management functions does not change this conclusion. In this case, discriminatory hiring by manager-employers reduces the profits that accrue to owners and, therefore, entails the risk that the owners will dismiss discriminating managers. However, when the product

market is imperfectly competitive, the absence of clear profit guidelines obscures the foregone profit cost of discriminatory hiring practices and prejudiced manager-employers can indulge their taste for discrimination with relative impunity.[5]

In equation (1) we employ the variable CON4 as the conventional measure of the degree of imperfect competition in the domestic product market. If, as neoclassical theory predicts, product market power is the crucible for gender discrimination, we expect that the sign of the CON4 coefficient is negative ($\alpha_1 < 0$).

Our analysis includes three additional domestic dimensions of the neoclassical model: the effects of discriminatory tastes of employees and/or customers (see the survey in Sloane 1985, 102–5); industry differences in the job and skill content of the target occupation (here, managers); and the effects of the urban-rural characteristics of the labour market in which the industry operates. The first two of these influences are both proxied by the variables PROD, WCD, and EDU in equation (1), while the urban-rural influence is measured by the variable URBAN.

Consider first the role of employee/customer preferences on employment practices. Suppose, for instance, male executives do not like working with, or the male labour force does not like working for, female executives. This might lead to 'production frictions'[6] and reduced productivity. Therefore, if male employees are a necessity – because essential skills have traditionally been a male preserve and the adjustment costs of hiring and firing prevent replacing male employees immediately[7] – employers might be acting 'rationally' by not employing female managers. On the other hand, in industries where female employees predominate this argument could lead to the preferential hiring of female managers. Finally, if customers prefer to deal with one gender or the other, rational employers may take these preferences into account when making employment decisions.

If these prejudices (preferences) in fact influence employment decisions at the managerial level, and if we assume that male employees (customers) predominate in producer goods industries (PROD) and female employees (customers) predominate in the women's goods industries (here, WCD), then we expect the signs on the PROD and WCD variables to be negative and positive, respectively, ($\alpha_2 < 0, \alpha_3 > 0$).[8]

The EDU variable is a measure of the relative number of university degrees

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5 For further observations on these arguments and some additional considerations that suggest a positive relationship between market power and employment discrimination see Ashenfelter and Hannan (1986, 152–5).
6 The phrase is used by McManus et al. (1983, 104) to describe the results of differences due to language, but it is equally applicable here.
7 Arrow (1973) notes that firms may wish to amortize the costs of hiring and training the existing (male) work force and, therefore, may not substitute female labour immediately.
8 The threefold partitioning of the sample into producer or intermediate goods industries (PROD), consumer goods industries (subsumed in the constant term in equation (1)) and women's goods industries (WCD) reflects presumed differences in the relative presence of males (females) in the work forces and customer populations of these three components of the manufacturing sector. Thus, in our sample, the female percentage of total employment in 1971 (1981) for the producer goods industries, consumer goods industries and the women's clothing industry is 14.2 per cent (18.0 per cent), 23.0 per cent (27.4 per cent), and 76.4 per cent (81.0 per cent), respectively. We note that Shepherd and Levin (1973, 414) also recognize customer gender differences by including producer-durables and 'women's' industries as 'industry specific demand attributes' in their analysis.

employed in the industry (see table 1), and, since university degrees are mainly held by individuals in relatively senior management-scientific occupations, this variable allows for the possibility that higher levels of educational attainment reduce the taste for prejudice at the management level primarily through its effect on peer group preferences. If this is correct, we anticipate a positive coefficient on the EDU variable ($\alpha_4 > 0$).

Turning now to the role PROD, WCD, and EDU in identifying interindustry differences in the content and skill level of the managerial set of occupations, we assume first that engineering-production managerial skills are relatively more important in producer goods industries and marketing-sales managerial skills are relatively more important in women's goods industries. Further, assuming that tradition and various other pre-labour market conditioning mechanisms are more resistant to female participation in engineering-production management than in marketing-sales management, we expect comparatively fewer females managers in producer goods industries ($\alpha_2 < 0$) and comparatively more female managers in women's goods industries ($\alpha_3 > 0$).

Second, the EDU variable is a proxy for interindustry differences in the level of skill required of managerial occupations. The specific assumption is that the required level of managerial skill varies positively with the relative number of university degrees employed in the industry (EDU). If, in addition, it is reasonable to assume that the elasticity of supply of managerial occupations varies inversely with the level of managerial skill required in the industry, then EDU proxies the costs (limited availability and/or increased price of qualified males) of discrimination and EDU can be expected, therefore, to have a positive effect on the employment of female managers ($\alpha_4 > 0$).

Summing up, the PROD, WCD, and EDU variables measure the preferences of employees/customers and/or the nature of the managerial tasks performed in different industries, and in either event, their predicted coefficient signs are $\alpha_2 < 0$ and $\alpha_3, \alpha_4 > 0$.

The final domestic variable, URBAN, approximates two main influences on the employment of female managers. First, it is frequently assumed that because 'traditional values' (prejudices) are weaker in urban areas, employers, employees, and customers are more accepting of female executives in more urban labour markets. Second, the more urban the labour market, the more elastic is the supply of qualified females and the more readily, therefore, do females find employment in managerial occupations. For both of these reason we expect the URBAN coefficient to be positive ($\alpha_5 > 0$).

b. Foreign influences

The 'openness' of the Canadian economy means that competition from foreign producers, the lure of foreign markets, and extensive ownership of Canadian firms, can have significant influences on the degree of market power in the domestic product market. Consequently, if the net impact of the foreign sector is to increase (decrease) domestic competition, then the potential for gender discrimination is reduced (increased). The variables IMP, EXP, and FC are intended to capture the influences of foreign competition, foreign markets, and foreign control, respectively.

Following convention we expect foreign (import) competition (as proxied by IMP) to reduce the impact of domestic market power (Caves 1985, 378–80) and, therefore, to reduce the potential for discrimination ($\alpha_6 > 0$).

However, the effect of access to foreign markets on discrimination is problematic because the effect of exports on domestic seller competition is ambiguous (ibid., 380–2). If prices are set on the world market, then an exporting industry is faced with the same type of competitive outcome as is an industry facing import competition. Similarly, in an oligopolistic situation, export opportunities may lessen the importance of interdependence in the domestic market and so lead to more competitive behaviour. Contrariwise, if domestic producers can take advantage of scale, product differentiation and price discrimination, then exports may decrease competition. It follows, therefore, that the effect of export markets on female managerial employment cannot be predicted, and the sign on the EXP variable is indeterminate ($\alpha_7 \gtrless 0$).[9]

The impact of multinational ownership is particularly interesting in that 'managerial mores' and 'extraterritoriality' may have implications for gender discrimination at the management level that are distinct form those associated with market competition. First, the managerial mores argument raises the possibility that the foreign management that frequently accompanies foreign ownership may have different 'mores' (tastes, prejudices) than 'host' country management. For Canada, the prominence of American ownership means that the mores likely to be transferred are American,[10] which in turn means that the experience of the 1960s and the 1970s may be quite different. Thus, in the 1960s the traditional U.S. corporate posture was not to encourage hiring female managers at home or abroad.[11] At this time, the Civil Rights Act of 1964 (sex discrimination falls under title VII) was most actively concerned with racial discrimination and had little effect on gender discrimination (Beller 1982, 1982). It is unlikely, therefore, that the presence of U.S. managers in Canada would exert a positive influence on the level of female managerial employment in 1971.

The 1970s are potentially different. The Equal Employment Opportunity Act of 1972 and title IX of the Education Amendments of 1972 strengthen title VII of the Civil Rights Act and contribute to a substantial gain in female employment at the managerial level in the United States in the 1970s (Beller 1985) and perhaps a changed attitude of U.S. management aboard. Therefore, the 'managerial mores' effect may produce a positive relationship between the presence of multinationals and female managerial employment in 1981.

Second, and potentially more important than the Civil Rights Act's changing

9 The existing empirical evidence on the relationship between exports and profit, like the theory, is mixed. For a survey see Caves (1985, 380–82) and for contrasting results for Canada in the mid-1960s see Caves et al. (1980, chap. 9) and Coxon and Jones (1985).

10 In 1975 55 per cent of the capital in Canadian manufacturing is controlled outside Canada and about 80 per cent of the direct investment capital in Canada is from the United States (Rugman, 1980, xi). On American management in Canada in the 1960s see Safarian (1966, chaps. 3 and 9). There is no comparable data for the 1970s.

11 U.S. texts on multinational management published from the 1960s to the 1980s make virtually no mention of female executives; and one study of the attributes of multinational managers in the 1960s, Gonzalez and Negandhi (1967), mentions women only in their role as spouses.

the mores of management, is the extra-territorial reach of U.S. laws. That is, U.S. firms are frequently subjected to U.S. laws and directives which take precedence, either formally or informally, over 'host' country laws.[12] If this applied to the Civil Rights Act, then U.S. subsidiaries in Canada might be forced by U.S. law to increase the employment of women in their Canadian operations. While there is no direct evidence on this influence,[13] the preceding observations on U.S. laws suggest that extraterritoriality is an unlikely factor in 1971 but could account for a positive relationship between foreign ownership and female managerial employment in 1981.

The 'managerial mores' and 'extraterritoriality' questions aside, what impact does foreign ownership have on competition in 'host' country market? Basically, the answer is uncertain and depends on structure and behaviour in 'home' country markets, the degree of competition in the 'host' country market before entry by foreign firms, and 'host' country competition policy. For example, the entry of foreign enterprise may intensify an oligopolistic market structure in the host country, but foreign entry may, alternatively, enhance competition by increasing the complexity of strategic-group structures.[14] The uncertain competitive effect of multinationals, together with the unsure consequences of 'managerial mores' and 'extraterritoriality,' lead us to conclude that the sign of FC is ambiguous ($\alpha_8 \gtrless 0$).

III. THE RESULTS

The result of estimating equation (1) for 1971 and 1981 are shown in table 2. Before examining the specifics of our findings, we note that an F-test (Pindyck and Rubinfeld 1981, 123–6) rejects the null hypothesis that the regression coefficients for 1971 are jointly equal to the regression coefficients for 1981, and the data for these two years, therefore, cannot be pooled. This means that at least some elements of the processes that determine the relative level of female employment at the managerial level changed during the 1970s.

Looking now at the results for 1971, the overall fit is clearly good, all the independent variables are significant at least at the 10 per cent level, and the signs of the six variables that can be predicted unambiguously are as anticipated. With regard to the effect of imperfectly competitive product markets on discrimination, the results are consistent with neoclassical theory: the relative employment of female managers is negatively related to domestic market imperfections as measured by CON4 and positively related to import competition as measured by IMP. Measured at the variable means, the elasticity of FMAN with respect to CON4 (IMP) is −0.288 (0.111).

12 For the application to Canada of U.S. Antitrust Laws and the Trading with the Enemy Act see Brewster (1960).
13 The authors surveyed a large number of sources (texts, monographs, etc.) on international management and could find no reference to the Civil Rights Act, the Equal Employment Opportunity Act, or, in general, gender issues.
14 The whole issue is reviewed in Caves (1982, chap. 4). See also Eastman and Stykolt (1967), Rugman (1980), and Safarian (1985) for Canadian evidence. For contrasting Canadian results on competition and foreign ownership see Caves (1982, chap. 4) and Coxon and Jones (1985, 390).

TABLE 2
The determinants of the relative number of female managers (FMAN): linear regression results (OLS) for 1971 and 1981.[a]

Independent variables (1)	Expected signs (2)	Year	
		1971 (3)	1981 (4)
CON4	−	−0.0539	−0.0526
		(2.5395)***	(2.4317)***
PROD	−	−2.3391	−3.6281
		(2.6566)***	(3.3668)***
WCD	+	9.0664	14.332
		(6.7820)***	(8.5416)***
EDU	+	0.0439	0.1200
		(3.7014)***	(6.6090)***
URBAN	+	0.0298	0.0325
		(1.7039)**	(1.1696)
IMP	+	0.0474	0.0463
		(2.3226)**	(2.4229)**
EXP	?	−0.0258	−0.0067
		(1.9281)*	(.3501)
FC	?	−0.0379	−0.0197
		(2.8414)***	(1.0396)
CONSTANT		9.4631	9.3055
		(5.2745)***	(4.0833)***
$\bar{R}^2$		0.5845	0.6198
n		41	41

a   The figures in parentheses are t statistics computed with White's heteroscedasticity-consistent standard errors (White, 1980). Since these t ratios are asymptotically normally distributed, the significance tests use tabulated values from the standard normal distribution. With the exception of EXP and FC, all variables are tested with a one-tail test.
*significant at the 10 per cent level
**significant at the 5 per cent level
***significant at the 1 per cent level

The ambiguously signed open economy variables, EXP and FC, have statistically significant negative effects on the employment of female managers in 1971. While the EXP result means that the availability of export markets is a net anti-competitive influence, the interpretation of the negative sign on the foreign control variable is problematic. Thus, if the U.S. Civil Rights Act of 1964, through its impact on management mores or its extraterritorial extensions, has a positive effect on the hiring of female managers in Canada in 1971, this effect is small enough to be swamped by the negative influences on the hiring of female managers operating through the FC variable – a net anti-competitive impact on Canadian product markets and/or more discriminatory 'mores' of the managements of foreign-controlled firms.[15]

15 With due allowance for differences in models, definitions, and data, some additional credence for the negative sign on the FC variable in our study is provided by comparisons with qualitatively similar studies for the United States, the principal 'home' country of foreign controlled enterprises in Canada. Specifically, our estimate of the elasticity of relative female managerial employment

The predicted influences of the remaining 'domestic' variables are supported by our results for 1971. Thus, we interpret the statistically significant positive WCD coefficient as reflecting the dominance of the preferences of female customers and employees in 'women's industries' and/or the relative prominence of marketing-sales management tasks in these industries; and the statistically significant negative PROD coefficient as the consequence of the preferences of the disproportionately male work forces and customer populations and/or the relative prevalence of engineering-production management jobs in producer goods industries.

In our model EDU measures the anti-discriminatory influence of university education and/or proxies directly the skill level required of management tasks in the industry and, therefore, proxies indirectly the price the industry must pay to practice discrimination. The positive EDU coefficient, then, signifies that the more prevalent are university degrees, the lower is the prejudice against employing females managers and/or the more expensive is discrimination and the less of it that is purchased.

Finally, the significant and positive URBAN coefficient in 1971 supports the view that any broadly based traditional attitude in opposition to the employment of females as managers is less common in more urban labour markets and/or the supposition that the elasticity of supply for female managers is higher in more urban labour markets.

The last step in describing the results in table 2 is to compare our findings for 1981 with those for 1971. Again, the overall fit of the regression equation is good. There are no sign reversals between 1971 and 1981, but three of the eight explanatory variables are no longer statistically significant in 1981. Some coefficient magnitudes are quite stable over the 1971–81 period, while others suggest the presence of considerable change in the processes that determine the employment of female managers.

The statistically insignificant variables in 1981 are EXP, FC, and URBAN. Thus, the foreign sector contribution to the definition of the competitiveness of the product market is not quite so apparent in 1981 as in 1971. While we have no explanation for the change in the role of export markets, the fact that in 1981 foreign controlled firms no longer have a statistically significant negative impact on the employment of female managers may be due to the effects on 'managerial mores' and 'extraterritoriality' of the anti-discrimination legislative initiatives that occurred in the United States during the 1970s. With respect to the URBAN variable, a reasonable conjecture is that by 1981 the traditional distinctions between 'urban' and 'rural' values and labour supply conditions have weakened considerably.

The main elements of stability in the estimates are the coefficients of CON4 and IMP, which are again statistically significant in 1981 and essentially unchanged in magnitude between 1971 and 1981. Thus, further support is provided for the

with respect to market concentration, −0.288 in 1971, compares with estimates in the range of −0.4 to −1.1 for U.S. studies (Ashenfelter and Hannan, 1986; Luksetich 1979). It appears, therefore, that for the late 1960s and early 1970s the lack of competitiveness in product markets is associated with less readiness to hire female managers in the United States than in Canada.

neoclassical proposition that domestic market power (import competition) decreases (increases) the relative employment of female managers.

While the presence of imperfect product market competition continues to exert an adverse effect on the employment of female managers in 1981, this effect did not prevent a quite substantial increase in the place of females in the managerial occupations of the Canadian manufacturing sector during the 1970s – for example, in our sample the mean value of FMAN increases from 8.53 per cent in 1971 to 12.73 per cent in 1981.[16] The factors responsible for the increased relative employment of female managers over the decade of the 1970s are widely recognized and include, for example, increasing rates of female labour force participation, rising levels of educational attainment by females,[17] the increasing presence of feminism, and related policy and legislative initiatives,[18] and perhaps lower overall levels of gender prejudice on the part of employees, customers, and even employers.[19]

These and other unobserved secular (1971–81) influences show up in our model as changes in the magnitudes of the estimated coefficients, most notably the increased 1981 (absolute) values of the coefficients of the PROD, WCD, and EDU variables. With respect to the changes in the PROD and WCD coefficients, our model allows for several possible explanations: sharper differentiation in the content (marketing-sales versus production-engineering) of managerial tasks in these industry groups; stronger gender prejudices on the part of employees and/or customers; stronger occupational stereotyping (marketing-sales jobs versus engineering-production jobs); stronger female preferences for marketing-sales positions over engineering-production positions; or some combination of all these factors.

It is of particular interest that between 1971 and 1981 the coefficient on EDU more than doubles.[20] Using standard decomposition techniques (see, e.g., Gunderson 1989), the 1971–81 increase in the EDU coefficient accounts for more than 80 per cent of the 1971–81 increase in the mean value of FMAN. In our model, the much stronger impact of EDU on the relative employment of female managers in 1981 is attributable to one or both of two factors – lower levels of prejudice against female

16 The reduction in the estimated elasticity (absolute values) of FMAN with respect to CON4 (IMP) from −0.288 (0.192) in 1971 to −0.111 (0.090) in 1981 is almost entirely attributable to the increased mean value of FMAN over the 1971 to 1981 period.

17 For example, the female participation rate in 1971 (1981) is 39.9 (52.9) (see Boulet and Lavallee 1984, 8); females as a percentage of total degree recipients in 1971 (1981) is 9.3 (24.2) (see Canada 1985, 630); females as a percentage of total enrolment in university undergraduate business administration programs (which may be the most relevant field for careers in management) in 1971 (1981) is 13.9 (37.2) (see Canada 1985, 631); and 'management' accounts for 4.3 per cent (8.4 per cent) of the *female* labour force, in 1971 (1981) (see Nakamura and Nakamura 1985, 180–1).

18 For a general review see Gunderson and Riddell (1988, 456–67) and the literature cited there. See also the citations in fn1.

19 Note that reduced gender discrimination by employers is not necessarily inconsistent with a continuing (constant) adverse effect of product market concentration on the employment of female managers, because the latter is in effect the product of two components: the amount of discrimination per unit of product market imperfection and the amount of market imperfection per unit of market concentration.

20 Evaluated at the variable means, the elasticity of FMAN with respect to EDU is 0.238 in 1971 and 0.425 in 1981.

managers and/or an increased opportunity cost of practising discrimination against females.

With respect to reduced prejudices, the possibilities are that a university education, perhaps through a heightened awareness of and sympathy for feminist causes, exerts a stronger dampening effect on the gender prejudices of fellow managers in 1981 than in 1971; and/or that employers, perhaps for the same reasons, are less prejudiced in 1981 and, therefore, are less prepared to pay the price of discrimination – shortages of male managers and/or higher (than female) wages to male managers.

Alternatively, or additionally, the stronger 1981 effect of the EDU variable is explained by a higher relative price on discriminatory behaviour by employers. That is, increases in female labour force participation and educational attainment[21] during the decade of the 1970s suggest that the elasticity of supply of female managers to Canadian manufacturing industries increases relative to the supply elasticity of male managers, so that the opportunity cost of discriminatory hiring practices increases.

IV. CONCLUSIONS

What can we conclude about theory and policy from the foregoing analysis? We think three points should be stressed.

First, the neoclassical approach, which stresses imperfectly competitive markets as the *sine qua non* for employment discrimination, is generally supported by the results for female managers. Since imperfect competition plays a part in suppressing female employment at the managerial level and given the low, even if increasing, presence of females in these occupations (see table A1), our analysis provides at least tentative support for the continuing efforts in Canada to develop an effective competition policy.[22] Setting aside the question of the costs of these competition policy efforts, the returns appear to include increased levels of employment for females as managers, a benefit that is, perhaps, not recognized as widely as it should be.

Second, in the Canadian case, when dealing with product market competition, it is clearly important to take the openness of the economy into account. Consistent with the predictions of neoclassical theory, our analysis indicates that import competition reduces gender discrimination at the managerial level. Thus, to the extent that the Free Trade Agreement with the United States promotes import competition in the manufacturing sector of the Canadian economy, it should also promote the relative expansion of the employment of female managers in this part of the economy. It is also of some interest to note that our findings are consistent with the view that by 1981 the anti-discrimination initiatives introduced in the United States

21 In addition to the data in footnote 17, we note that in our industry sample the percentage of university degrees held by women doubles from 7.5 per cent in 1971 to 15.2 per cent in 1981.
22 Between 1968 and 1986 there were numerous attempts to amend the ineffective *Combines Investigation Act*. One relatively unimportant amendment took place in 1976 and in 1986 the Act was replaced by the *Competition Act*.

during the early 1970s also influence the hiring practices of foreign-controlled enterprises in Canada.

Third, we want to emphasize several aspects of our finding that the higher the skill level required of an industry's managers, here proxied by the EDU variable, the higher the relative employment of female managers. Thus, this relationship applies *within* the broad occupational category, managers, and does not necessarily imply anything with respect to the relative magnitude of gender discrimination in the manager category compared with that in other *broad* occupational categories.[23] It must also be recognized that the expanded management opportunities for females that occur in industries where comparatively high-skilled managers are employed may be predominantly at the lower managerial echelons.

These disclaimers aside, our analysis of the FMAN:EDU relationship means that high levels of educational attainment are significant to the creation of managerial opportunities for females in the manufacturing sector of the economy. In our model one or both of two mechanisms lead to this conclusion: one, an increasing general prevalence of university degrees in the work force reduces the prejudice of fellow employees against females as managers; and two, there is a strong presumption that the increasing participation of females in university degree programs raises the opportunity cost of gender discrimination by employers and/or expands the supply of females who are able to take advantage of managerial career opportunities that result from any reduction in the intensity of employer gender prejudice. This conclusion suggests further that labour market and educational policies that operate through these mechanisms are also important to the relative expansion of female employment in the managerial occupations of the manufacturing sector.

APPENDIX

TABLE A1
Descriptive statistics*

Variable	Mean		Standard deviation	
	1971	1981	1971	1981
FMAN	8.530	12.727	3.965	5.157
CON4	45.568	46.590	19.058	20.908
PROD	0.585	0.585	0.499	0.499
WCD	0.024	0.024	0.156	0.156
EDU	46.228	45.104	17.613	16.879
URBAN	63.858	61.028	19.661	19.365
IMP	19.959	24.863	20.627	24.163
EXP	20.176	25.229	27.368	31.876
FC	44.463	36.976	26.165	26.195

*With the exception of PROD and WCD, all the variables are measured in per cent.
SOURCE: Calculated from data sources described in table 1.

23 Across broad occupational classes the usual finding is that gender discrimination is strongest for the upper levels of the occupational hierarchy. For the United States, for example, see Luksetich (1979, 218, 220).

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