WOMEN'S WORK AND WORKING WOMEN
The Demand for Female Labor

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The demand for female labor is a central explanatory component of macrostructural theories of gender stratification. This study analyzes how the structural demand for female labor affects gender differences in labor force participation. The authors develop a measure of the gendered demand for labor by indexing the degree to which the occupational structure is skewed toward usually male or female occupations. Using census data from 1910 through 1990 and National Longitudinal Sample of Youth (NLSY) data from 261 contemporary U.S. labor markets, the authors show that the gender difference in labor force participation covaries across time and space with this measure of the demand for female labor.

> The first condition for the liberation of the wife is to bring the whole female sex back into public industry.
>
> *—Friedrich Engels ([1884] 1942, 66)*

> It is through gainful employment that woman has traversed most of the distance that separated her from the male; and nothing else can guarantee her liberty in practice. Once she ceases to be a parasite the system based on her dependence crumbles; between her and the universe there is no longer any need for a masculine mediator.
>
> *—Simone De Beauvoir ([1949] 1989, 679)*

> The kids are great. But going to work, that's like, hmmmm, that's like another reason to live. Since I went to work I'm more interested in life and life's more interested in me.
>
> *Latina store manager and mother of three*
> *as quoted by Lillian Rubin (1994, 81)*

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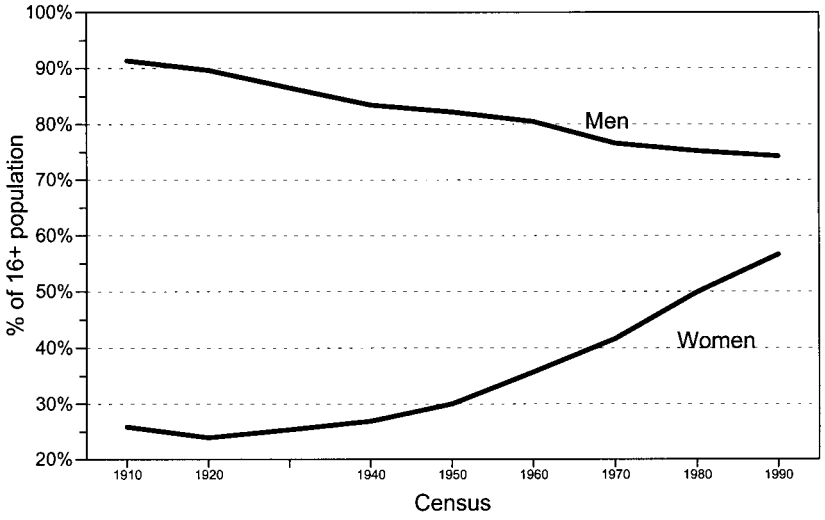

Figure 1: Paid Labor Force Participation Rates by Gender, 1910 to 1990
SOURCE: Calculated from the data of the Minnesota Integrated Public Use Microdata (IPUMS) project, population older than 16.

As the above quotes demonstrate, there has long been a general agreement that increasing gender equality is fueled, at least in part, by the growth in women's paid labor force participation. For much of the past century in the United States, labor force participation rates have grown steadily more equal (see Figure 1). Although a slight decline in the labor force participation rate of men across time explains some of the decline in the gender gap in participation rates, much of the change reflects higher participation rates among women. This is part of a change in the overall gender division of labor, with women's rates of market work coming to resemble those of men (Saltzman Chafetz 1989). As Figure 1 illustrates, the growth in women's paid labor force participation is one of the fundamental facts of gender relations in this century.

Why have women come into the paid labor force so steadily during the last century? If rates of labor force participation are widely believed to be a primary basis of gender stratification, one would have expected equally widespread attention to the conditions that have generated the change. Unfortunately, much of the research literature has been dominated by an overly individualistic model of labor force participation coming out of labor economics. While we have learned much from this approach, the dominance of neoclassic economics has come with a cost of less attention paid to the social conditions that surround the participation decision. One goal of this article is to affirm the continuing relevance of opportunities and

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contexts as an explanation of labor force trends by focusing on the demand for female labor as an indicator of the employment opportunity structure.

Specifically, in this study, we demonstrate the relationship between the demand for female labor and the rising female share of the labor force across both time and space. We begin by defining a measure of the demand for female labor that we first use to examine the historical changes in the occupational structure that led to an increased demand for women's labor, and then we turn to a series of cross-sectional analyses of the relationship between the demand for female labor and women's labor force participation across contemporary metropolitan areas (MAs).

Background Literature

Standard microeconomic models of labor force participation have emphasized the incentive effects of women's potential wages as indexed by their education, the disincentives from husbands' and other family income, and the economic rationality of a family division of labor that relegates women more often to unpaid household labor (e.g., Killingsworth and Heckman 1986). Cross-sectional studies thus focus on education, other family income, and the presence and age of children as primary determinants of women's labor force participation (e.g., Cramer 1980; Felmlee 1993). Each of these individual-level factors has its analogue in longitudinal explanations of the century-long rise in women's entry into the labor market. Thus, women's steadily rising education has raised the opportunity costs of staying out of paid work, and declining fertility, to the extent it is not itself a consequence of increased labor force participation, has removed some of the constraints on women's labor force decisions (Smith and Ward 1984). More recently, men's declining earnings since the mid-1970s have appeared to validate the popular explanations based on family economic need (Myers 1985), although an economic-need explanation is hardly consistent with the simultaneous increases in men's earnings and women's labor force participation throughout the third quarter of the century.

Consistent with the microeconomic origins of this work, most of these explanations focus on characteristics of women or, at best, their immediate families, as the source of changes in the decisions to participate in the labor force. But while women have undeniably changed during the last century, so too have the situations in which women find themselves. These changes in opportunity structures have received less systematic attention in the research literature. Sometimes, area-level unemployment rates are included in cross-sectional studies as one concession to demand-side factors (Browne 1997; Figueroa and Melendez 1993; Kahn and Whittington 1995), but the fluctuations of unemployment with the business cycle are not useful as an explanation of the long-term growth in women's labor force participation. Moreover, the unemployment rate does not adequately capture the concept of employment opportunities as it conflates labor supply and labor demand factors.

Rising wage rates during the last century have also been used to explain the narrowing gender gap in labor force participation. In this analysis, higher wages affect genders differently because for men, the increased income causes men to

substitute leisure for work, while for women the incentive effect of higher wages predominates.

An alternative perspective is found in Oppenheimer's (1970, 1973) analyses of the shifts in the occupational structure in the post–World War II United States. She argues that "continued economic development in our society has increased the demand for female labor, which combined with demographically induced shifts in the supply of women, has resulted in a considerable" rise in women's labor force participation (1973, 186). Increases in the demand for female labor resulted from women's traditional domination of occupations that "were destined to expand enormously with the industrial growth of our society" (p. 189), such as nurses, teachers, and librarians. The rising demand for female labor pulled older and married women into the labor market. The converse side of this explanation is that the discrimination that women faced in entering male-dominated occupations severely limited their economic opportunities in the early part of the century. It is only as the few positions traditionally open to women happened to expand enormously during the twentieth century that women found themselves in situations in which they had true economic choices to make.

A gender-specific demand for labor requires some degree of gender segregation—that within each society at every point in time there are some tasks that are reserved predominantly for women and others for men. These forms of segregation are quite fixed in the short run but mutable in the long run. For instance, clerical occupations had long been bastions of male employment until the turn of the century when they quickly became predominantly female (Reskin and Roos 1990). The same was true of schoolteachers in an earlier period and bank tellers some years later. The demand for female labor and the gender segregation of occupations are themselves dynamically related, but the nature of this relationship goes beyond the scope of this article. As long as the processes of social closure that restrict women to particular areas of employment are in operation, women's level of market work is limited by the size of the occupational sectors to which they are regularly admitted. We return to this important issue in the discussion but make the simplifying assumption here of an exogenously determined occupational structure that determines the demand for female labor at any particular point in time and space.

Oppenheimer's opportunity-based explanation has always been well received in more sociological discussions of gender stratification. For example, Huber and Spitze (1983) link the growth in women's labor force participation to the expansion of the service economy and to the growth of large bureaucracies that increase the amount of "paper shuffling"—a task defined as women's work. Jones and Rosenfeld (1989) found that women's share of the local labor force is greater in MAs with greater employment in public administration.

The emphasis on the demand for female labor has also been generalized in more theoretical explanations of the whole range of gender stratification outcomes. Saltzman Chafetz (1989, 146), for example, contends that

> if the overall demand for women's labor remains high over a long enough period of time, then their [women's] increased access to power resources should begin to affect both the division of household labor and their entry into more highly coveted labor force roles, in an equalitarian direction.

Similarly, Lesser Blumberg (1984) argues that it is the "strategic indispensability" of women's labor that contributes to their overall status. Huber (1990) adapts those arguments to explain changes in gender stratification in contemporary, industrialized societies.

These ideas about the centrality of the demand for female labor can be traced back to Engels who claimed that women's emancipation would come from the demand for their labor—and subsequent employment—in modern industry.

> The emancipation of woman will only be possible when woman can take part in production on a large, social scale, and domestic work no longer claims anything but an insignificant amount of her time. Only now has that become possible through modern large-scale industry, which does not merely permit the employment of female labor over a wide range but positively demands it. (Friedrich Engels [1884] 1942, 148)

Although Engels was correct in highlighting the demand for female labor as an important element in changing gender stratification, he overstated the potential effect of industrial demand. Indeed, it was not industrial factory work but rather postindustrial service work that pulled large numbers of women into the labor force. Nevertheless, Engels does point to the structural roots of gender stratification.

Economic demand theories are not the only situationally focused explanations of women's labor force participation. Politics and culture have changed too during the last century, and both types of changes have probably facilitated women's entry into the labor force (Gornick, Meyers, and Ross 1998; Valian 1999). For example, equal employment legislation has put employers on notice that gender discrimination in hiring may bring with it legal costs. And as Harriet Nelson and June Cleaver have yielded their places to Mary Tyler Moore and Murphy Brown, people's expectations of women's economic roles have also changed. But like explanations based on fertility and educational changes, it is difficult to sort out cause and effect in observing the association between women's rising labor force participation and the political or cultural changes that have accompanied that trend. Oppenheimer's emphasis on the demand for female labor enjoys an advantage in this regard in that it is more clearly grounded in economic changes outside the system of gender relations. It is the changing shape of the nation's economy that shifts employment from manufacturing (and agriculture) to the service sector, and it is growing firm size and its attendant problems of organizational control that leads to bureaucratization and increases in clerical work. Thus, the demand for female labor has both a theoretical and methodological appeal as an *independent* change that may set in motion the various other mutually reinforcing political, economic, cultural, and social changes that reduce gender inequalities.

Opportunity theories of gender stratification are nevertheless difficult to test since they are best examined over both time and space (Dunn, Almquist, and Saltzman Chafetz 1993). Therefore, despite the theoretical interest, relatively few empirical studies have addressed the importance of the demand for female labor. Anthropologists have used the Human Relations Area Files to test portions of the theories on preliterate societies (Lesser Blumberg 1984). And indirect measures such as the size of the government sector that appear in some macrolevel studies are consistent with the female demand explanation.

Finally, although opportunity theories typically describe secular changes, these theories are applicable to describing variation across contemporary labor markets. There are numerous analyses of inequality in U.S. labor market areas. For example, as Kodras and Padavic (1993) demonstrate, there is considerable variation in women's occupational employment opportunities across labor market areas. In addition, Lorence (1992) has shown that a decline in opportunities for "typical" male employment in some MAs is linked to lower occupational gender segregation in these same areas. And McCall (2000) found that "causalization" (e.g., temporary employment, unincorporated self-employed), a potential indicator of a lack of opportunity, is associated with greater within-gender earnings inequality. While important contributions to our understanding of the relationship between labor market opportunity structures and inequality, these articles do not directly test the demand-for-female-labor thesis we test in this article.

Operationalizing the Demand for Female Labor

Following Oppenheimer (1970), we measure the demand for female labor as the extent to which the occupational structure is skewed toward predominantly female occupations. She reasoned that when employment increased among historically female occupations such as clerical and service work, the demand for female labor would grow, and more women would be pulled into the paid labor market.

Oppenheimer's measure was based on the number of women employed in occupations that were at least 70 percent female. We extend her methods in two ways. First, rather than using an arbitrary 70 percent cutoff to separate male from female occupations, we construct a weighted average of all occupations with the weights given by the national female share of the occupation. Second, we use total employment rather than just female employment because we want a measure of the overall occupational structure of the labor market; a measure based on female employment incorporates aspects of female labor force participation that we want to measure independently. A labor market can then be categorized as having a high or low demand for female labor.

In the analyses to follow, we develop a demand measure for over-time comparisons, as well as a demand measure for comparisons across contemporary labor markets. The measure of female demand used in the historical analysis is:

$$Demand\ for\ Female\ Labor_y = \sum_{i=1}^{nocc} \%\ female_{i,1950}\, P_{iy}, \quad (1)$$

where

$Demand\ for\ female\ labor_y$ = the demand for female labor for a given year y,
$\%female_{i,\,1950}$ = the female share of occupation i for a base year (1950 in these analyses), and
P_{iy} = the proportion of all workers (men and women) in occupation i for year y.
This number represents the expected proportion of the labor force who are women given the year's occupational structure but assuming that the female share of each occupation reflects the national average for that occupation in the base year.

For these analyses, we have chosen 1950 as the base year because the 1950 census is the source of the occupational codes used by the Minnesota Integrated Public Use Microdata (IPUMS) project to code occupations for all censuses (Ruggles, Sobek, et al. 1997). There are 269 occupations in the 1950 IPUMS codes. In addition, 1950 is in the center of the time series we are describing (1910 to 1990). Finally, the 1950 sample size is large enough to provide reliable estimates of the percentage female for each occupation. There are two drawbacks with using the 1950 occupation codes. First, for the period prior to 1950, we are using future (1950) occupational gender composition to predict past labor force participation rates. Second, we are using 1950 occupational gender composition to predict labor force patterns in the 1970s and 1980s, even though we know gender composition of occupations changed significantly during this later period. While the choice of base year somewhat affects the plots of the demand for female labor, the same general trends are observed no matter which base year is chosen. Thus, we opt for the common 1950 standard.

The measure varies across years according to changes in the occupational structure, not the observed rate of women's participation in the labor force. A similar measure of demand can be calculated to compare MA labor markets rather than years. To do so, the female share of the occupation in 1950 is substituted with the *national* female share of the occupation in 1990, and the proportion of workers in occupation i for year y is substituted with the proportion of workers in occupation i for MA j.

HISTORICAL ANALYSES

Data

We draw on data from the IPUMS project for the historical analysis. The IPUMS files consist of samples of individual-level records from the federal censuses from

1850 to 1990 (Ruggles, Sobek, et al. 1997). Employment data in each census have been recoded into a common set of occupational categories based on the 1950 census codes. We begin the analysis in 1910 because census data prior to that time severely undercount women's participation in the paid labor force, especially in farming, the operation of boarding houses, and in large-scale manufacturing firms (Goldin 1990). No 1930 data are available yet from the IPUMS project.

Results

In Table 1 we present the share of the labor force of the 12 major occupation groups and of selected detailed occupations from 1910 to 1990. The table also lists the percentage female in 1950 (the base year) for each of these occupational categories. The demand theory argues that the occupations women dominate grew enormously, thereby increasing the demand for female labor. For example, nearly 98 percent of nurses in 1950 were women, and nurses as a share of the labor force grew steadily from 0.27 percent to 1.63 percent during the century. In addition, women held a greater share of clerical positions, and these occupational positions grew from nearly 5 percent of the labor force in 1910 to more than 19 percent by 1970, consistent with the demand framework.

In contrast, many occupations that were male dominated have declined as a share of the labor force. Miners, for instance, are almost exclusively male. They comprised 2.46 percent of the labor force in 1910 but less than a quarter of a percent in 1990. Skilled craft work, another largely male domain, has declined steadily if less dramatically since 1950. The largest occupational declines have come from farmers and farm laborers, also predominantly male occupations as recorded in the census.

There are also important exceptions to the growth of female occupations. Household service, an overwhelmingly female occupation, declined from 6.05 percent of the labor force in 1910 to only 0.53 percent of the labor force in 1990. Also, the share of clerical workers in the labor force stopped increasing after 1970.

The many changes illustrated in Table 1 are summarized in a single statistic by our index for the demand for female labor. In Figure 2, we plot this expected female share of the labor force over time. The "femaleness" of the occupational structure increased over time (as Oppenheimer suggested), consistent with the increase in female labor force participation shown earlier in Figure 1. Thus, there is historical evidence to suggest that the growth in the demand for female labor—as measured by the growth in female occupations—has generated some of the growth in female labor force participation.

There are also notable deviations from the general pattern. Change in the occupational structure is not responsible for the continued growth in women's labor force participation after 1970. That is, it is not the growth of traditionally female occupations that is driving the continuing growth in women's labor force participation rates in the 1970s and 1980s. After 1970, the growth of integrated occupations and the desegregation of traditionally male occupations, especially managerial

TABLE 1: Changes Over Time in the U.S. Occupational Structure (source: IPUMS)[a]

Occupation Group (1950 codes)	*Percentage Female 1950*	*Percentage of Labor Force in Occupation Group*							
		1910	*1920*	*1940*	*1950*	*1960*	*1970*	*1980*	*1990*
Professional, technical	39.60	4.66	5.73	6.87	8.53	10.41	13.77	15.61	18.44
Nurses	97.94	0.27	0.34	0.66	0.68	1.05	1.22	1.33	1.63
Teachers, not elsewhere classified	74.45	1.70	1.86	2.09	1.93	2.55	3.39	3.47	3.57
Librarians	89.66	0.00	0.04	0.07	0.10	0.13	0.16	0.19	0.20
Farmers	2.65	16.46	16.60	10.16	7.24	3.44	1.70	1.27	0.90
Managers	13.36	6.82	6.68	7.54	8.58	7.19	6.56	9.11	11.52
Clerical	62.12	5.32	8.19	10.18	12.17	17.01	19.08	19.27	19.05
Office machine operators	83.50	0.00	0.03	0.15	0.26	0.57	0.75	0.88	1.15
Stenographers, typists, secretaries	94.71	0.84	1.74	2.29	2.76	4.59	5.50	4.73	3.95
Sales	34.34	4.48	4.95	6.23	6.83	7.87	7.29	6.67	6.78
Craft	2.96	11.46	14.09	11.88	13.81	12.10	11.67	11.19	10.00
Operatives	27.15	15.97	15.53	18.41	20.06	19.12	17.49	14.99	11.89
Mine operatives, laborers	0.13	2.46	2.46	1.54	0.99	0.49	0.26	0.28	0.17
Railroad brakemen	0.44	0.26	0.29	0.15	0.13	0.08	0.05	0.07	0.03
Household service	95.64	6.05	3.62	4.50	2.45	2.95	1.83	0.74	0.53
Service	44.26	3.65	4.46	7.11	7.80	9.95	12.24	13.66	14.01
Cooks	52.51	0.00	0.46	0.67	0.80	1.00	1.19	1.81	2.07
Waiters, waitresses	82.63	0.57	0.53	1.19	1.22	2.08	1.97	1.79	1.36
Farm laborers	23.04	14.07	8.13	6.44	4.38	2.78	1.64	1.16	0.84
Laborers	3.42	10.70	11.46	10.23	6.48	5.10	4.69	4.92	4.90
Military	1.98	0.36	0.55	0.46	1.68	2.09	2.04	1.39	1.14

a. IPUMS = Minnesota Integrated Public Use Microdata.

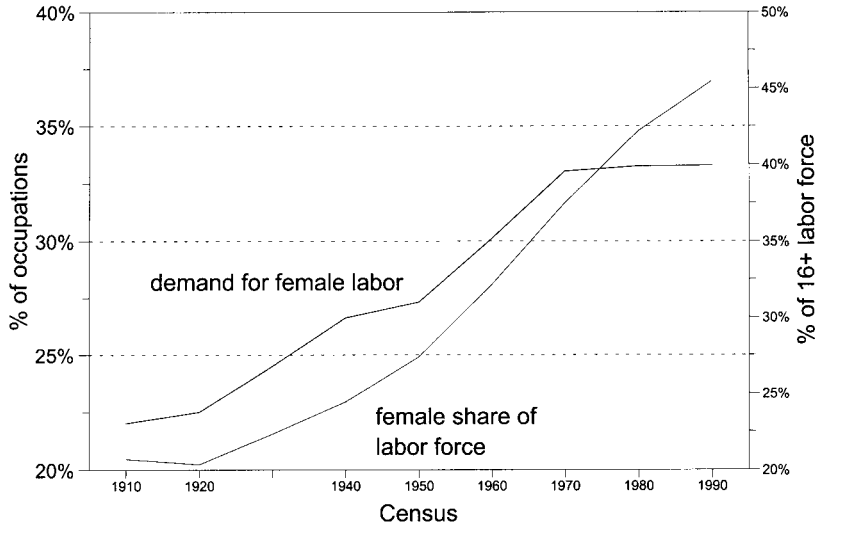

Figure 2: Demand for Female Labor and Female Share of the Labor Force
SOURCE: Calculated from the data of the Minnesota Integrated Public Use Microdata (IPUMS) project, population older than 16.

occupations, are responsible for the continued upward trend of female labor force participation (see Cotter et al. 1995). One general question this raises about the demand framework is whether, in fact, the demand for female labor remains an important cause of women's labor force participation. The cross-sectional analyses presented below attempt to address this question.

A second historical exception can be observed for the World War II decade of the 1940s. The occupational structure paused in its shift toward more female occupations, probably as a result of the growth of manufacturing for the war effort and the immediate postwar readjustment. However, the gender gap in labor force participation continued to narrow as women filled many of the jobs left open by men moving into the military. Once the occupational structure resumed its female shift in the 1950s, the female share of the labor force grew at an accelerated pace.

CROSS-SECTIONAL ANALYSES

Design

We use a cross-sectional design to test the macro-level effects of the demand for female labor across U.S. MA labor markets. Here the question shifts from why men's and women's labor force participation rates have become more equal since the 1920s to why they are closer in Washington than in Detroit. This use of the *geographic* variation in the demand for female labor tests the continued significance of

the demand framework as a significant cause of gender differences in labor force participation even after the leveling off of the demand trend line in the 1970s.

The cross-sectional MA analysis also provides a more rigorous test that incorporates both the conventional individual-level neoclassic factors describing individual characteristics and the macro-level demand factors that reflect situational opportunities. The historical analysis presented above shows a simple bivariate association over time. It does not take into account the changing characteristics of labor force participants (e.g., the increases in women's schooling) that also influence declines in the gender gap in labor force participation. The cross-sectional, multilevel analysis includes the individual-level factors and then tests whether the demand for female labor accounts for the remaining variation across MAs in gender differences in labor force participation.

We first use Public Use Microdata Samples (PUMS) from the 1990 census to examine the bivariate association of the demand for female labor with gender differences in labor force participation across U.S. metropolitan labor markets (U.S. Bureau of the Census 1992). We then apply multilevel logistic regression techniques to data from the National Longitudinal Sample of Youth, 1979 (NLSY). Multilevel models are the appropriate method for this study because they best incorporate into a single design a standard individual-level labor force participation model and macro-level equations that reflect the opportunities available to those individuals.

We restrict these analyses to young workers (ages 25-33 in 1990) because of our individual-level data. This represents a strong, yet conservative, test of the demand for female labor explanation. This younger cohort has only a small gender difference in labor force participation rates *and* they began their work lives after the leveling-off of the demand for female labor shown in Figure 2 (Goldin 1997). If the demand for female labor theory predicts a smaller gender gap in labor force participation for this young group of workers, then one would expect the same to be true for other cohorts where there is greater variation in labor force participation.

Bivariate Variation across Labor Markets

Among 25- to 33-year-old metropolitan residents, 92 percent of men and 75 percent of women were in the labor force in 1990. There is substantial variation across labor markets in these labor force participation rates. Table 2 identifies the means, standard deviations, and "best" and "worst" MAs in terms of male and female labor force participation rates and the gender difference in participation rates. We are particularly interested in the gender difference in labor force participation rates as it reflects the degree of gender inequality. Male and female labor force participation rates differ most in Steubenville, Ohio and Weirton, West Virginia (a gap of 38 percentage points) and Laredo, Texas (a gap of 33 percentage points). Labor force participation rates are more similar, and hence the difference smaller, in Jackson, Michigan (where women have a higher participation rate than men) and Lima, Ohio (a gap of 3 percentage points).

TABLE 2: Metropolitan Labor Market Variation in Labor Force Participation Rates and Relative Demand for Female Labor

Male Labor Force Participation Rate	*Female Labor Force Participation Rate*	*Gender Differences in Labor Force Participation Rates (male-female)*	*The Expected Female Share of the Occupational Structure*
		Worst	
Jackson, MI (.70)	Steubenville-Weirton, OH-WV (.52)	Steubenville-Weirton, OH-WV (.38)	Houma, LA (.39)
San Luis Obispo, CA (.74)	Houma, LA (.56)	Laredo, TX (.33)	Decatur, AL (.41)
Salinas, CA (.81)	Laredo, TX (.56)	Parkersburg-Marietta, WV-OH (.32)	Bakersfield, CA (.41)
Lima, OH (.81)	Huntington-Ashland, WV-KY-OH (.56)	Huntington-Ashland, WV-KY-OH (.30)	Elkhart-Goshen, IN (.41)
Glens Falls, NY (.81)	Visalia-Tulare-Porterville, CA (.60)	Houma, LA (.30)	Merced, CA (.41)
		Best	
Wausau, WI (.98)	Rochester, MN (.88)	Jackson, MI (–.03)	Columbia, MO (.50)
Bloomington-Normal, IL (.97)	Sioux Falls, SD (.88)	Lima, OH (.03)	Gainesville, FL (.50)
La Crosse, WI-MN (.97)	Madison, WI (.87)	San Luis Obispo, CA (.03)	Tallahassee, FL (.50)
Elkhart-Goshen, IN (.97)	Lincoln, NE (.86)	Glens Falls, NY (.04)	Springfield, IL (.50)
Anchorage, AK (.97)	Wausau, WI (.85)	Madison, WI (.05)	Rochester, MN (.50)
M = .93	*M* = .78	*M* = .14	*M* = .45
SD = .03	*SD* = .05	*SD* = .04	*SD* = .02

Our measure of the demand for female labor varies across labor markets as well. The fourth column of Table 2 presents the expected female share of the labor force based on the occupational structure. According to this measure, the demand for female labor is worst in Houma, Louisiana and Decatur, Alabama, where the expected female share of the labor force is 39 percent and 41 percent, respectively. The demand for women's labor is greatest in Columbia, Missouri and Gainesville, Florida, where "female" occupations comprise 50 percent of labor force positions.

Our theoretical framework argues, and the historical analysis above suggests, that the demand for female labor is related to the gender gap in labor force participation. Figure 3 plots each of these measures for the 25 largest MAs with populations above 1.5 million. Areas with high demand for female labor do tend to have smaller gender gaps in labor force participation. For example, the Baltimore-Washington MA, an area with a high demand for female labor, has a gender gap in labor force participation rates of 11 percentage points. This compares to Detroit, where the demand for female labor is lower, and the gender gap in labor force participation rates is 21 percentage points. The correlation between these two measures is –.49 for all 261 MAs.

Again, there are exceptions. The correlation is not perfect. In Figure 3, New York is a notable outlier: It has a high score on the demand for female labor and only an average gender difference in labor force participation. If New York were removed from the other large MAs, the correlation between demand and the gender difference measure improves from .325 to .519 for this subset of MAs. We have no particular explanation for New York, but the exceptions remind us that other factors besides female demand help explain variations in labor force participation.

Multilevel Analysis

Multilevel analysis is increasingly common in sociology, at least in part because it allows researchers to examine the way in which properties of larger collectives affect individuals (DiPrete and Forristal 1994; Kreft and De Leeuw 1998). In our case, a conventional neoclassic model is estimated for individuals in each MA that predicts their individual probability of being in or out of the labor force. The individual-level model includes the variables that are standard in models of labor force participation: education, presence and number of children, marital status, race/ethnicity, age and its square, disability status, and other family income.[1] Then a second, simultaneous, MA-level model is used to explain the variation in those individual-level coefficients across MAs. While any of the individual-level coefficients can be modeled at the MA level, in this analysis, the coefficients for the intercept and the gender difference in labor force participation for each MA (the gender coefficient) are treated as the dependent variables. We are especially interested in how the gender coefficient in the individual-level model varies with the demand for female labor at the MA level, holding constant other MA-level differences.

To test the robustness of the effect of the demand for female labor, a set of MA-level control variables are also included in the MA-level model: the supply of

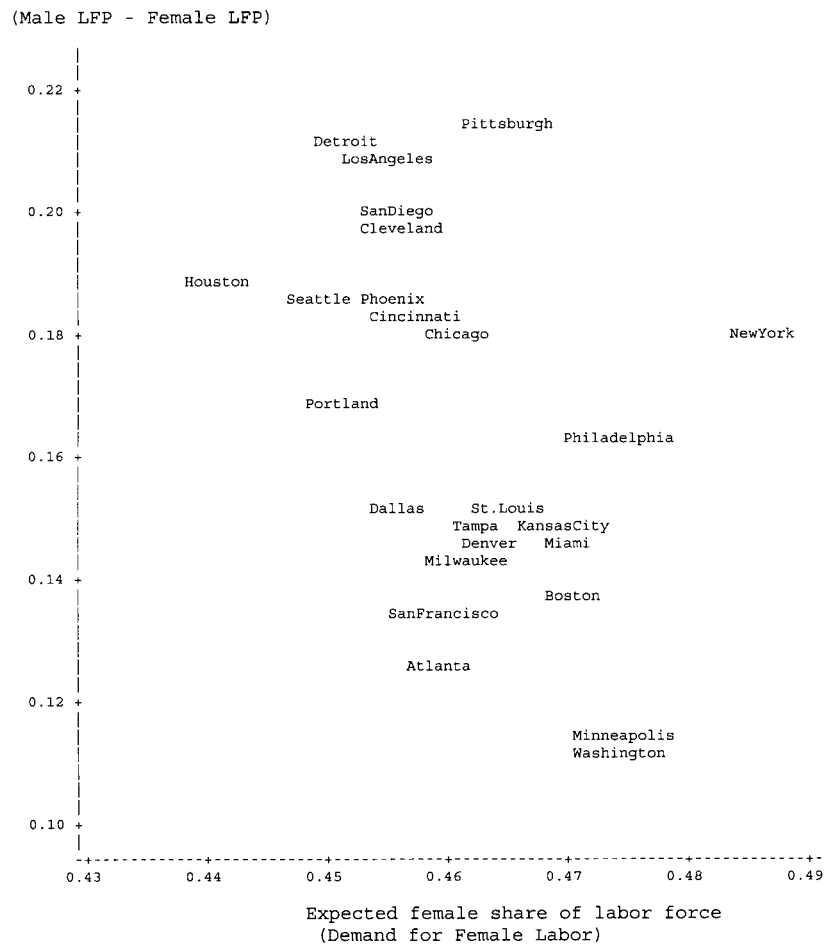

Figure 3: Plot of the Gender Difference in Labor Force Participation Rates by the Expected Female Share of the Labor Force (largest 25 metropolitan areas, 1990)

NOTE: Data point is the first letter in the name of the metropolitan area.

labor, region, net migration during the previous five years, racial/ethnic composition, male income inequality, state Aid to Families with Dependent Children (AFDC) level, and size of immigrant population. The operational definition and source for each variable are found in Appendix Table A1.

Results: Micro-Level Effects

The results of the multilevel analyses of labor force participation are presented in Table 3. The bottom panel shows the effects for the standard micro-level models

TABLE 3: Logistic Regression Results for Multilevel Models Predicting Labor Force Participation

	Effects on Men	*Effects on Gender Difference*
Macro-level effects on labor force participation		
Intercept	3.014***	–1.457***
Demand for female labor	–12.368†	17.792*
Supply of female labor	1.619	0.157
Region: North Central	–0.105	0.046
Region: South	–0.523	0.177
Region: West	–0.296	0.243
Net migration	1.075	1.538
Male income inequality	–0.261	–6.650
Proportion Black	2.954*	–4.828**
Proportion Hispanic	0.101	–1.590
Proportion immigrant	7.094	7.835
AFDC[a] payments (family of four)	–0.260	–0.576
Micro-level effects on labor force participation		
Presence of child age < 2	0.106	–1.150**
Presence of child age 2-6	0.172	–0.815*
Number of children	–0.211†	–0.171
Cohabitor	–0.934***	0.180
Never married	–1.687***	0.877**
Formerly married	–1.710***	1.654***
African American	–0.811***	1.123***
Hispanic	–0.279	0.581*
Education	0.138***	0.066†
Age	0.072*	–0.053
Age^2	–0.011	0.009
Disability	–2.826***	0.958***
ln other income	–0.091	–0.181*
Other income missing	–0.261	0.333

a. AFDC = Aid to Families with Dependent Children.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

of labor force participation. Because each individual-level variable (e.g., education) is interacted with gender, the coefficient in the first column represents the effect on men and the second, interaction, coefficient represents the difference between the effects on women and on men. Therefore, to find the effect for women, one must add the coefficients from the first and second columns. The tests of significance tell us whether the gender differences are statistically significant.

The results reflect the usual individual-level labor supply models. Education increases labor force participation rates, slightly more so for women than men. Nonwage family income (including spouse's earnings) reduces labor force participation rates, again more for women than for men. Disabilities decrease labor force participation rates, more for men than women. Marriage (the comparison group for marital status) increases men's labor force participation rate, but not women's,

relative to people who are cohabiting, never married, or formerly married. Children, especially young children, reduce women's labor force participation but not men's. None of these results are surprising; the important point is that all these effects are held constant when we look at the MA differences in the intercept (the men's log-odds of labor force participation) and in the gender coefficient (the difference between the men's and women's log-odds).

Results: Macro-Level Effects

The top panel of Table 3 reports the results from the MA-level models. The first column analyzes the intercept in the individual-level model; it reflects the likelihood that men are in the labor force. For example, men are 20.36 times ($e^{3.014}$) more likely to be in the labor force as not in the labor force in the average MA. But this varies with the occupational structure in the MA. Where the demand for women's labor is higher (i.e., the relative demand for men's labor is lower), men are less likely to be in the labor force.

The second column analyzes the cross-MA variation in the gender coefficient from the individual-level model; it indicates the female-male difference in the logged odds of labor force participation. In the average MA, gender is a significant predictor of labor force participation, even after the controls for human capital and family status. For example, on average across all MAs, women are nearly five times ($3.014 - 1.457 = 1.557$, $e^{1.557} = 4.74$) more likely to be in the labor force than out of the labor force, a figure substantially smaller than that of men (20.36 times). That is, men are approximately 4.3 times (20.36/4.74) more likely than women to be in the labor force.[2] This difference reflects a significant gender gap in labor force participation, even after holding constant other individual-level characteristics.

We are interested in how this gender coefficient varies across metropolitan labor markets. Our central concern is with the degree to which the relative demand for female labor affects the gender gap in labor force participation. The significant coefficient, 17.792, means that areas with a higher demand for female labor have a smaller gender difference in the odds of labor force participation (i.e., the gender coefficient is less negative). The effect for the demand for female labor is substantively important: It ranges from a prediction that men are 12.5 times more likely to be in the labor force in places like Houma, Louisiana to just 1.76 times more likely in places like Columbia, Missouri. That is, in labor markets where there are relatively more usually female occupations (as in Columbia, Missouri), the gender difference in labor force participation is markedly smaller.

The marginally significant negative female demand coefficient in the MA-level equation for the overall intercept (–12.368) suggests that the female demand effect operates as much through reducing men's labor force participation as through increasing women's labor force participation. The overall intercept represents the predicted logged odds of labor force participation for men (i.e., when gender and all the other variables in the individual-level model are zero). Our measure of female demand is a *relative* measure implying relatively less demand for male labor in

MAs where female demand is high. Thus, the negative female demand coefficient for the intercept equation may mean that men's labor force participation rates are lower where there are many female occupations, few male occupations, or both.

Of the remaining MA-level effects, African American concentration is the only factor to affect the gender differentials in labor force participation. MAs with high proportions of African Americans have larger gender gaps in labor force participation rates. This effect is independent of the racial ethnic characteristics of the persons themselves since they are held constant in the micro-level model (and, in fact, have the opposite sign at the individual level). We identify three possible explanations for this counterintuitive finding about the effect of an MA's racial composition. While none of these explanations can be tested adequately within the context of this article, they deserve further examination.

1. Substitution: What employers may be looking for is simply "devalued" or cheap labor. Either women or African Americans will be sufficient to fill this need. Hence, where there is an ample supply of African Americans, employers have less need to tap the pool of potential female workers. However, the level of occupational segregation between white women and African American men is nearly equal to that between white women and white men, so there is little to suggest that employers actually practice this form of substitution.[3]

2. Stigmatization: African American women have long had higher rates of labor force participation than white women and have always been relegated to the least desirable occupational fields. In areas with large concentrations of African Americans, there may thus be a significant disincentive for white women to work since women's working may be associated with the devalued status of African Americans.

3. Queuing: Labor force participation may be, at least in part, a queuing phenomenon for which people fill available slots according to their individual propensity to be employed. Since African American women are more likely to enter the labor force, MAs with many African Americans will fill the female slots more readily than MAs with few African Americans. A more readily filled queue of employment slots will depress a hypothetically average woman's likelihood of being in the labor force. The queuing interpretation is also consistent with the positive coefficient for African American concentrations on the overall intercept, 2.954, which reflects *men's* likelihood of labor force participation. Since African American men have a slightly lower individual propensity to be in the labor force, MAs with more African Americans take longer to fill their labor force queues, thus raising the average man's likelihood of labor force participation.

DISCUSSION

The results of both the cross-sectional and historical analyses provide considerable support for the role of a specifically female demand for labor in reducing the gender gap in labor force participation. We developed a measure of the gendered

demand for labor by indexing the degree to which the occupational structure is skewed toward usually female occupations, both over time and across contemporary labor markets. Consistent with our theoretical framework, the demand for female labor grew substantially over much of the twentieth century in concert with a declining gender gap in labor force participation rates. And MA labor markets with a more female occupational structure in 1990 had more equal labor force participation rates even after adjusting for individual determinants of labor supply. Together, these results suggest that part of the explanation for the declining gender gap in labor force participation can be found in changing opportunities as well as in changing characteristics of women themselves.

There are interesting exceptions to each of these analyses. In the cross-sectional comparisons, New York has one of the more strongly female occupational structures among large MAs, but the gender gap in labor force participation is still average. Perhaps even more interesting, over time, the demand for workers in typically female occupations leveled off in the 1970s and 1980s, but the rate of women's participation in the paid labor force continued to increase. This does not necessarily mean that the demand for female labor no longer has any causal impact on labor force participation rates—the multilevel analysis shows that MAs with more female occupational structures still have smaller gender gaps in labor force participation. But when the occupational structure unexpectedly stopped shifting toward female occupations, that was no longer the engine driving equalizing participation rates.

This suggests that occupational integration has taken over from shifts in the overall occupational structure as the primary explanation of the declining gender gap in labor force participation. In fact, the occupational structure only began to integrate in the 1970s. The relative effect of increasing size of female occupations is related to the fixity of gender segregation at a given point in time. When the barriers or boundaries between "male" and "female" work are rigid, the only way women's market work can expand is through the expansion of "female" occupational spheres. When the barriers to women's employment in "male" occupations fall, however, women's employment can increase over and above the growth of "female" occupations.[4] There is a causal ordering problem of whether the growth of previously male occupations leads to their integration or whether the decline of gender barriers brings more women into the occupation. That is, does the demand for workers in a given field increase and, wanting workers, employers deign to hire women? Or, do occupations become "female" before they begin to expand, and their expansion brings on this increased demand for women as workers? Most evidence in this area points in the direction of mutual causality (Cohn 1999; Reskin and Roos 1990).

A related question is whether the different causes of rising women's labor force participation have equally beneficial consequences for gender equality. The quotes

at the outset of this article assume that it is the growth in labor force participation that pushes other egalitarian changes along. But perhaps the growth in the middle of the century that resulted from the increased demand for female labor was not as beneficial as the growth in the last quarter of the century that resulted from occupational integration. The gender gap in earnings did not decline significantly until the 1970s despite the long prior upward trend in women's labor force participation. On this question, the MA evidence suggests a quite different answer than the longitudinal trends. Labor markets with female occupational structures not only have smaller gender gaps in employment; they also have more occupational integration and smaller earnings gaps (Cotter et al. 1998). Over time, however, occupational integration and declining earnings gaps only happened *after* the occupational structure stopped becoming more female. More analyses are needed of the simultaneous effect of the demand for female labor on labor force participation, occupational integration, earnings, and other aspects of gender stratification.

Another significant limitation of our analysis has been the lack of sufficient attention to the ways in which race, ethnicity, and class may interact with, or override, the effects of the demand for female labor in determining women's work outside the home. The contextual effects of racial composition on gender differences in labor force participation suggest that these interrelationships may be more complex than the simple additive models used in this analysis. As is well documented, women of color and poor and working-class women have had higher labor force participation for most of the century (Goldin 1990; Kirk Blackwelder 1997). Moreover, much of the increase in women's labor force participation has taken place among older women, married women, and mothers—more "unusual" workers—giving rise to politically contentious issues (Rubin 1994). Future research might attempt to disentangle the demand effects for these subgroups. For us, however, it is the broad story of increasing labor force participation that is of interest and especially as it is explained by shifts in the occupational structure.

At the macro level, our focus on the demand for female labor in particular, and labor market characteristics in general, adds a structural component to the extant cultural (Reeves Sanday 1981), political (Burstein 1985), and organizational (Acker 1990) explanations of changing gender labor force patterns. Nevertheless, such a focus on labor market characteristics must avoid a rigid economic determinism. Just as too narrow a focus on norms, state regulations, or organizational characteristics may limit the explanatory range of our theories, so too is there danger in treating economic structure as more than an important *part* of the overall explanation for gender inequalities. What is needed is more careful attention to the ways in which macro-level cultural and structural forces may combine with organizational and micro-level factors to affect changes in labor market-related behavior.

APPENDIX TABLE A.1
Definitions of Variables

Variable	*Mean*	*Definition*
		Macro-Level Measures
Region	North Central = 0.26 South = 0.45 West = 0.16	Three dummy variables for North Central, South, and West (Northeast is the excluded category) (source: 1990 summary tape file 3c [STF3C]; see U.S. Bureau of the Census 1993a)
Net migration	0.12	The number of migrants into a metropolitan area (MA) from 1985 to 1990 minus the number of migrants out of an MA from 1985 to 1990 as a proportion of the total 1990 MA population (source: 1990 county to county migration; see U.S. Bureau of the Census 1995)
Male earnings inequality	0.34	Gini coefficient for annual earnings of 25- to 54-year-old men working full-time year-round (source: 1990 Public Use Microdata Samples [PUMS]; see U.S. Bureau of the Census 1993b)
Proportion Black	0.11	Proportion of population non-Hispanic Black (source: 1990 STF3C; see U.S. Bureau of the Census 1993a)
Proportion Hispanic	0.07	Proportion of population Hispanic, any race (source: 1990 STF3C; see U.S. Bureau of the Census 1993a)
Proportion immigrant	0.01	Proportion of population who are immigrants (source: 1990 PUMS; see U.S. Bureau of the Census 1993b)
Aid to Families with Dependent Children (AFDC) (ln)	5.95	Log of the minimum monthly benefits for a family of four (AFDC + food stamps + Medicare) (source: Moffitt 1992)
		Individual-Level Measures from National Longitudinal Sample of Youth (NLSY)
Labor force participation	0.86	Binary variable coded 1 if in the labor force
Gender	0.52	Dummy variable coded 1 if female
Marital status	Formerly married = 0.11 Cohabitant = 0.08 Never married = 0.25	Three dummy variables: Formerly married (divorced, separated, widowed, and married-spouse absent), cohabitant, and never married (currently married, spouse present, is the excluded category)
Number of children	.96	Number of children in the household

Presence of children	Child age < 2 = .17 Child age 2-6 = 0.23	Two dummy variables: Presence of at least one child younger than 2 and presence of at least one child between ages 2 and 6.
Education	13.31	Number of years of school completed
Age	28.75	Years of age
Race	African American = 0.15 Hispanic = 0.07	Two dummy variables: African American and Hispanic (white, non-Hispanic is the excluded category)
Disability	0.06	Dummy variable indicating respondent has a disability
Other income (ln)	8.71	Value of income in household, other than that earned by respondent

NOTES

1. Some of these controls, such as the number of children, may themselves be consequences of labor force participation and thus of the demand for female labor. Including these as control variables biases the estimates for the demand for female labor toward zero. So this model is a conservative test of the theory.

2. Although this figure may seem high, it is consistent with the gross labor force participation rates shown in Table 2. For example, in Steubenville, Ohio, and Weirton, West Virginia, the metropolitan area (MA) with the lowest women's labor force participation rate, men are 9.0 (.90/.10) times more likely to be in the labor force than not, while women are 1.08 (.52/.48) times more likely to be in the labor force than not. In other words, in this MA, men are nearly 9 (9.0/1.08) times more likely than women to be in the labor force. However, in Madison, Wisconsin, an MA with one of the highest rates of women's labor force participation, men are just 1.8 times more likely to be in the labor force.

3. We thank an anonymous reviewer for both this possible explanation and for pointing out its implausibility.

4. We thank an anonymous reviewer for reminding us of the relationship between gender segregation and sex-specific labor demand.

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