CROSS-NATIONAL VARIATION IN OCCUPATIONAL SEX SEGREGATION*

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I examine the relationship between the occupational distributions of men and women in 25 industrial countries and selected social, economic, and cultural factors. Recent research suggests counterintuitive international patterns of occupational sex segregation: low levels of segregation in some traditional countries like Japan and Italy, and high levels in the "progressive" countries of Scandinavia. I argue that the same economic structures that are associated with women's greater integration into the formal labor force also contributes to a deepening institutionalization of gender within *the occupational structure. This may occur through the incorporation of women's traditional tasks into the formal economy, and/or through the hierarchical and functional differentiation of economic activity in highly industrial societies. Results indicate that some primary structural characteristics of modern economies (a relatively large service sector and a large employee class) are associated with greater female concentration in clerical, sales, and service occupations. However, other social and cultural characteristics of these countries — low rates of fertility and more favorable ideological environments — partially offset these segregative forces. Furthermore, the actual penetration of egalitarian principles into the labor market appears to be mediated by the structure of interest articulation, with corporatist systems showing greater propensity toward segregation.*

Despite convergence in the labor market histories and qualifications of women and men, occupational distributions in many industrialized countries reveal large and persistent sex differences. For example, in 1985 over two-thirds of occupationally active U.S. women worked in occupations that were at least 70 percent female (Jacobs 1989a). Similar extreme patterns of sexual differentiation have been documented for many modern labor markets (Izraeli 1979; Hakim 1979; Jonung 1984; Roos 1985; Willms-Herget 1985; Charles 1987, 1990; Bettio 1988). Throughout the industrialized world, female-dominated occupations tend to have lower wages, fewer possibilities for occupational advancement, and less on-the-job training than do occupations dominated by males (Stevenson 1973; Treiman and Hartmann 1981; Lappe 1981; Dex 1985; Silén 1988; Brinton 1988; Rubery 1988; Haavio-Mannila 1989; Charles and Buchmann 1991).

Cross-national similarities in the sex-typing of occupations are well-documented: Women are usually overrepresented in clerical, sales, and service work; men predominate in production and managerial occupations. Although these similarities have received a great deal of attention, patterns of cross-national *variation* have been neglected. Despite recent evidence of substantial international differences, the factors underlying these differences have not been systematically investigated (although see Jacobs and Lim 1988). This research gap is of interest because available information suggests that patterns diverge sharply from what would be expected based on prevailing notions of women's relative status cross-nationally. For example, among 12 industrial countries, Roos (1985) found that *Japan* had the lowest level of occupational sex segregation, and *Sweden* had the highest. Similarly, Brinton and Ngo (1990) found lower levels of occupational sex segregation in Japan than in the United States. Other studies have indicated substantially lower segregation values for countries like Greece, Por-

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tugal, and Italy than for the more advanced postindustrial societies (Charles 1987; Jacobs and Lim 1988). Although segregation measures based on each country's unique occupational classification present problems of comparability, such comparisons suggest similar patterns across countries: high levels of occupational sex segregation for the Scandinavian countries, which are known for their "progressive" social policies and egalitarian culture, and substantially lower levels for more traditional countries like Japan and Italy (Reubens and Harrisson 1983; Charles 1990, Table 3.4).

Both common wisdom and mainstream economic and social theory suggest that the low levels of fertility, high rates of female labor force participation, and egalitarian ideological climates generally prevailing in the most industrialized societies should be associated with more "gender-neutral" occupational distributions. To understand the empirical anomaly, I consider some primary structural characteristics of postindustrial economies: their large service sectors and their highly bureaucratic, employee-based class structures. My central premise is that these structural characteristics *counteract* the integrative demographic, social, and cultural features of these societies, promoting occupational sex segregation through the incorporation of women's traditional tasks into the formal economy and through the greater hierarchical and functional differentiation of economic activity.

THE STRUCTURAL AND CULTURAL CONTEXT OF OCCUPATIONAL SEGREGATION BY SEX

Theories of social stratification and gender inequality suggest that occupational sex segregation should be less pronounced in highly industrialized societies. Sociologists and economists have often linked rationalization, bureaucratization, and market competition to achievement-based systems of occupational allocation (Durkheim [1893] 1984; Weber [1922] 1978; Davis and Moore 1945; Parsons 1951; Blau and Duncan 1967; Treiman 1970; Becker 1971; Schultz 1977). Women's relatively high market productivity in postindustrial economies should imply greater occupational integration. Furthermore, culture-level arguments suggest that sex discrimination should be less prevalent in advanced industrial labor markets in which the ideological environment is generally more egalitarian (Goode 1963; Ramirez and Weiss 1979). Women's increasing representation in the formal labor force should also support their cultural definition as equal economic actors (Weiss, Ramirez, and Tracy 1976; Ramirez 1987). Clearly, the observed patterns of international variation suggest the operation of some countervailing, segregative forces in postindustrial economies.

It is possible that these counterintuitive patterns occur because labor markets in the industrialized world develop within the constraints of traditional sex-roles and existing sex differentials in power (Boserup 1970; Hartmann 1976; Ward 1984; Scott 1986). Two central structural characteristics of postindustrial economies might then contribute to high levels of sex segregation: their large service sectors and their bureaucratic, employee-based class structures. *A large service sector* means that many "female" tasks, like child care and food service, have been incorporated into the formal economy. In the tight labor markets that are characteristic of emerging service economies, the affinity of many new service-sector jobs to women's traditional domestic roles may result in a greater penetration of the sexual division of labor into the occupational sphere. *A highly rationalized bureaucratic economy* implies a large, hierarchical, functionally differentiated labor market that increases possibilities for occupationally-based distinctions. In these contexts, any sex differences in family obligations, preferences, skills, cultural identity, and social and political power are more likely to be manifested in the form of *occupational* divisions than is the case in simpler economies, where public- versus domestic-sphere distinctions and direct wage discrimination are the salient dimensions of gender stratification. Both a large service sector and an employee-based class structure are associated with high rates of female labor force participation, ironically implying that the factors contributing to women's overall integration into paid employment may also be responsible for a deepening institutionalization of gender *within* the occupational world itself.

Although a number of historical analyses have linked the postindustrial economic transformation in the United States to occupational distributions by sex (Oppenheimer 1970; Treiman and Terrell 1975; Semyonov and Scott 1983; Abrahamson and Sigelman 1987; Kuhn and Bluestone 1987; Tienda, Smith, and Ortiz 1987; Jones and Rosenfeld 1989), international analyses of this relationship are few and unenlightening. For example, some studies found that women's odds of

working in managerial and professional occupations are *lower* in highly developed service economies with high female labor force participation (Semyonov 1980; Semyonov and Shenhav 1988). Other studies found no relationship between economic development or female labor force participation and women's representation in "high status" occupations (Safilios-Rothschild 1971; Cooney 1975; Ramirez and Weiss 1979; Nuss and Majka 1983). And, a negative relationship between occupational sex segregation and female labor force participation has been reported in yet other studies (Pampel and Tanaka 1986; Jacobs and Lim 1988).

There are many reasons for these seemingly inconsistent findings. The comparability of these studies is difficult to assess — some focus on developed countries, others on developing countries, and still others compare developed countries with developing countries. Furthermore, researchers have used different measures of sex segregation. Finally, the impact of economic structure has usually been assessed with general indicators of "modernization," like GNP per capital or energy consumption per capita. This does not allow identification of the *specific* mechanisms that may affect the occupational distributions of men and women. Thus, previous analyses suggest that the relationships between economic restructuring, female labor force participation, and sex segregation in the labor market are more complex than has been assumed by economists and early modernization theorists.

I believe this complexity reflects the independent and sometimes contradictory effects of certain aspects of postindustrial economic structure and culture: *While the generally more egalitarian ideological environment, lower rates of fertility, and greater labor force participation of women in highly industrialized societies push toward greater equality in women's and men's occupational distributions, the structural characteristics of these economies undermine these potentially integrative factors.* In this paper, I explore the relationship between the occupational distributions of men and women and macrolevel characteristics of nations. I consider all members of the Organization for Economic Cooperation and Development except Iceland, and also include Yugoslavia and Israel, two industrial economies for which relatively good data were available. Although all 25 countries can be described as "industrialized," they vary substantially in their industrial and class structures, rates of female labor force participation, fertility rates, and cultural traditions.[1] I group the central explanatory factors into three categories: *economic structure*, *women's domestic ties*, and *ideology*.

Economic Structure

Size of the service-sector. One of the primary structural characteristics that distinguishes advanced industrial economies is the presence of a large service sector.[2] The new occupational opportunities offered by a large service sector have triggered women's entry into the formal labor market. At the same time, prevailing cultural definitions of femininity, historically rooted in the domestic division of labor, have helped institutionalize some of the new caretaking, subordinate, or domestic-type jobs as "women's work." Historical evidence suggests that the incorporation of traditionally "female" tasks (e.g., laundry and food service, the care of preschoolers and the elderly) into the formal economy resulted in a shift of women's responsibility for this type of work from the domestic to the formal public sphere (Oppenheimer 1973; Hartmann 1976; Izraeli 1979; Bradley 1989). This suggests a greater propensity for women's and men's labor to be divided across *occupational* lines in advanced service economies

[1] The characteristics of "modern" economies do not always covary. For example, the Netherlands has relatively low levels of female labor force participation, but an extremely modern economic structure. And in Israel, high rates of fertility coincide with above-average levels of female labor force participation and a large service sector. The terms "advanced industrial," "highly industrial," and "postindustrial" are used more or less interchangeably here to refer to countries like the United States, Sweden, France, and Germany, which are characterized by highly rationalized, bureaucratic economies, and large service sectors.

[2] The terms "industry" and "sector" refer to *where* (i.e., in what type of firm) individuals work, and "occupation" indicates the *nature of the tasks performed.* My argument here pertains to differences in the *types of jobs* included in each occupational category and in their *industrial locations*, rather than simple increases in the sizes of any of the occupational categories. For example, the sex composition of "professional-occupation" jobs is expected to differ depending on whether they are more often located in a hospital or in a manufacturing plant. Furthermore, cashiers and child care workers may make up a larger share of "sales" and "service" occupations in some types of economies than in others. In these contexts, the high levels of sex segregation that characterize such jobs is likely to dominate the sex ratios for these occupational categories.

and a weaker sexual division of labor between domestic- and private-sphere activities.

A large service sector also implies greater opportunities to work in managerial and high-prestige professional jobs. These positions attract well-educated, career-committed men and women, depleting the supply of labor available for less well-rewarded service-sector work. New female entrants into the labor force are often actively recruited to fill these service-sector jobs, which include clerical and service occupations as well as sales positions selling products traditionally produced in the home (such as clothes and food products). In many cases, service-sector jobs have been restructured, e.g., through part-time scheduling, to suit the family responsibilities of this "reserve labor force" (Cockburn 1991). In economies with a large service sector, the availability of "suitable work," the new possibilities for purchasing household services, and the high salaries that result from a tight labor market combine to draw large numbers of women — especially middle-class wives — into the paid labor force *and* into "female" occupations. In addition, some women may move from manufacturing jobs to the better working conditions often found in the service sector. This shift may also be encouraged by the mechanization of previously labor-intensive production tasks.

Size of the employee class. The highly rationalized and bureaucratic nature of advanced industrial economies implies a class structure comprised of a relatively large employee class and a correspondingly small class of self-employed workers. Historical evidence in the United States indicates that the shift in ownership and control that accompanied increasing economic rationalization led to a substantial redefinition of the work processes and the rewards associated with many occupations (Braverman 1974; Thurow 1975; Kuhn and Bluestone 1987). Thus, some previously attractive occupations were degraded and deskilled to such an extent that they were abandoned by career-oriented men and women (Davies 1975; Tilly and Scott 1978; Reskin and Roos 1990). For example, when proprietor-run specialty stores were replaced by large discount chains, sales jobs were routinized to involve little more than cashier tasks. The replacement of proprietor-run service establishments like restaurants, laundries, and lodges by large bureaucratized chains meant that the actual services were often provided by employees rather than by entrepreneurs (Kuhn and Bluestone 1987). Davies (1975) described a similar process by which clerical occupations lost attractiveness for young, educated American men: The nineteenth-century clerical work force was composed largely of male apprentices in small (often family-owned) businesses. With bureaucratization and increased specialization, these tasks were routinized and removed from any training function. Men abandoned these occupations as they found more attractive options in the expanding managerial and professional sectors (see also Carter and Carter 1981).

In the United States (and presumably in other rationalized economies), employers have often filled "deskilled" and subordinate occupations by recruiting women — often from outside the labor force (Davies 1975; Tienda et al. 1987). In this type of labor market, wives and mothers (often well-educated but with domestic obligations), as well as young, unmarried women (freed from domestic duties in modern service economies) are major sources of labor for restructured sales, service, and clerical jobs.[3]

Women's Domestic Ties

Female labor force participation. In the highly industrialized societies, the greater availability of effective contraception and of market substitutes for domestic production means that a greater share of the population engages in market work. Various theoretical arguments suggest that high levels of female labor force participation should coincide with a more egalitarian occupational structure. Microeconomic theory predicts that the occupational distributions of men and women will be more similar where women's labor market attachment (and thus their stock of "human capital") is closer to men's. Structural arguments suggest that women are better able to compete for male-dominated occupations when they form a relatively large share of the labor force (Kanter 1977).[4] And an institutionalist perspective pre-

[3] Women's concentration in less desirable jobs has been attributed to such diverse factors as sex differences in family responsibilities (Polachek 1981), exclusion by male co-workers or labor unions (Milkman 1987; Cockburn 1991), employer discrimination (Becker 1971; Edwards, Reich, and Gordon 1975; Strober 1984), men's historically derived power over women (Collins 1971; Goode 1982; Walby 1986), and gender ideology (Mann 1986; Scott 1986).

[4] Some theories of minority-group discrimination have suggested that women will be *more* likely to experience discrimination and exclusion when their share of the labor force — and thus their threat to men — is relatively high (Blalock 1967; Thurow 1975; Blau 1977; Semyonov and Shenhav 1988).

dicts an egalitarian occupational structure in cultures in which women are defined as "equal economic actors" (Weiss et al. 1976; Ramirez and Weiss 1979; Ramirez 1987).[5]

Fertility. Men's and women's occupational distributions should also be more similar in countries where fertility is low. Reduced childbearing and childrearing responsibilities free women to acquire the credentials, skills, and experience necessary to compete in the labor market (Becker 1981; Polachek 1981). Low fertility rates should also affect employers' assessments of the "risks" of hiring women for jobs in which continuity is important to productivity (Phelps 1980). Finally, low fertility rates may support a cultural definition of women's role beyond the domestic realm (Ramirez 1987).

Ideology: Gender Egalitarianism

Sociological arguments and common wisdom suggest that occupational sex segregation should be less pronounced in countries characterized by an ideology that emphasizes gender equality. Sex discrimination should be less acceptable and more costly in such cultures (Goode 1963). Also, the occupational and educational goals of men and women should converge in cultures in which gender is a less salient dimension of social identity (Ramirez 1987). Whether an egalitarian ideology emerges in response to the higher economic costs of labor market discrimination (Durkheim [1893] 1984; Davis and Moore 1945; Parsons 1951; Treiman 1970) or arises from a nation-state's growing need for legitimacy (Weiss et al. 1976; Ramirez and Weiss 1979; Meyer 1980; Ramirez 1987), a universalist ideology should contribute to similarity in women's and men's occupational distributions.

Some authors have suggested that the impact of an egalitarian ideology on women's occupational opportunities is mediated by political structure — in particular by a society's *dominant mode of interest articulation* (Silén 1988; Gelb 1989; Eduards 1988). This discussion is often based on the distinction between two ideal types of interest-intermediation structures: In "corporatist" systems, like Sweden, labor market policy is formed through an institutionalized process of negotiation and consensus by a tripartite body consisting of officially sanctioned representatives from the state, the labor unions, and the employers' associations. In "pluralist" systems, policy is made through a relatively chaotic process involving various, competing single-interest groups.

On a cultural level, the debate over the merits of each of these systems suggests that a society's operational definition of "sexual equality" may differ substantially depending upon whether it is official (state, labor, and industry) representatives or autonomous feminist interest groups that are predominantly responsible for its articulation. Furthermore, the political strategies open to advocates of gender equality and their chances of success are quite different in corporatist and pluralist systems. A corporatist structure results in co-optation of women's demands for equal employment opportunities because feminists working within the male-dominated system tend to win concessions on issues like child care and pregnancy leave, rather than on "bread and butter issues" like affirmative action (Lovenduski 1986; Silén 1988; Gelb 1989; Eduards 1988; but see Ruggie 1984). In pluralist systems, where they are unconstrained by the necessity to work through the intermediation of existing groups such as parties and unions, feminists enjoy greater autonomy in the choice of tactics. Thus, American women have been more successful in institutionalizing affirmative action and expanding economic opportunities for women, while the Swedes have been able to create a much better support structure for encouraging female labor force participation (Gelb 1989).

METHODOLOGICAL AND CONCEPTUAL ISSUES

Three methodological and conceptual problems have hampered most past attempts to measure and account for international differences in the occupational distributions of men and women.

(1) The dependent variable has not been defined in a way that reveals complex distributional patterns. Sex segregation is most often measured by a cumulative scalar index, like the "index of dissimilarity" (Duncan and Duncan 1955), which indicates the percentage of women (or men) that would have to change occupations in order to arrive at a proportional representation of the sexes across occupations. Although such indices

[5] This refers to the *net* effects of female labor force participation. If it is the availability of "female" positions that motivates women to enter the labor force (or motivates employers to recruit them), greater female presence in the labor force would in fact coincide with a more sex-segregated occupational structure. Similarly, little decline in occupational segregation can be expected if women enter the labor force to work in jobs abandoned by men.

provide a convenient single measure of segregation, they result in a great deal of lost information, since they tell us nothing about the occupational sources of these deviations. This means that cross-cultural or historical differences in the gender typing of particular occupations are obscured, as is the relationship of gender typing to social, economic, and cultural characteristics. Segregation may occur through an overrepresentation of women in service jobs in some countries, an overrepresentation of women in clerical jobs in other countries, or an underrepresentation of women in production in others (Haavio-Mannila 1989; Charles and Grusky 1992).

Such distinctions may not be relevant if the research objective is to *describe* the level of sex segregation in different countries. But a unidimensional measure of segregation is clearly inadequate as a dependent variable in an explanatory model; the model would imply that the covariates act generically on the sex ratios of *all* occupational categories, increasing female representation where women are underrepresented (relative to their overall rate of labor force participation) and decreasing female representation where they are overrepresented. Although some variables may indeed act in this way (gender egalitarianism might be an example), this cannot be presumed to hold true universally. Higher levels of female education might, for example, be associated with women's greater access to managerial occupations, but *not* to production jobs.

(2) Past research has failed to disentangle "compositional effects" (i.e., the female labor force participation rate and the occupational structure) from the measure of occupational sex segregation (Semyonov 1980). Because the index of dissimilarity is sensitive to the relative sizes of occupational categories, a "size standardized" index is often used in comparative and historical analyses (Gross 1968; Blau and Hendricks 1979; Williams 1979; Jacobs and Lim 1988, Jacobs 1989b). Although the size-standardized index is unaffected by the relative sizes of occupational categories, it is sensitive to changes in the female labor force participation rates (Charles and Grusky 1992).

Either type of "compositional dependence" presents difficulties in comparative research, since the relationship between the compositional factors and cross-national variation in segregation is unknown. When labor market sex distributions are confounded with the occupational structure and rates of female labor force participation, information regarding the *process* by which men and women are allocated to different labor market positions is lost, and we cannot possibly hope to disentangle the complex causal relationships between these factors. For example, if the dissimilarity index were higher in countries with many managerial jobs, we would not be able to determine how much of this effect was a result of women's underrepresentation in these occupations and how much was the result of processes specific to economies with many managers. Similarly, if cross-national differences in female labor force participation rates were not purged from the measure of sex segregation, the "substantive" effect of this variable could not be unambiguously determined. If a single-value measure of occupational sex segregation is to be used, it should be invariant with respect to both occupational structure and female labor force participation rates.

(3) Most international comparative research has not employed multivariate analysis. Because of the small number of countries that constitute the international "population," it is difficult to construct linear models that include a sufficiently large number of covariates to allow complex interrelationships to be understood. For example, where investigators have found an effect of "modernization" on patterns of segregation, it has generally been unclear whether the relationship arises from changes in the occupational, industrial, or class structure, an increase in the female labor force participation rate, a growing egalitarianism, or other factors. This is important, since these various dimensions of modernization may have mutually independent effects.

Many of these difficulties can be eliminated or mitigated through use of log-linear methods. A log-linear model of occupational distribution by sex allows the impact of independent variables to be measured separately for *individual* occupational categories. It also allows sex segregation to be measured net of both female labor force participation rates and occupational structure. And, this method allows construction of a more complex multivariate model than is possible using conventional linear models.

LABOR FORCE DATA

Because of the difficulty of identifying the paid labor force in less-developed economies, I included only industrialized countries in the present analysis. Although this restriction limits the generalizability of results, sufficient variability exists among industrialized countries in the occupational distributions of men and women and in

the independent variables to allow investigation of these relationships.

Data for occupation-by-sex cross-tabulations are from the International Labor Office's (ILO) *Yearbook of Labor Statistics* (various years, Table 2B). Figures published by ILO are drawn from information provided by national statistical services, which are requested to follow the "International Recommendations on Labour Statistics." Some countries base these figures on complete census counts; others base their figures on random samples of the population (or households). The age range covered by these figures also varies among the countries. Data are for 1985, or the year closest to 1985. (The exact date, coverage, and source of labor force survey data for each country is available on request from the author.)

All occupational data employed in this analysis were reported in accordance with the ILO's 1968 "International Standard Classification of Occupations" (International Labour Office 1986, pp. 971–72). Occupational categories are: (1) professional, technical and related workers; (2) administrative and managerial workers; (3) clerical and related workers; (4) sales workers; (5) service workers; (6) agricultural, animal husbandry and forestry workers, fishermen and hunters; and (7) production and related workers, transport equipment operators and laborers. Category 6 workers and unpaid family workers were eliminated because of sharp discrepancies between countries in the assignment of women to these categories (see International Labour Office 1986, p. 3), and because women's allocation to these types of jobs is likely to occur in a family context rather than through competition in the formal economy. Unemployed individuals and those "not classifiable by status" were also excluded because of large cross-national differences in their definition.

These occupational categories are general and large, and nothing is known about the level of segregation within these categories (see Baron and Bielby 1980). However, these are the most detailed, internationally comparable labor market data available for a large number of countries. Although the use of such broad categories most certainly masks much sex segregation, it is reassuring that the rank-order of countries by the index of dissimilarity is roughly the same using broad or more detailed occupational categories (Reubens and Harrisson 1983; Jonung 1984; Charles 1987, 1990; Jacobs and Lim 1988). Furthermore, the general patterns of occupational distribution by sex suggested by the ILO data closely parallel those found when more detailed country-specific occupational classifications are employed.

MEASURING SEX SEGREGATION

An overall occupational sex segregation score based on the six-category occupational classification was computed for each country to provide a general idea of the relative levels of sex segregation in the 25 countries. I employ the "ratio index" of sex segregation (R), which was recently proposed by Charles and Grusky (1992). Unlike other scalar measures of segregation, this index is not influenced by cross-national differences in occupational structure or female labor force participation. The index is given by the equation

$$R = 1/I \sum_{i=1}^{I} |\ln(F_i/M_i) - [1/I \sum_{i=1}^{I} \ln (F_i/M_i)]|, \quad (1)$$

where F_i is the number of women in occupation i, M_i is the number of men in occupation i, and I is the number of occupational categories. Values of R give the sum of occupation-specific deviation from proportional representation of the sexes. The factor by which women in a given country are disproportionately represented in the average occupation is given by $\exp(R)$. In a perfectly integrated labor market, R equals 0 and $\exp(R)$ equals 1. In a perfectly segregated labor market, R is undefined because M_i equals 0 in all female-dominated occupations.

Segregation scores for the 25 countries, presented in the first column of Table 1, reveal the same counterintuitive patterns that have been found using the index of dissimilarity. For example, results indicate that women or men are overrepresented by a factor of 2.61 in the average Swedish occupation, while the corresponding value for Japan is only 2.05. Occupational sex segregation can thus be said to be 27 percent greater in Sweden than in Japan (2.61/2.05 = 1.27).

The following six columns of this table show the occupation-specific parameters (R_i) generating the ratio index score. These are calculated by deviating the ratio of females to males in the i^{th} occupation from the corresponding ratios averaged across all occupations. They are defined by equation 2:

$$R_i = \ln(F_i/M_i) - [1/I \sum_{i=1}^{I} \ln (F_i/M_i)], \quad (2)$$

Table 1. Ratio Index of Occupational Sex Segregation and Occupation-Specific Parameters for Female Representation: 25 Industrial Countries, 1985

Country	Ratio Index		Occupation-Specific Parameters					
	(*R*)	Exp(*R*)	Professional	Managerial	Clerical	Sales	Service	Production
Luxembourg	1.33	3.78	.31	-1.98	.70	1.06	1.93	-2.02
Switzerland	1.10	3.00	.19	-2.20	.80	.93	1.39	-1.12
Netherlands	1.10	3.00	.45	-1.66	.95	.30	1.60	-1.63
Spain	1.04	2.83	.63	-2.25	.68	.55	1.26	-.88
Austria	1.03	2.80	.18	-1.67	.88	.67	1.36	-1.42
Norway	.99	2.69	.20	-1.24	1.24	.22	1.29	-1.72
Finland	.98	2.66	.13	-1.46	1.36	.20	1.26	-1.48
Sweden	.96	2.61	.22	-1.29	1.50	-.10	1.16	-1.50
Australia	.95	2.59	.14	-1.21	1.35	.44	.93	-1.65
Denmark	.93	2.53	.60	-1.58	.70	.22	1.25	-1.19
Great Britain	.92	2.51	-.22	-1.02	1.27	.58	.92	-1.52
Ireland	.90	2.46	.64	-1.60	1.18	.13	.76	-1.11
Turkey	.90	2.46	1.28	-.74	1.41	-1.01	-.40	-.55
Israel	.88	2.41	.70	-1.08	1.08	-.27	.87	-1.30
New Zealand	.86	2.36	.24	-1.27	1.36	.16	.83	-1.32
Belgium	.86	2.36	.53	-1.30	.47	.38	1.18	-1.27
Yugoslavia	.85	2.34	.42	-1.50	.85	.07	1.22	-1.05
France	.82	2.27	.14	-1.27	1.05	.21	1.05	-1.19
Germany	.79	2.20	.10	-1.14	.91	.69	.68	-1.24
Canada	.75	2.12	.30	-.54	1.53	-.07	.43	-1.64
Portugal	.74	2.10	.61	-1.40	.43	-.11	1.19	-.73
Japan	.72	2.05	.55	-1.90	.87	-.03	.74	-.23
United States	.65	1.92	.01	-.53	1.45	.01	.49	-1.43
Greece	.59	1.80	.61	-.82	.84	-.19	.33	-.77
Italy	.41	1.51	.53	.17	.04	-1.24	.42	.08
Mean	.88	2.45	.38	-1.30	1.00	.15	.97	-1.10

where terms are defined as in equation 1. The parameter for each occupation can be interpreted as the deviation of that occupation from proportional female representation. The international means indicate that, on the average, *women are overrepresented in professional, clerical, sales, and service occupations* (positive values), *and substantially underrepresented in managerial and production jobs* (negative values).

Women are overrepresented in professional occupations in every country except Great Britain. This may reflect the functional proximity of some large professional occupations (e.g., nursing, social work, children's education) to women's traditional role in the family. Also, historical shortages of educated workers may have made women's exclusion from professional occupations prohibitively costly. For career-committed women, a professional education may represent one of the few means of ensuring a relatively prestigious (and gender-appropriate) occupational career. Finally, more universalistic allocative criteria may prevail for professional jobs, as applicants can be easily screened on the basis of formal, occupation-specific credentials.

MODELING INTERNATIONAL VARIATION IN SEX SEGREGATION

Methods

For the log-linear analysis, the raw labor force data were arranged a three-dimensional, 300-cell matrix: 6 occupational categories × 2 sexes × 25

countries. The object was to predict counts for each cell based on the information provided by the model. The relative fit of nested hierarchical models was assessed using the likelihood-ratio chi-square statistic (L^2), which indicates how well a given model reproduces the observed cell frequencies (Fienberg 1987). Although the ILO figures are weighted up to population counts, the analyses presented here are based on the original unweighted sample data. The effective sample size for these models is 67,431,776 individuals in the 25 countries.

The first model includes the three main effects of SEX, OCCUPATION, and COUNTRY, plus three two-way interaction terms — SEX × OCCUPATION, OCCUPATION × COUNTRY, and SEX × COUNTRY. The SEX × COUNTRY interaction permits the labor force sex ratio to vary across countries. The OCCUPATION × COUNTRY interaction permits the sizes of occupational categories to vary across countries, and the SEX × OCCUPATION interaction permits the "world" sex composition to vary across occupational categories. The fit statistic for this model provides a "purged" measure (net of occupational structure and labor force sex ratio) of cross-national variation in occupational sex segregation. The unexplained variance reflects total cross-national differences in relative occupational distributions of males and females.

The object of the multivariate analysis is to account for this international variation by considering the impact of relevant social, economic, and cultural characteristics of countries. These characteristics were taken from publicly available national and international sources.[6]

The *size of the service sector* is measured as the percentage of the paid nonagricultural labor force working in trade, financial, or service industries.

The *size of the employee class* is the percentage of the paid, nonagricultural labor force working as employees.

Female labor force participation is measured as the percentage of the paid, nonagricultural labor force that are women.

Fertility is measured as the natural log of the crude birth rate in 1985.

"*Gender egalitarianism*" is an index representing women's legal status, which I believe to be the best available indicator of the actual penetration of gender-egalitarian notions into the national culture.[7] The index is based on a principal components analysis, single-factor solution of three variables: (1) a dummy variable coded 1 if abortion is legally available to women on re-

[6] Occupational distributions by sex and data on size of employee class, size of service sector, and female labor force participation are from International Labour Office (various years, Tables 2A and 2B); data on fertility and modernization are from United Nations Conference on Trade and Development (1985); factor scores for gender egalitarianism are based on information in Seager and Olson (1986), Morgen (1984), and Arat (1989); corporatism scores were taken from Schmidt (1982), Schmitter (1977), and Uca (1983); data on labor force growth are from World Bank (1987). More detailed information on definitions and data sources for independent variables are available from the author on request.

The present model includes no indicator for female educational attainment. Although neoclassical arguments imply a tight link between educational attainment and occupational distributions, these processes are thought to occur at the individual level (Mincer and Polachek 1973; Becker 1975, 1981). National-level data cannot be used to assess the impact of individual women's educational attainment on their occupational locations. As a control, women's relative educational attainment was included in an earlier model, but it had little effect on the overall fit of the model, and its inclusion did not appreciably affect the parameters for other variables. Other control variables examined in previous models were the rate of part-time employment, the ratio of female to male earnings, Catholicism, public sector employment, and unionization. These had little or no effect on the direction or magnitude of the explanatory parameter estimates, and were dropped from the present analysis.

[7] Legal affirmations of women's right to control specific areas of their lives would seem to reflect cultural norms of gender equality more directly than would generic indicators of female participation in public institutions. Cross-national differences in rates of female labor force participation may simply reflect differences in industrial structure, or a shortage of male or foreign labor. Similarly, expanded female access to educational institutions may be made compatible with women's traditional role if education is defined as an important qualification for motherhood, as is reportedly the case in Japan. And if women are concentrated in low-status, service-oriented occupations or fields of study, participation in the labor market or in educational institutions may in fact reinforce gender stereotypes. Furthermore, denying women these legal rights is not likely to be highly visible internationally, although exclusion of women from public institutions (such as education, politics, and, increasingly, the labor market) represents a blatant transgression of international principles. I do not include employment-related legislation (such as affirmative action) in this index, because the object is to measure the purely *ideological* effects, rather than the direct impact of specific national policies.

Table 2. Values of Independent Variables Used in the Analyses: 25 Industrial Countries, 1985

Country	Variable							
	Size of Service Sector	Size of Employee Class	% Female of Labor Force	Crude Birth Rate	Gender Egalitar-ianism	Corpo-ratism	Labor Force Growth	Moderni-zation
Australia	62.4	87.4	39.2	2.73	-1.02	2	2.4	9.33
Austria	50.3	94.1	38.2	2.51	1.29	3	.2	9.09
Belgium	61.9	87.4	36.4	2.52	.06	2	.7	9.08
Canada	65.5	92.9	43.2	2.74	-.48	1	3.2	9.40
Denmark	62.6	93.0	46.2	2.48	1.17	2	1.2	9.31
Finland	56.4	94.4	48.2	2.50	-1.02	2	.7	9.23
France	60.2	90.8	41.8	2.60	1.83	1	.8	9.21
Germany	51.1	92.4	37.7	2.42	-.36	2	.3	9.28
Great Britain	62.2	90.0	43.2	2.53	-.48	1	.3	9.05
Greece	50.8	71.4	27.2	2.77	-1.02	3	.5	8.26
Ireland	55.9	89.1	33.2	3.01	-1.02	1	.8	8.56
Israel	62.0	82.9	38.4	3.11	.06	2	3.0	8.71
Italy	56.0	78.2	31.1	2.54	.74	1	.3	8.71
Japan	54.1	86.3	36.0	2.50	-1.02	3	1.0	9.10
Luxembourg	62.0	92.3	34.0	2.37	-1.02	2	.6	9.14
Netherlands	63.4	93.2	33.5	2.53	-.36	2	1.4	9.17
New Zealand	58.3	86.8	41.8	2.86	.18	2	1.9	8.95
Norway	60.9	94.1	44.2	2.57	1.83	3	1.8	9.52
Portugal	49.3	85.0	37.6	2.83	.72	3	1.2	7.76
Spain	51.3	84.0	28.3	2.80	-1.02	3	.6	8.47
Sweden	61.3	95.6	48.1	2.32	1.17	3	1.1	9.38
Switzerland	51.5	92.5	36.7	2.40	-1.02	3	.8	9.61
Turkey	52.9	77.9	10.9	3.45	-1.02	1	1.7	7.02
United States	64.4	92.8	44.8	2.82	1.17	1	2.2	9.48
Yugoslavia	43.8	96.9	36.1	2.72	.63	3	.9	7.69
Mean	57.2	88.8	37.4	2.67	.00	2.08	1.2	8.90
Standard deviation	5.8	6.2	7.9	.26	1.00	.81	.8	.64

quest; (2) a dummy variable coded 1 if marital rape is defined as a crime; and (3) a dummy variable coded 1 if women are guaranteed at least 12 weeks of paid pregnancy leave from their jobs.

Corporatism is measured on a scale ranging from 1 ("weakly corporatist") to 3 ("strongly corporatist").

Labor force growth is measured as the average annual growth of the labor force (in percent), from 1965 to 1980. This variable allows the effects of economic structure to be distinguished from those for labor force growth.[8]

Finally, *modernization* is measured as the natural log of 1982 gross domestic product per capital in U.S. dollars. (For these countries, GDP is highly correlated with other standard indicators of modernization, such as energy use, newspaper

[8] Labor-force expansion likely affects women's economic opportunities *independent of a country's economic structure*. Countries with relatively large service sectors have usually experienced substantial labor-force growth in recent years. If this variable is not controlled, any effects of service-sector size could be interpreted as spurious consequences of a tight labor market. For example, it could be argued that women will take advantage of labor shortages to increase their representation in sales jobs *regardless of the industrial location* of these jobs (e.g., whether in a construction firm or a retail outlet).

circulation, and hospital beds per capita.) This variable was included to control for the residual effect of overall economic modernization.

Table 2 shows frequencies and descriptive statistics for the independent variables. (Zero-order correlations are available on request from the author.)

Log-linear parameter estimates are usually calculated relative to one omitted category. The parameterization employed here, however, equates the main effect of gender to the relative number of women *averaged across all occupations*, rather than with the relative number of women in a single occupation (see Charles and Grusky 1992 for details). This represents a more theoretically meaningful baseline reference. This method also produces meaningful parameter estimates for each occupational category: Parameters for the occupation-specific interaction terms can be interpreted as deviations from this average for the respective occupational category. (Of course, there are only five independent effects, but the sixth can be calculated easily, since the parameters are constrained to sum to 0).

Effects of the independent variables on the occupational distributions of women and men in industrial countries were assessed by interacting each occupation-specific segregation term (R_i) with each of the eight covariates. By a maximum-likelihood procedure, individual parameter estimates were then derived that specify the relationship between the independent variable and the mean sex ratio in each occupational category (Grusky and Hauser 1984; Hauser and Grusky 1988). The complete model is:

$$\begin{aligned}&(O \times C)\,(S \times C) + \\ &R_1(J+K+L+M+N+P+Q+T) + \\ &R_2(J+K+L+M+N+P+Q+T) + \\ &R_3(J+K+L+M+N+P+Q+T) + \\ &R_4(J+K+L+M+N+P+Q+T) + \\ &R_5(J+K+L+M+N+P+Q+T), \end{aligned} \quad (3)$$

where S is sex, O is occupation, C is country, and J, K, L, M, N, P, Q, and T are the country-specific values on the eight exogenous variables. R_1 through R_5 denote the occupation-specific segregation effects, which are constrained with country-specific exogenous variables as follows:

$$\begin{aligned}R_{ik} = {} & a_i + b_{1i}(J_k) + b_{2i}(K_k) + b_{3i}(L_k) + b_{4i}(M_k) + \\ & b_{5i}(N_k) + b_{6i}(P_k) + b_{7i}(Q_k) + b_{8i}(T_k), \end{aligned} \quad (4)$$

where k indexes countries, i indexes occupations, a_i is the intercept, and $b_{1i}, \ldots, b_{8i}$ are slopes in the linear regression of the occupation-specific ratios on the macro-level variables (Charles and Grusky 1992).

The *relative* effects of each independent variable were investigated in two ways:

(1) The complete multivariate model was run eight times, with a different covariate omitted each time ("backward selection"). Comparison of the fit statistics for the complete model with each of these seven-variable models provides information about the *net* amount of international variance in occupational distributions of men and women explained by each covariate.[9]

(2) Eight models were computed, each including the three two-way interaction effects and a single covariate. These "single-variable models" provide information about the *total* effect of each independent variable and may also allow some inferences about the relationships between the covariates.

Results

Tables 3 and 4 present results for the log-linear analyses. The upper panel of Table 3 compares the fit of models with and without the covariates. The contrast shown in Line 3 indicates that an overwhelming share (97 percent) of cross-national variability in occupational distributions of women and men is accounted for by international differences in the eight independent variables. The lower panel reports statistics for models after deleting single covariates in turn from the full multivariate model. By comparing models with and without a given variable, it is possible to determine each covariate's relative contribution to explained cross-national variation. Table 4 presents the multiplicative parameter estimates for the independent variables in the full multivariate model. These estimates indicate the direction and strength of the relationship between the given independent variable and female representation in a particular occupational category. For example, the figure 1.01 in the first row indicates that, net of all the other variables in the model, a one

[9] These results depend in part on the size of each country's labor force sample. Thus, results will be unrepresentative if countries with large labor force surveys also have extreme values on the independent variables. As a check, this procedure was followed for a sample standardized to 1,000 individuals per country. Results did not deviate substantially from those presented for the unstandardized sample.

Table 3. Partitions of Covariate Effects on Occupational Distributions by Sex: 25 Industrial Countries, 1985

Model	L^2	Degrees of Freedom	L^2/L^2_t
Model 1 as Baseline			
Model 1: (SEX × OCCUPATION) + (OCCUPATION × COUNTRY) + (SEX × COUNTRY) (Total variation)	3,875,543*	120	100.00
Model 2: Multivariate Model (Unexplained variation)	108,596*	80	2.80
Model 1 vs. Model 2 (Explained variation)	3,766,947*	40	97.20
Multivariate Model (Model 2) as Baseline			
Delete percent in service sector	188,813*	85	—
Effect	80,217*	5	2.07
Delete percent employees	289,332*	85	—
Effect	180,736*	5	4.66
Delete percent female	135,557*	85	—
Effect	26,961*	5	.70
Delete crude birth rate	187,085*	85	—
Effect	78,489*	5	2.03
Delete gender egalitarianism	152,639*	85	—
Effect	188,034*	5	1.14
Delete corporatism	188,034*	85	—
Effect	79,438*	5	2.05
Delete labor force growth	186,814*	85	—
Effect	78,218*	5	2.02
Delete modernization	126,359*	85	—
Effect	17,763*	5	.46

* $p < .05$

Note: L^2_t refers to the likelihood-ratio chi-square statistic for total cross-national variation in occupational distributions by sex (Model 1).

percentage-point increase in the percentage of the labor force working as employees is associated with a one-percent increase in female representation in professional occupations. All relationships are statistically significant at the .05 probability level, which is not surprising given the large sample sizes. (Results were not altered when Yugoslavia, the only socialist country, was excluded from the analysis.) Parameter estimates and fit statistics for the single-variable models are presented in Appendix A.

As expected, structural characteristics of the economy — *size of the employee class and size of the service* sector — show generally segregative net effects.[10] A relatively large employee class and a relatively large service industry is associated with a greater concentration of women in service and sales occupations,[11] and much lower female representation in the male-dominated production and managerial occupations. The greater concentration of women in clerical occupations in more employee-based economies is consistent with arguments linking economic rationalization to feminization of clerical work.

Interpretations of the coefficients for the managerial, production, and professional occupations must consider the relationship between economic structure and the composition of the female labor force. A "modern" economic structure implies greater opportunities in sales, service, and clerical occupations for women who might otherwise not participate in the labor force. Thus, weaker female representation in managerial occupations does not necessarily indicate fewer managerial opportunities for qualified women, but may simply reflect the different process by which the female labor force is selected in these economic contexts. This "selection effect" may also account for women's weaker representation in professional occupations in more employee-based economies.[12] Similarly, women's weaker representation in production occupations in the relatively modernized economies may be partially attributable to the disproportionate entry of less financially pressured women (often former housewives) into female-dominated occupations, which often have more pleasant working conditions, but low wages.

[10] For individual countries, whether these effects are "segregative" or "integrative" depends on the occupational distribution of men and women in that country. In Italy, for example, women are grossly underrepresented in the sales occupation. Thus, further economic rationalization would presumably contribute to integration of this occupation in Italy.

[11] The magnitude of the coefficients for the sales occupation reflects the large cross-national differences in the sex ratios for this occupation compared to other occupations: Men dominate sales occupations in several countries, whereas women are overrepresented in service and clerical occupations throughout the industrial world, except in Turkey where women are underrepresented in service occupations.

[12] A large service sector is associated with slightly *greater* female representation in professional work. This may reflect the nature of professional jobs in service-based economies, in which a relatively large share of professional jobs involve caretaking and domestic-type tasks like child care and social work. Engineers and technical support professionals may make up a greater proportion of professional workers in more industrial-based economies.

Table 4. Log-Linear Parameter Estimates for Covariates' Effects on Female Representation in Occupations: 25 Industrial Countries, 1985

Independent Variables	Occupation					
	Professional	Managerial	Clerical	Sales	Service	Production
Percent in service industry	1.01	.95	.98	1.07	1.05	.92
	(36.15)	(-38.99)	(-5.32)	(137.65)	(94.27)	(-192.86)
Percent in employee class	.97	.93	1.04	1.09	1.03	.93
	(-96.15)	(-99.61)	(132.00)	(249.64)	(103.18)	(-262.85)
Percent females	.97	1.02	1.03	.99	.99	.99
	(-94.24)	(29.58)	(109.89)	(-26.74)	(-20.31)	(-42.39)
Crude birth rate (log)	.63	.15	10.91	9.41	.58	1.79
	(-38.96)	(-88.20)	(187.17)	(149.02)	(-40.73)	(-146.86)
Gender egalitarianism	1.05	1.20	.78	.87	1.06	1.10
	(36.77)	(65.52)	(-172.22)	(-78.33)	(39.08)	(74.27)
Corporatism	1.26	.48	.89	1.61	1.55	.75
	(91.21)	(-112.82)	(-46.87)	(148.76)	(147.91)	(-119.36)
Labor force growth	1.27	1.65	.86	.50	.82	1.36
	(94.56)	(132.99)	(-54.98)	(-211.97)	(-72.34)	(123.00)
Modernization (log)	.78	.65	1.28	1.73	.93	.95
	(-54.76)	(-37.22)	(54.80)	(102.46)	(-13.94)	(-12.32)

Note: Figures shown are multiplicative parameter estimates. Numbers in parentheses are z-scores, i.e., the additive parameter estimate/standard error.

The effects of these two "structural" factors in explaining occupational sex segregation are strong, as indicated by their relative contributions to the fit of the model (Table 3). This is especially true for size of the employee class. I have suggested that factors such as the incorporation of "female" tasks in the formal economy, the diverse socioeconomic and educational backgrounds of the female labor force, and the bureaucratic, highly rationalized organization of many occupations in postindustrial labor markets underlie these relationships. Systematic sex differences in market-relevant skills could also produce greater sex segregation in modern, achievement-oriented societies in which the linkage between skill and occupational allocation is tighter. Unfortunately, it is not possible to investigate the validity of this argument using the aggregate-level data employed here. However, results of individual-level studies in the United States have indicated a strong ideological component in sex segregation, suggesting that productivity-related explanations can tell only part of the story, even in the most modern economies (Bielby and Baron 1986; Jacobs 1989a).

The net effects of *female labor force participation* are relatively weak, with no clear integrative or segregative tendency. Consistent with cultural and structural arguments about the liberating consequences of labor market activity, women are better represented in managerial occupations when they represent a relatively high share of the labor force. But they are also less likely to do production work. For the female-typed occupations, the effect is also mixed: Women's representation in clerical occupations is positively related to their share of the labor force, but sales and service occupations show a weak negative association with this variable. Another generally integrative — but not desirable — concomitant of women's greater labor market involvement is their moderately weaker representation in professional occupations. This may be attributable to differences in the composition of the female labor force between countries with high and low female shares of the labor force: When relatively few women participate in the paid, nonagricultural labor force, those who do so tend to be well-educated and from urban backgrounds (Lewin-Epstein and Semyonov 1992). Professional work, e.g., in teaching or health care, may be one of the few socially acceptable forms of independent employment for women. In any case, the generally weak and unsystematic relationships here provide little support for arguments suggesting large positive effects of women's labor market integration on their occupational opportunities.

We cannot presume that differences in female shares of the labor force are causally prior to cross-national differences in occupational distributions. Some analysts have suggested that jobs differ in their attractiveness and availability to

women. Some support for this claim can be found by comparing the net and the total effects of female labor force participation (Table 4 and Appendix A, respectively). Parameters in the single variable model in which cross-national differences in industrial and class structure are not taken into account indicate a strong positive relationship between women's share of the labor force and their concentration in sales, service, and clerical occupations. This is consistent with arguments linking economic rationalization and growth of the service sector to higher levels of female labor force participation as well as greater occupational differentiation of men and women.

The net effects of *fertility* are as expected. Women's representation in both male-dominated occupations (management and production) is greater and their concentration in clerical and sales occupations is considerably less pronounced in countries where fertility is relatively low. Again, this cross-sectional analysis provides little information about the causal direction of this relationship: Greater occupational equality may be a consequence or a cause of lower fertility. (However, the effect of women's economic opportunities on fertility is partially accounted for in the full model by inclusion of variables measuring the size of the service sector and the size of the employee class.)

The net effects of *gender egalitarianism* are consistent with institutional and modernization arguments: Women's relative representation in the male-dominated production and managerial occupations is greater in relatively egalitarian countries, and their relative concentration in clerical and sales occupations is much lower. Interestingly, parameter estimates for "egalitarianism" in many cases suggest relationships opposing those found for the two structural variables, size of the employee class, and size of the service sector. In this sense, ideological egalitarianism is indeed a cultural force that opposes the occupational sex segregation associated with postindustrial economic structure.

The *corporatism* variable has a strong relationship to cross-national variation in occupational distributions of men and women (see Table 3). The pattern of this relationship is consistent with arguments suggesting a segregative effect of corporatism: Where corporatism is relatively high, women are much more likely to work in the female-dominated occupations, especially in sales and service, and considerably less likely to be found in the "male" managerial and production occupations. Women's greater access to male-dominated occupations in more pluralist systems may reflect the weaker ties of the feminist movement to the mainstream political system and thus their greater effectiveness at articulating and lobbying for radical or unconventional programs of economic equality.

The net effect of *labor force growth* is generally integrative.[13] Relatively strong labor force growth is associated with greater female representation in managerial and production occupations and lower concentration of women in sales jobs. Net of industrial and class structures, women's access to male-dominated occupations thus appears to be greater in tight labor markets, perhaps reflecting employers' greater recruitment efforts or women's greater bargaining power in these contexts.

Parameter estimates for the residual *modernization* variable suggest a weak segregative effect: Women are more concentrated in clerical and sales occupations in relatively "modern" countries and are slightly less well represented in the two male-dominated occupations — management and production. (Again, the weaker representation of women in professional occupations in more modernized countries probably reflects differences between more and less modernized countries in the composition of the female labor force.) The net effect of this variable is relatively weak in this model (Table 3), presumably because the effects of many key dimensions of modernization are accounted for by other covariates. Thus, relationships for this variable likely relate to unmeasured dimensions of modernization like urbanization, literacy, technological advancement, and secularism. The *total* effects of modernization are, on the other hand, strongly segregative (see Appendix A), as was expected, given the substantial effects of the two structural variables — size of employee class and size of service sector. Although hardly surprising, this large total effect should be well noted, since it implies a *general* tendency toward greater sex segregation in more modern countries — a relationship that may help account for the observed counterintuitive patterns of international variation in occupational sex segregation.

[13] However, the *total* effect of this variable is to decrease women's representation in "male" occupations of management and production and to increase their concentration in clerical and sales occupations (Appendix A). The discrepancy is probably due to the association between labor force growth and service-sector expansion.

Table 5. Ratio Index of Occupational Sex Segregation and Occupation-Specific Parameters for Female Representation: United States, 1950–1970

	Ratio Index		Occupation-Specific Parameters					
Year	(*R*)	Exp(*R*)	Professional	Managerial	Clerical	Sales	Service	Production
1950	.76	2.14	.32	-1.19	1.03	-.02	.93	-1.08
1960	.80	2.23	.13	-1.22	1.18	-.02	1.09	-1.16
1970	.86	2.36	-.07	-1.29	1.46	.06	1.07	-1.22
Trend, 1950-1970	+	+	–	–	+	+	+	–

GLOBAL EFFECTS OF MODERNIZATION

Has the modernization of these economies been accompanied by a *trend* toward greater occupational sex segregation? Historical data to address this question are scarce and of generally poor quality, primarily because of frequent changes in national occupational classification schemes and the substantial revision of the International Standard Classification of Occupations in 1968.[14] However, some preliminary insights into trends in the United States are available using labor market data adapted by Treiman and Terrell (1975, p. 160) from the population censuses of 1950, 1960, and 1970. These data cover a historical period characterized by dramatic transformation of the U.S. industrial and class structure, and a tremendous increase in the rate of female labor force participation (Bell 1973; Braverman 1974; Davis 1984; Singelmann and Tienda 1985). (Treiman and Terrell also present data from the 1940 census. I confine the present analysis to postwar trends to avoid confounding temporary wartime shifts with the longer-term structural transformations that are of interest here.)

After recoding these data to be roughly comparable to ILO categories, I calculated the ratio index of sex segregation and the six occupation-specific segregation parameters for each decennial census from 1950 to 1970 (equations 1 and 2). Ratio-index scores presented in Table 5 indeed suggest modest increases in occupational sex segregation over this period. However, it is more illuminating to consider shifts in the *occupation-specific* parameters. In all six cases, the direction of these effects are consistent with those of "modernization" in the single-variable model (Appendix A): Over this period, women's representation in professional, managerial, and production occupations consistently declined, while their representation in clerical, sales, and service occupations generally increased.[15] Although idiosyncratic institutional characteristics and national histories caution against generalizing beyond the United States, these historical figures do provide some preliminary evidence that the cross-sectional relationships elaborated above may have shaped the historical development of occupational sex segregation in some postindustrial societies. Future research should examine more systematically the historical relationships between occupational distributions by sex and time-variant factors like economic structure, rates of female labor force participation, and fertility.

NATIONAL DIFFERENCES IN OCCUPATIONAL SEX SEGREGATION

Re-examining the single-index measures of occupational sex segregation presented in Table 1 suggests that the low levels of occupational sex segregation in Japan, Italy, Greece, and Portugal are in large part attributable to the less modernized industrial and class structures of these economies: None of these countries have large service sectors, and all have a relatively large class of self-employed workers, factors associated with

[14] Up to 1980, the occupational classification used by the U.S. Bureau of the Census changed with each new census. Furthermore, the data provided to the ILO by many countries were based on idiosyncratic national occupational classifications or included no breakdown by sex until quite recently.

[15] Conventional (compositionally dependent) measures based on detailed occupational categories indicate generally increasing occupational sex segregation during the 1950 to 1960 period and slightly decreasing segregation between 1960 and 1970 (see England 1981 for a review). Jacobs (1989b) has found stronger evidence of a pronounced decline in sex segregation during the 1970s and 1980s, perhaps reflecting the increasing prevalence of gender-egalitarian norms and policies (see Beller 1982; Steinberg 1988). Around this time, also, the transformation from a goods- to a service-producing economy began to slow in the U.S. (Singelmann and Tienda 1985).

low female concentration in sales, service, and clerical occupations. Among countries with low segregation levels, only the United States, with its large employee class and large service sector, is structurally predisposed to high levels of sex segregation. However, working against these structural factors in the United States is a relatively egalitarian ideological climate and a highly pluralist form of interest intermediation. The high level of labor force growth in the United States in recent years may also have contributed to American women's greater access to managerial occupations.

Among countries with very high levels of segregation — Luxembourg, Switzerland, the Netherlands, Spain, and Austria — all but Spain have a large employee class, and all but Austria have a relatively low score on egalitarianism. Switzerland, Austria, and Spain are all highly corporatist systems, and Luxembourg and the Netherlands are moderately corporatist. The main differences between these countries and the Scandinavian countries are the much higher women's share of the labor force and the more egalitarian ideology in Scandinavia, which may increase women's representation in managerial occupations.

CONCLUSION

International variation in occupational distributions of women and men have been linked to the independent, sometimes mutually opposing effects of some central economic, social, and cultural features of modern societies. Although the low fertility rates and gender-egalitarian ideological environments that generally characterize highly industrialized countries are associated with women's greater access to male-dominated occupations, the structural characteristics of these economies (i.e., their large service-sectors and employee-based class structures) undermine these integrative factors and push toward a relatively large and more occupationally segregated female labor force. The penetration of modern egalitarian principles into the labor market appears to be mediated by the structure of interest articulation, with pluralist systems showing a weaker tendency toward segregation.

Results shed some light on the observed counterintuitive patterns of cross-national variation in occupational sex segregation. It is striking that some of the same structural characteristics associated with a weaker sexual division of labor between the public and domestic domains contribute to greater gender differentiation *within* the formal occupational sphere: Large service sectors imply the incorporation of many traditionally female tasks into the paid economy, and the hierarchical organization and functional differentiation characteristic of highly rationalized, employee-based labor markets imply greater opportunities for occupational sex segregation. Both these structural factors are associated with women's greater integration into the formal economy. Thus, while sex differences in the *general* nature of economic activity may be more pronounced in more "traditional" economies, *occupational* distinctions represent a more salient dimension of gender stratification in postindustrial economies.[16]

The cultural delegitimization of sex-based occupational distinctions is likely to occur slowly and to be met with great resistance, even in the most "modern" ideological settings where serious policy efforts have been made toward accommodating women, e.g., through guaranteed part-time work, child care provisions, and pregnancy benefits. Thus, the segregative impact of large service sectors and employee-based class structures typical of socially progressive welfare states should initially outweigh any ideologically-driven change. Historically embedded and highly institutionalized notions about the inevitability of the sexual division of labor mean that women's increasing concentration in sales, service, and clerical jobs is likely to go unchallenged — even unnoticed — for some time. A highly mobilized and politically independent women's movement may accelerate the process by which sex distinctions in the occupational sphere are defined as inconsistent with modern egalitarian principles.

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[16] Even if measures of occupational sex segregation tell us little about the overall degree to which women's and men's *work* is segregated in a society, they do provide information about the status of occupationally active women, and therefore warrant serious attention. For individuals participating in the formal labor force, occupational distinctions strongly affect social status, life chances, and returns to economic activity.

Appendix A. Single-Variable Log-Linear Parameter Estimates for Covariates' Effects on Female Representation in Occupations: 25 Industrial Countries, 1985

Independent Variables	Occupation						L^2
	Professional	Managerial	Clerical	Sales	Service	Production	
Percent in service industry	.97	.94	1.04	1.06	1.02	.97	3,393,843
	(-312.07)	(-293.67)	(315.11)	(353.56)	(188.74)	(-293.22)	
Percent in employee class	.96	.91	1.05	1.11	1.05	.92	1,432,778
	(-404.66)	(-688.55)	(501.32)	(787.20)	(520.12)	(-969.37)	
Percent females	.95	.93	1.03	1.11	1.04	.95	1,957,917
	(-653.89)	(-615.26)	(297.85)	(716.58)	(403.48)	(-753.61)	
Crude birth rate (log)	3.32	.60	2.00	.52	.34	1.44	3,524,464
	(404.24)	(-65.01)	(225.79)	(-140.24)	(-295.86)	(131.67)	
Gender egalitarianism	1.17	2.05	.61	.50	.84	1.62	2,565,515
	(180.12)	(581.23)	(-549.73)	(-635.85)	(-188.82)	(624.15)	
Corporatism	1.12	.47	.97	1.51	1.44	.90	3,524,942
	(124.41)	(-304.39)	(-36.71)	(365.13)	(340.07)	(-123.47)	
Labor force growth	1.31	.77	1.25	1.16	.84	.82	3,693,907
	(248.23)	(-158.27)	(198.09)	(111.26)	(-153.15)	(-195.52)	
Modernization (log)	.66	.60	1.06	2.01	1.53	.78	3,300,366
	(-412.23)	(-256.87)	(53.48)	(408.41)	(351.54)	(-284.33)	

Note: Figures shown are multiplicative parameter estimates. Numbers in parentheses are z-scores, i.e., the additive parameter estimate/standard error. Degrees of freedom of $L^2 = 115$ for all models.

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