

Engendering Change:
Organizational Dynamics
and Workplace Gender
Desegregation,
1975–2005

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We examine workplace-level sources of gender inequality to explore the link between organizational change and levels of workplace gender integration over time. To do so, we analyze the gender division of labor and key structural aspects of U.S. private-sector work establishments, using longitudinal data from the U.S. Equal Employment Opportunity Commission from 1975 to 2005. We find that women's presence in managerial positions is positively related to gender integration, as is both establishment size and growth. Additionally, the results show that trends toward gender integration are due to change within workplaces rather than new, relatively integrated workplaces entering the population over time. Our results also provide compelling evidence that the effect of female managers varies dramatically across organizational contexts, with the strongest desegregating effects in larger and growing establishments. Finally, the effect of women's access to organizational power structures has sharply diminished over time.●

The segregation of jobs and occupations is a persistent feature of the U.S. labor market and the proximate cause of many forms of gender inequality. An expansive and well-established literature documents the pernicious effects of gender segregation on women's labor market opportunities, which include lower wages (Cotter et al., 1995; Cohen and Huffman, 2003), slower upward mobility and access to internal labor markets (Baron, Davis-Blake, and Bielby, 1986; Maume, 1999), and overrepresentation in positions lacking organizational autonomy and authority (Reskin and Ross, 1992; Adler, 1993; Tomaskovic-Devey, 1993). Although some have attempted to explain the persistence of gender segregation by citing individual-level attributes such as gender socialization and workers' choice (for a review, see England, 1992), economic and organizational sociologists have consistently shown the primacy of organizational structures and processes over such supply-side factors (Baron, 1984; Bielby and Baron, 1986; Nelson and Bridges, 1999; Tomaskovic-Devey and Skaggs, 1999; Sørensen, 2007). As organizations change over time, these structures and processes constitute organizational dynamics that can affect gender inequality.

Studies have shown the importance of many types of organizational change, including growth and employee turnover, by linking it to career mobility in organizations (e.g., Stewman and Konda, 1983; Haveman and Cohen, 1994; Baron, Hannan, and Burton, 2001). Other work has focused specifically on how organizational change shapes various forms of workplace gender inequality, including job segregation, disparities in salary changes associated with job shifts, and gender differences in managerial promotion (e.g., Baron, Mittman, and Newman, 1991; Barnett, Baron, and Stuart, 2000; Haveman, Broschak, and Cohen, 2009; Hirsh, 2009). The central role of organizations in stratification processes has been underscored by scholars since Baron and Bielby's (1980) admonition to "bring firms back in" to the study of inequality. Since then, numerous scholars have argued and demonstrated empirically that firms—and individual work establishments—are "where the action is" with regard to inequality (e.g., Nelson and

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Bridges, 1999; Reskin, 2003; Tomaskovic-Devey et al., 2006; Castilla, 2008; Kalev, 2009). Jobs and careers are embedded in organizational structures, and therefore organizations are critical to how economic, social, and psychological outcomes are shaped (Haveman, Broschak, and Cohen, 2009). Economic sociologists have long argued that these effects trump the market and efficiency considerations often stressed in economic analyses of work and careers (Baron, 1984; Nelson and Bridges, 1999; Tomaskovic-Devey and Skaggs, 1999). A host of empirical studies demonstrates that organizational and establishment-level policies and practices are critical determinants of work-based gender inequality, eclipsing the effects of individual workers' characteristics (e.g., Bielby and Baron, 1986; Huffman and Cohen, 2004; Kmec, 2005).

Existing scholarship lacks careful theorizing about how various organizational features jointly have an impact on gender inequality. Moreover, longitudinal, workplace-level analyses that are based on large, diverse samples and cover a long time series are relatively scarce. Our theorizing focuses on three key establishment-level characteristics—women's access to organizational power structures and establishment size and growth—and the effect of time on the organizational dynamics that affect gender desegregation.

Women's access to organizational power structures matters in organizations because, as a significant source of internal pressure, the characteristics of leaders can shape organizational adaptation and strongly influence workplace inequality (Baron, Mittman, and Newman, 1991; Hultin and Szulkin, 1999; Hirsh, 2009). Scholars interested in organizational demography have focused on how processes generating inequality are influenced by the representation of various groups within work organizations (Pfeffer, 1983; Pfeffer and Davis-Blake, 1987; Stewman, 1988; Shenhav and Haberfeld, 1992). These researchers focus on particular groups' interest in sustaining or eliminating ascription in the allocation of rewards (Baron, 1991). These interests may be defined along class or demographic lines, with gender often providing a crucial distinction (Pfeffer, 1989). The linking of demographic processes and inequality in organizations is anchored in Kanter's (1977) classic work, which articulated the "strength-in-numbers" view, that increasing women's representation improves their organizational standing and reduces inequality. Kanter argued that the presence of top-level female managers facilitates workplace equality by alleviating the negative effects of token status. Kanter's work highlights the role of "homosocial reproduction," the tendency for individuals to prefer to work alongside similar individuals (Ibarra, 1992; Elliott and Smith, 2004).

There is growing empirical support for the link between the presence of female organizational leaders and reduced inequality, but workplace-level studies remain rare. Hultin and Szulkin (2003) analyzed data from Swedish private-sector companies, offering one of the most direct tests of the wage effect of female managers. They found a smaller net gender wage gap among non-managerial workers in organizations with a relatively large percentage of women in managerial roles. Shenhav and Haberfeld (1992) found similar wage

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patterns where women held a large share of managerial jobs. More recently, Kalev, Dobbin, and Kelly (2006) studied organizational factors leading to managerial diversity in private-sector establishments. They found that establishments with more female top managers also have higher proportions of women at lower managerial levels. In another dynamic analysis, Baron, Mittman, and Newman (1991) reported that California state agencies with a relatively large contingent of female managers exhibited faster gender integration in the 1970s and 1980s. And Cohen, Broschak, and Haveman (1998) found that California savings and loans are more likely to hire and promote women into managerial roles when women are well represented in management.

These studies notwithstanding, research in this area tends to be industry specific, cross sectional, or limited to specific labor markets or geographic regions, often in narrow time periods (e.g., Baron, Mittman, and Newman, 1991; Shenhav and Haberfeld, 1992; Cohen, Broschak, and Haveman, 1998; Hultin and Szulkin, 2003; Cohen and Huffman, 2007). These characteristics limit the generalizability of these studies. Moreover, changes in organizational dynamics over time can alter power structures (Dencker, 2009), which would remain undetected in studies with short time periods. Finally, establishment size and growth should have effects on gender desegregation across geographic regions and labor markets but have not been tested broadly. In this study, we draw on organizational theory and research to form predictions about the rate of gender desegregation in a large sample of U.S. private-sector work establishments over a thirty-year period. Based on the idea that characteristics of leaders can influence organizational adaptation, we consider how women's access to organizational power structures is linked to patterns of workplace inequality. We offer new theory about how that link is conditional on organizational change, especially establishment size and rates of growth, which have previously been associated with gender dynamics.

THE ORGANIZATIONAL DYNAMICS OF GENDER DESEGREGATION

Our analysis targets not only the main effects of the organizational attributes described above but also their joint effects on desegregation trajectories in private-sector establishments. Reflecting our interest in the gender composition of leadership, we focus on the interaction between women's access to organizational power structures and change in other important structural attributes—organizational size and growth—as well as time. As Baron, Mittman, and Newman (1991) noted, the most engaging question about the effect of organizational leaders is not simply whether they matter but the organizational contexts in which they matter. We take this question to heart in modeling within-establishment change in gender segregation as a function of the interaction between women's representation in leadership positions and other organizational characteristics.

Establishment Size

Size may facilitate or impede organizational change (Hirsh, 2009). Relative to other characteristics, size has been shown

to have among the most robust effects on careers and perhaps has been given more attention than any other organizational attribute (Stolzenberg, 1978; Baron, 1984; Baron and Bielby, 1984; Hannan, 1988; Kalleberg and Van Buren, 1996). Yet organizational sociologists have offered opposing predictions about the effect of organizational size on ascriptive inequality. This, in part, reflects the assumption that size is a proxy for a diverse set of organizational attributes, which precludes a straightforward interpretation of any observed effect (Kimberly, 1976; Baron, 1984). On the one hand, population ecology models of organizational change suggest that larger organizations will be slower to integrate their ranks by gender. Larger organizations, though having more formalized human resource functions, may exhibit greater structural inertia, which may foster moral opposition to change and limit organizational adaptation (Hannan and Freeman, 1984; Dobbin et al., 1993). Baron, Mittman, and Newman (1991) found that larger California state agencies were slower to desegregate, and they cited bureaucratic inertia as one possible explanation. Additionally, it is not clear that bureaucratization is an equalizing force; rather, it may solidify existing gender inequities (Acker, 1990). For example, Baron and Bielby (1984) reasoned that bureaucratization enabled organizations to establish detailed divisions of labor that functioned to relegate female employees to low-ranking jobs (also see Tomaskovic-Devey and Skaggs, 1999). In this same vein, Tolbert (1986) argued that larger organizations can better afford to discriminate based on gender. Therefore, because of bureaucratization and differentiation, larger size may lead to the entrenchment of existing patterns of gender segregation.

On the other hand, institutional research on organizational legitimacy implies that size promotes gender integration within establishments, because size increases both visibility to the public and government regulatory agencies and pressure to conform to societal expectations (Meyer and Rowan, 1977; Salancik, 1979). Size is positively correlated with the formalization of personnel policies and other practices, and formalization is thought to reduce gender-based ascription by limiting managers' discretion and subjectivity and holding decision makers accountable for their decisions. Formalization thus should limit the effects of gender stereotypes and other social psychological impediments that help reproduce gender segregation (Szafran, 1982), and most research is consistent with this pattern (Anderson and Tomaskovic-Devey, 1995; Pfeffer and Cohen, 1984; Reskin and McBrier, 2000; but see Huffman and Velasco, 1997). Thus, although size may increase bureaucratization and differentiation in the division of labor, it also has been shown to be positively related to both external, normative pressures toward gender integration and specific organizational practices that work internally to counteract ascription. It follows that large establishments may provide a context that strengthens any positive effects of female managers on the desegregation rate by providing the means for female managers to insist on fairness in hiring and promotion. In this way, formalization may trump bureaucratization and differentiation, which might otherwise reinforce existing segregation patterns. As a result, we propose the managerial formalization hypothesis:

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Hypothesis 1: The positive effect of women's representation in management on the level of gender integration will be enhanced by establishment size.

Growth

A context of growth may strengthen the link between women's access to organizational power structures and workplace inequality (Shenhav and Haberfeld, 1992; Reskin, McBrier, and Kmec, 1999), making female managers a stronger equalizing force. Growth changes the structure of labor queues within organizations, increasing managers' capacity to make influential personnel decisions. In contrast, attempts by motivated and well-positioned female managers to effect change may be stymied by stagnant or shrinking opportunities for women. Although downsizing and contraction affect all workers' career prospects, there is evidence that women have been affected more strongly than men (Skvoretz, 1984).

Growth affects the queuing processes through which workers and jobs are hierarchically ranked and subsequently matched, with the most desirable jobs filled by the highest ranking group (Lieberson, 1980; Reskin and Roos, 1990; Kaufman, 2002). As a result, growth creates opportunities for both internal and interfirm mobility and reduces the tendency for the best jobs to be reserved for members of the most favored group, which should hasten gender integration (Shenhav and Haberfeld, 1992; Reskin, McBrier, and Kmec, 1999; Kaufman, 2002; Haveman, Broschak, and Cohen, 2009). Moreover, growing establishments may exhibit more gender integration either because growth allows them to hire workers who are earlier in their careers, and are therefore less likely to be trained and experienced in gender-typical jobs, or because their growth offers opportunities to move into positions that are not yet gender-typed within the organization.

There is some evidence that growth has gender-specific effects that may spur desegregation (Baron, Mittman, and Newman, 1991). For example, Bielby and Baron (1984) found that growth improved chances for internal promotions, especially among women. In another organizational study, Rosenbaum (1979) reported a positive relationship between growth and promotion rates, with newly created advancement opportunities spilling over to workers who otherwise would be less likely to advance. More recently, Bygren and Kumlin (2005) found that growth encourages desegregation through the hiring of women into previously male-dominated establishments. Studies at the occupational or industrial level have yielded analogous findings, presumably resulting from similar mechanisms. For example, Fields and Wolff (1991) reported that gender segregation across both occupations and industries was negatively related to employment growth (see also Jennings, 2005). Because growth provides opportunities to foster gender equality in access to new positions, we propose the managerial opportunity hypothesis, to reflect women's greater salience in a context of growth:

Hypothesis 2: The positive relationship between women's representation in management and the level of gender integration will be stronger in growing establishments.

Time

Finally, the effect of women's access to organizational power structures on gender desegregation is likely to be time dependent. On the one hand, there are grounds for predicting an increasing salience of female managers over time. First, women's overall gains in representation among managers since 1970 have been profound (Cohen and Huffman, 2007), and although progress has slowed, the magnitude and timing of the fundamental shift in managerial demographics may have led to greater legitimacy for female managers' authority. Additionally, Cohen, Huffman, and Knauer (2009) documented a shrinking gender wage gap among managers over time, which could imply increasing female power; it could also reflect declining differences in the kinds of managerial jobs male and female managers hold. And, finally, some have argued that the gender gap in assumed competence, which could stifle the effective exercise of women's authority in the workplace, has declined over time (Ridgeway and Correll, 2000).

Alternatively, if the increase in women's representation in positions of authority has resulted primarily from a widespread proliferation of low-status managerial jobs, a process described as "title inflation" (Jacobs, 1992), then one would expect relatively stable or weakening effects of women's representation over time. This would also be consistent with a stalling trend toward gender equality documented elsewhere (Cotter, Hermsen, and Vanneman, 2004). Although women's share of managerial occupations has increased dramatically, women's entrance into management slowed in the 1990s, during which time gender segregation among managers increased (Cohen, Huffman, and Knauer, 2009). These fundamental changes, coupled with stalling progress toward gender equality on other fronts, could impose increasing limits on women managers' exercise of authority and suggest a decreasing salience of women in management. This reasoning leads us to predict a waning effect of women in management on desegregation, which we refer to as the gender stall hypothesis:

Hypothesis 3: The positive effect of women in management on the level of gender desegregation will decrease over time.

Finally, in testing our hypotheses, we can also explore important nuances in the overall workplace desegregation trends over the time period we study. In their recent analysis of U.S. private-sector work establishments, Tomaskovic-Devey et al. (2006) found strong evidence of establishment-level gender desegregation between the mid-1960s and 2003, which was not due to shifts in the industrial or regional composition; they concluded that real progress toward gender integration had been made. One mechanism proposed as an explanation for such findings is cohort replacement, a process through which new, more integrated establishments enter the population over time, speeding desegregation. Although the concept of cohort replacement has been used frequently to account for individual-level attitudinal change (e.g., Firebaugh, 1989; Brooks and Bolzendahl, 2004), it is clearly useful for understanding organizational-level change as well. This is a

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different process from within-establishment change, in which workplaces become more integrated as they age, and has not been examined in existing research. In light of this, we ask whether the entry of new cohorts of establishments—versus desegregation within establishments—accounts for changes over time, exploiting our longitudinal data to test this question for the first time.

METHODS

Data

We employ longitudinal data on private-sector workplace composition collected by the U.S. federal government since the 1960s; our sample covers 1975–2005. The longitudinal data permit more conclusive inferences about the effects in question, and an assessment of the dynamics of gender desegregation between and within establishments over time. The time span covered includes the early period of gender-based affirmative action through the most recent years, as progress toward gender equality has slowed, stalled, or even reversed (Cotter, Hermsen, and Vanneman, 2004; Cohen, Huffman, and Knauer, 2009), even while explicit attempts to increase managerial diversity have spread (Kalev, Dobbin, and Kelly, 2006).

Our data are from the 1975–2005 United States Equal Employment Opportunity Commission (EEOC), drawn from EEO-1 reports filed by those private-sector employers, as mandated by Title VII of the 1964 Civil Rights Act.¹ This data set includes private-sector employers with more than 100 employees and federal contractors with more than 50 employees and contracts exceeding \$50,000.² The EEO-1 reports provide the sex and racial/ethnic composition of nine occupational categories within each establishment. These categories include officials and managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers. The EEO data include identifiers enabling us to track the establishment across years.³ For a detailed discussion of the EEO data and their advantages for analyzing gender segregation, see Robinson et al. (2005).

Importantly, the EEO-1 reports describe individual workplaces (establishments), rather than companies. Thus each outlet in a department store chain, for example, has its own report; corporate headquarters appear as establishments as well. Therefore, we did not test effects of company characteristics per se, beyond what could be aggregated from the establishment data. We could not assess the gender of top officers but, rather, only the gender composition of the managerial ranks at each establishment; even at company headquarters, lower-level managers presumably outnumber top officers in large companies. We did group together establishments as firms, which permitted us to test for some firm-level effects.

We arranged the data into a nested structure, with multiple measurements (time points) nested within individual establishments, which in turn were nested within firms. Most characteristics of establishments may vary across years, but for modeling purposes we treated some variables as time

1
The confidential EEO-1 data are not publicly available. Matt L. Huffman obtained the data from the EEOC through an Intergovernmental Personnel Act (IPA) agreement.

2
Reporting requirements for establishment size changed somewhat in the early 1980s; however, the inclusion of establishment size in our multivariate models effectively adjusts for these changes (Tomaskovic-Devey et al., 2006).

3
The data are not available for the years 1976 and 1977. At the time of the analysis, we did not have the data from 1980, 1985, 2000, and 2004, so those years are also not included.

invariant, as specified below. After excluding cases, as described below, our dataset included 1,791,922 observations of 273,503 unique establishments nested within 68,269 firms.

Measures

Dependent variable. We used the index of dissimilarity (D) to measure establishment-level gender segregation, following previous work (Baron, Mittman, and Newman, 1991; Tomaskovic-Devey et al., 2006; Tomaskovic-Devey and Stainback, 2007), but we measured segregation only among non-managerial workers in each establishment. D is given by:

$$D = [0.5 \times \sum |M_i - F_i|] \times 100$$

Where M_i is the proportion of men in the establishment in the i^{th} occupational category, and F_i is the proportion of women in that same occupational category. The summation is taken over the eight non-managerial occupations within each establishment. D, which ranges between 0 and 100, is interpreted as the percentage of women or men that would have to change occupations in order to equalize the gender distributions across the occupations. Negative coefficients in our regression models indicate integration effects.

Because we could not compute a segregation score for establishments with workers in only one occupational category, we excluded observations with only one occupational category. The EEO data also include gender-homogeneous establishments, which are ambiguous with respect to the segregation measure but actually reflect gender-based exclusion (Tomaskovic-Devey et al., 2006), because in every U.S. labor market there is at least one woman to staff some job in every work establishment.⁴ Therefore, we assigned gender-homogeneous establishments a dissimilarity score of 100, reflecting complete segregation.

Independent variables. To test the effects of women's representation in leadership positions, we measured the percentage of female officials and managers in each establishment. Based on preliminary analysis and prior research suggesting a non-linear effect (Cohen and Huffman, 2007), we included percentage female squared. Following Kalev, Dobbin, and Kelly (2006), we used a one-year lag for these gender composition variables. Our measure of the gender composition of managers did not distinguish top managers from lower-level managers, which has implications for their authority (Cohen and Huffman, 2007). Further, because top managers are less likely to be female (Kalev, Dobbin, and Kelly, 2006), our analysis provides a conservative test of the impact of women in management.

We measured establishment size with the natural logarithm of the total number of workers. To measure growth, we calculated the mean annualized growth rate (see Preston, Heuveline, and Guillot, 2001: 12) of each establishment's total employment over the previous four-year period. It is calculated by $\ln[N(T)/N(0)]/T$, where $N(T)$ is size in the final year of observation, $N(0)$ is size at the first year of observation, and T is the number of years elapsed. For example, an establishment that had 100 employees in 2000 and 150 employees in

⁴ This is true for gender, but not for race. Because of the uneven distribution of race across U.S. labor markets, one could argue that a complete absence of racial minorities from an establishment reflects their scarcity in the available labor pool.

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2004 would have a four-year growth rate of $\ln[N(150)/N(100)]/4 = .101$.

Our growth rate variable imposes limitations on the data, which were justified by the theoretical importance of growth and the fit improvement achieved over using growth rates of shorter time spans. The main limitation is the absence of size measures for years not recorded. For the calculation, we needed data points four years apart, although years in between could be missing. In all, about one-third of all observations in the original data did not include enough information to calculate a four-year growth rate and had to be dropped.⁵ The largest group among these is establishments that appear in the dataset for fewer than four years, but we also excluded from the regressions all observations from 1975, so the first year in our regression analysis is 1978 (observations in that year could be linked to size in 1974 via the previous-year size measure in the 1975 data). Finally, extreme outliers on the growth measure, those more than four standard deviations from the mean, had corrupting effects on the results, and investigation showed that these usually indicated a coding error or some unidentifiable change in the establishment's structure; these observations also were excluded.

We captured time period with a variable indicating the calendar year, from which we subtracted 1975 so that the intercept in our models represented establishments in the first year of the dataset. We also controlled for the percentage of black non-managerial workers. Percentage Hispanic had no substantive effects in our models, so we excluded it.

Lastly, we employed a transformation of establishment size, a heterogeneity index, as suggested by Robinson et al. (2005). This helps account for the tendency of the EEO data to understate gender segregation by categorizing workers in broad occupational groups rather than detailed job titles. The measure is computed as follows: $[1 - (\Sigma P^2 \div T^2)] \times 100$, where P equals the number of employees in each of the nine establishment-specific occupations, which is squared and then summed over the set of nine occupations, and T² equals the total establishment employment squared (Gibbs and Martin, 1962). Other longitudinal analyses relying on the EEO reports have included this control (e.g., Hirsh, 2009).

To control for stable differences in unmeasured characteristics across industries, we used two-digit Standard Industrial Classification categories, which allowed us to hold constant industry-specific gender dynamics and isolate the effects of establishment-level factors. A very small number of establishments changed two-digit industries over our time period. In these rare cases, we used the industry listed in the first observation.

Our ability to identify firm-level characteristics was limited, but size was readily available. We measured firm size two ways, by the number of establishments within each firm and by the number of employees across all establishments. To obtain stable measures of firm size—which allowed us to group establishments for some of our fixed-effects regression models (see below)—we measured size in the year for which

5

The EEO-1 reports contain a measure of size for the previous year, which we used when available. When neither measure of size was available, we were forced to drop the observations, after determining that substituting shorter time spans or growth rates of 0 produced unstable effects.

each firm was largest and applied that measure to all establishment observations for the firm. The categories for number of employees included small (under 100), medium (100–499), and large (500+); for number of establishments, the categories included small (1–2), medium (3–10), and large (11+).

We examined and compared the cases we excluded with those we used in the regression models and found the differences to be modest. To test the sensitivity of our models to the exclusion (Allison, 2002), we estimated a linear probability model for the exclusion condition on gender segregation and the other variables from our basic model (except growth, which could not be calculated for the excluded cases). We found that a one standard deviation change in segregation was associated with a change of .03 standard deviations in the probability of being excluded, which was statistically significant with an N of nearly 3 million but substantively is very small. Therefore we are confident that excluding cases does not substantially alter our results. Descriptive statistics for the sample we analyzed are presented in table 1.

Modeling Strategy

Our analysis proceeded in three steps. First, we modeled variation in non-managerial gender segregation as a function of establishment and firm characteristics, with both ordinary least squares (OLS) and fixed effects regression models. Second, we estimated fixed effects models within categories of stable characteristics of both firms and establishments. Finally, we examined interactions between female managerial rank composition and other establishment characteristics in establishment-level fixed effects models.

In the first step, we began by estimating two OLS regression models with adjusted standard errors to account for the clustering of observations within establishments. Because of the large sample size, all coefficients were highly statistically significant regardless of this adjustment. The second OLS model included additional controls for industry and firm characteristics. We then estimated fixed effects regression models for both firms and establishments. The major advantage of the fixed effects approach is the ability to control for all stable characteristics of firms or establishments, thereby eliminating potential biases due to unmeasured firm or establishment characteristics (Allison, 2005). Because these models remove variation due to unchanging characteristics of firms or establishments, the remaining variance left to explain is longitudinal change within those units (Hirsh, 2009). This approach therefore yields extremely stringent tests of within-firm or establishment change, as the estimators are purged of possible spurious effects of unmeasured, stable characteristics (England et al., 1988; Castilla, 2007).

The coefficients in the OLS models capture variance associated with our key indicators occurring both between and within firms and establishments. In contrast, because the fixed effects models only refer to within-firm or -establishment variance, we can compare the two sets of models to see how much of the effects of our predictors occurs between versus within firms and establishments. For example, the effects of

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Table 1

Descriptive Statistics of Sample for Analysis (N = 1,791,922)				
Variable	Mean	S.D.	Min.	Max.
Gender segregation	44.44	26.53	0	100
% Female managers (lagged)	26.88	25.01	0	100
Heterogeneity	58.68	17.52	.492	88.89
% Black managers	12.52	16.49	0	100
Size (ln)	5.055	.950	1.10	10.63
Years since 1975	17.03	7.71	3	30
Growth (4-year)	.006	.109	-.830	.870
<i>Industry</i>				
Agriculture	.004	.062	0	1
Mining	.011	.105	0	1
Construction	.018	.132	0	1
Manufacturing	.305	.461	0	1
Transportation, communication & utilities	.080	.271	0	1
Wholesale trade	.055	.228	0	1
Retail trade	.228	.419	0	1
Finance, insurance and real estate	.082	.274	0	1
Service	.217	.412	0	1
<i>Firm number of employees</i>				
500+ Employees	.753	.431	0	1
100–499 Employees	.212	.409	0	1
<100 Employees	.035	.184	0	1
<i>Firm number of establishments</i>				
11+ Establishments	.573	.495	0	1
3–10 Establishments	.165	.371	0	1
1–2 Establishments	.262	.439	0	1

time in the OLS model show whether establishments in later years are desegregated compared with those in earlier years as well as change within establishments, while the time effect in the fixed effects models represents only the extent to which establishments themselves desegregate over time. This is a crucial distinction, as these two results represent two distinct mechanisms for desegregation: change within workplaces versus cohort replacement, the replacement over time of segregated workplaces with more integrated ones.

Second, we estimated a series of establishment fixed effects models for each of the categories of the variables identified as invariant at the establishment or firm level—industry and firm size categories. Because these variables are time invariant, they cannot be included in a fixed effects model, but comparing the separate models by category permits an examination of interactions between the time-varying variables and these unchanging characteristics (Halaby, 2004). For example, we could test whether within-establishment variation in the gender composition of managers is associated with segregation in large as well as small firms, rather than establishments.

Last, we investigated the gender composition effects on the level of gender integration more deeply with an establishment fixed effects model testing interactions between managerial proportion female, on the one hand, and establishment size, growth, and time, on the other. This model illuminates the

conditions under which the presence of female managers has enhanced or reduced effects on gender integration.

RESULTS

Descriptive Findings

It is useful, before examining the regression results, to see the trends in desegregation and female managerial composition found in the EEO data from 1975 to 2005 and the observed association between the two over this period. Figure 1 shows the managerial composition of EEO-reporting establishments in approximately 10-year intervals, using the full data files rather than only the restricted sample we used for analysis. It illustrates the veritable sea change that has occurred with women's entrance into management positions. Fully 63 percent of workers in 1975 were found in establishments with less than 10 percent female managers, and that has now dropped to less than 15 percent. This level of representation remained the modal experience for workers until the 2000s, when the most common category (16 percent) became 20–29 percent female. Although the representation of women in management increased in each 10-year period, the improvement was greatest between 1975 and 1986. Despite incontrovertible progress, almost half of workers (45 percent) remain in establishments with less than 30 percent female management.

Figure 2 shows trends in the bivariate relationship between women's representation in management and non-managerial gender segregation, portrayed with one line for each year at the same intervals, calculated using weights for establishment size, so that it shows the distribution for all non-managerial employees rather than for establishments. At each time point, segregation levels are lower in those establishments with a greater representation of women in management, up to 50 percent, above which the level of segregation rises (for 1975) or flattens out. The figure shows desegregation over time regardless of managerial gender composition and a slowing rate of improvement in the last two decades, consistent with the trends revealed by others (Tomaskovic-Devey and Stainback, 2007; Cohen, Huffman, and Knauer, 2009).

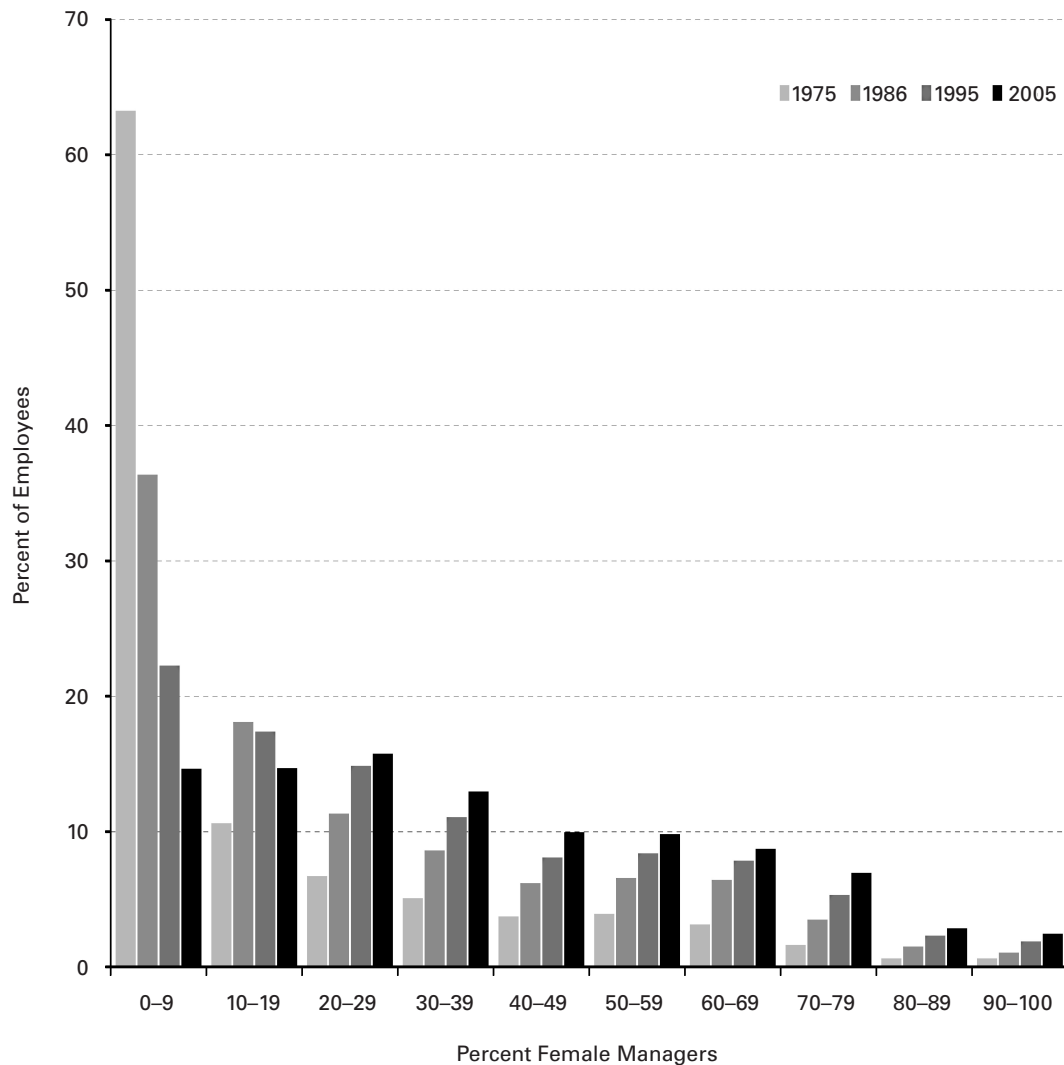
If the managerial occupation category simply mirrored the pattern of other occupations, we would expect these lines to take a U-shape, with higher levels of segregation occurring at both very low and very high concentrations of women in management. This is closest to the shape shown for 1975. But in the subsequent years, only the left side of this distribution fits the pattern. This means that although non-managerial employees in establishments with few women in management are very segregated, the same is not true of those in which most or even all managers are women. Thus gender composition in the managerial occupation is not simply a reflection of gender concentration at the establishment level.

Regression Results

The regression results for cluster-adjusted OLS models and fixed effects models appear in table 2. The first model includes only establishment characteristics and controls,

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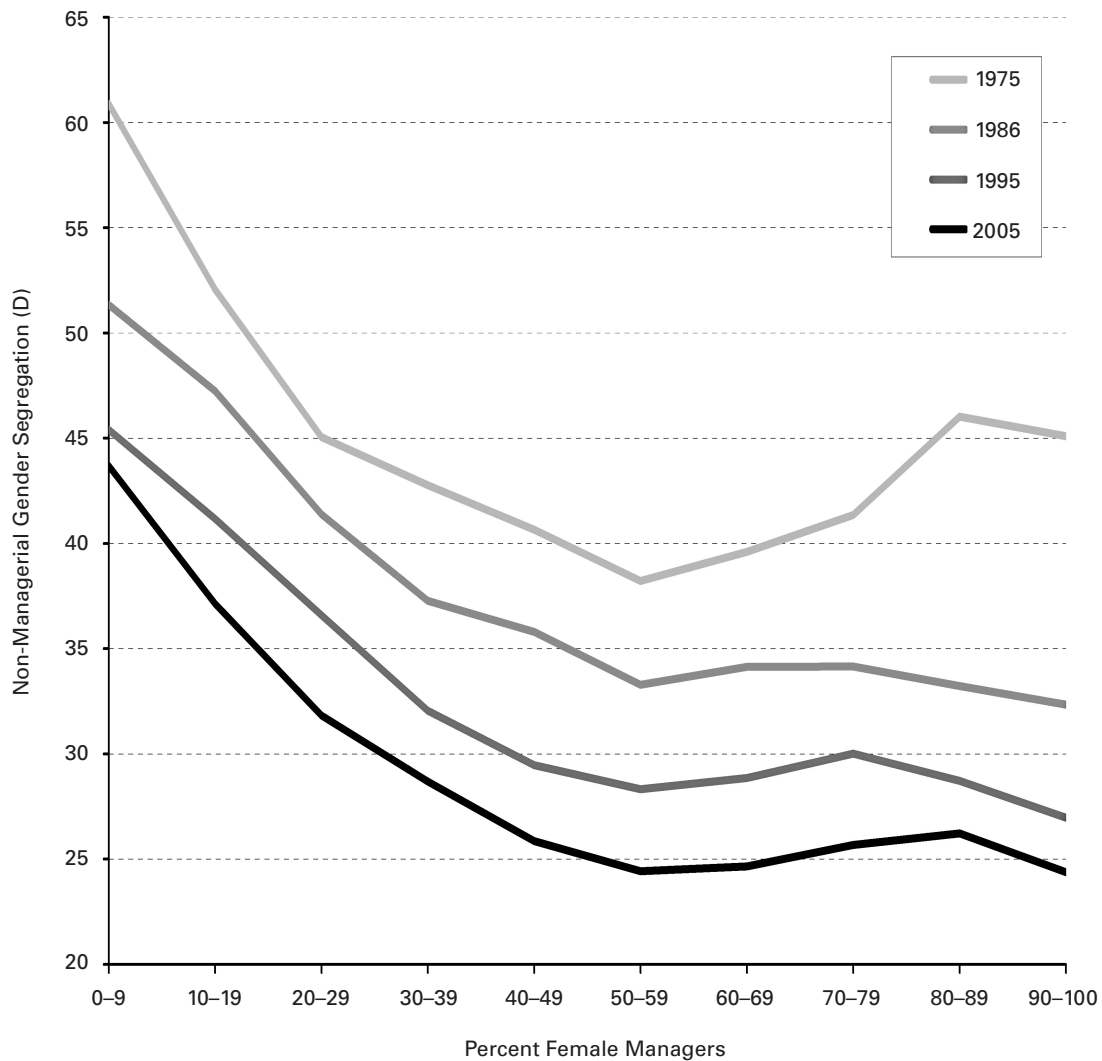
Figure 1. Distribution of non-managerial employees, by percent female managers, 1975–2005.



while model 2 introduces controls for industry group and firm-size variables. The third and fourth models include fixed effects for firms and establishments, respectively. Because the OLS models include the entire association between the variables of interest and gender segregation, while the fixed effects models model only effects within firms or establishments, the comparison between these models permits evaluation of the proportion of each effect that occurs within firms or establishments.

All four models show significant effects of managerial gender composition, such that establishments with higher proportions of female managers are markedly less gender segregated. Although the effects sizes differ, all four models show inflection points between 56 and 61 percent female, above which female managers are associated with increasing levels of segregation. Industry and firm variables account for a little more than one-fifth of the effect of female managers. Firm fixed effects account for just over half of the remaining effect;

Figure 2. Percent female managers and non-managerial gender segregation, 1975–2005.



thus most of the desegregating effect of female managers is observed between rather than within firms.

The establishment fixed effects model reduces the effect much further, showing that about 90 percent of the female manager effect is between establishments. Thus across workplaces, non-managerial workers are much less segregated when they work under higher proportions of female managers, but only a small part of that association is attributable to changes within establishments as they shift to include more women in management. Thus a hypothetical job applicant seeking non-segregated working conditions would do better to look at existing levels of segregation rather than hoping for future desegregation in any given workplace. Nevertheless, even the small within-establishment effect is remarkable, as it is the most stringent test we can conduct, measuring the effect of female managers holding constant all stable, unobserved workplace characteristics. This is strong

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Table 2

Regression Coefficients for Gender Segregation on Establishment Characteristics*

Variable	OLS		Fixed Effects	
	1	2	Firm	Establishment
% Female managers (lagged)	-.604	-.475	-.222	-.066
% Female managers squared	.0050	.0043	.0020	.0006
Size (ln)	-5.514	-5.423	-5.308	-5.375
Growth (4-year)	-2.758	-3.496	-2.226	-.393
Years since 1975	-.423	-.418	-.430	-.412
Heterogeneity	.715	.624	.572	.512
% Black managers	-.065	-.053	-.044	-.043
Industry controls	No	Yes	—	—
Firm controls	No	Yes	—	—
Intercept	47.92	49.83	—	—

* OLS models control for clustering of observations within establishments; fixed effects models do not have meaningful intercepts. Two-tailed *p*-value is less than .0005 for all coefficients.

supporting evidence for the view that women's presence in positions of organizational authority itself reduces gender segregation at the workplace level.

The results in table 2 also provide persuasive evidence for the effects of establishment size and growth. Larger establishments are predicted to be significantly more integrated by both the OLS and fixed effects models. Because the fixed effects models hold constant average size for each establishment, this shows that within-workplace variations in size are also associated with segregation. The fact that growth effects are greatly reduced in the fixed effects models suggests that unobserved characteristics of growing establishments are associated with lower levels of segregation, but years of above-average growth still lead to desegregation. These results constitute strong support for the view that establishment size and growth contribute to gender integration, supporting hypotheses 1 and 2.

Finally, the models in table 2 confirm that trends toward desegregation over time have not been driven by changes in industrial composition or firm size, as the coefficient for time is not substantially changed when these controls are added to the OLS models. With the controls for establishment characteristics, industry, and firm size, EEO-reporting private-sector workplaces as a whole have desegregated at an average rate of about 0.4 points per year. That is only slightly slower than the unadjusted rate of desegregation from 1975 to 2005 (figure 1). Remarkably, however, this effect is not diminished in the fixed effects models. This shows that change over time has been driven not by changes between establishments—that is, by new establishments entering the data with lower levels of segregation—but rather by the dynamic of desegregation within establishments over this period.

To examine the contexts in which female managers—and our other central variables—are more or less efficacious for levels

Table 3

Establishment Fixed Effects on Gender Segregation, by Industry and Firm Characteristics**Effects of Establishment Characteristics**

	Size (ln)	Year	Growth	Female managers	Female managers ²	N
<i>Industry</i>						
Agriculture	-8.987***	-.440***	2.342	.023	-.0004**	6,967
Mining	-4.549***	-.309***	-2.089*	-.129***	.0008**	19,997
Construction	-4.218***	-.626***	-3.108***	-.081***	.0006***	31,853
Manufacturing	-5.728***	-.457***	-2.509***	-.070***	.0009***	547,374
Transportation, communication & utilities	-2.344***	-.479***	-2.355***	-.015*	-.0001**	143,009
Wholesale trade	-5.105***	-.540***	1.026*	-.063***	.0006***	98,324
Retail trade	-6.123***	-.182***	3.111***	-.049***	.0004***	408,172
Finance, insurance & real estate	-4.401***	-.721***	.507	-.157***	.0013***	146,625
Service	-5.802***	-.379***	.615**	-.074***	.0006***	389,601
<i>Firm number of employees</i>						
<100	-8.393***	-.347***	.810	-.015	-.00001**	62,677
100–499	-7.396***	-.383***	.885***	-.061***	.0005***	379,623
500+	-4.807***	-.424***	-.600***	-.069***	.0006***	1,349,622
<i>Firm number of establishments</i>						
1–2	-6.490***	-.357***	.172	-.072***	.0006***	468,590
3–10	-5.863***	-.448***	-.316	-.060***	.0006***	296,156
11+	-4.540***	-.433***	-.710***	-.065***	.0005***	1,027,176

* $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed tests.

of segregation, we estimated fixed effects models separately by categories of our time-invariant variables. These results are shown in table 3. The overarching conclusion from this analysis is that female managers have remarkably similar effects across a wide range of workplace environments. In every industry group except agriculture, higher proportions of female managers within establishments lead to desegregation. The strength of the association varies, but the nonlinear pattern is repeated in all but one industry, with inflection points ranging from a low of 40 percent (in manufacturing, which has very few establishments above 40 percent female managers) and 78 percent. Female managers also have very similar effects across firm-size categories, with the exception of the small number of firms with fewer than 100 total employees.

Table 3 also presents effects of size, growth, and time on gender segregation across the same group of categories, and the results are also quite consistent. Across industries, establishment size effects are most pronounced in agriculture and retail trade, while growth effects are smallest in finance, insurance, and real estate and service industry workplaces.

Finally, we examined the establishment-level interactions that promote or hinder the desegregating effects of female managers. Although only a small portion of the observed female manager effects occur within establishments, because we were interested in the conditions under which

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Table 4

Establishment Fixed Effects Coefficients for Gender Segregation and Percent Female Managers Interactions*

Variable	Coefficient
% Female managers (lagged)	-.085
% Female managers squared	.0011
Size (ln)	-5.112
Size × % Female managers	-.013
Growth (4-year)	-3.607
Growth × % Female managers	.250
Growth × % Female managers squared	-.002
Year (from 1975)	-.494
Time × % Female managers	.005
Time × % Female managers squared	-.00003

* Controls for % black managers and heterogeneity are not shown.
Two-tailed *p*-value is less than .0001 for all coefficients.

female managers may be able to have a direct influence on segregation, we employed within-establishment fixed effects models for these tests. Results for interactions between managerial gender composition and size, growth, and time are shown in table 4. All coefficients are highly significant ($p < .0001$).

The interaction with size is negative, which means that the effect of female managers on segregation levels is stronger in larger establishments.⁶ The growth effects are complicated by the nonlinear effects, which show that in growing establishments, the effect of female managers is stronger, but from a higher baseline. Our interpretation of these size and growth effects is that they are consistent with hypothesis 2, the managerial opportunity hypothesis. Female managers have more potential for influence when establishments are adding employees. Hypothesis 1, the managerial formalization hypothesis, which predicted that female managers would use formal procedures to improve women's opportunities in larger organizations, was also supported at the establishment level. The results are not consistent at the firm level, however, as the differences across firm-size categories occur only for number of employees, not number of establishments.

The result of the interaction of time with female managerial representation is striking and strongly supports hypothesis 3, the gender-stall hypothesis. The positive effect of the interaction attenuates the desegregating benefits of female managers over time, until the effect is completely gone by the end of the period—increasing female representation in management is no longer associated with desegregation. The cross-sectional association persists to 2005 (see figure 1), but the within-establishment effect, which is a better test of the effect of female managers within workplaces, does not.

DISCUSSION AND CONCLUSION

Workplace inequality in large part reflects establishment-level processes that shape job assignment, advancement opportunities, and the distribution of rewards. A rich tradition in

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We did not include the interaction between size and percentage female managers squared, as this variable did not improve the models.

organizational research has shown how organizations' capacity to change is a function of both internal and external pressures. Uniting theory and research on organizations with gender stratification, we examined how gender integration in private-sector workplaces is conditioned by establishment characteristics. Our dynamic models provide several important contributions to the literature.

First, to the extent that workplace segregation results from gender discrimination, it follows that managerial action is essential for creating and sustaining inequality in organizational rewards (Hultin and Szulkin, 1999). Our analysis strongly supports the idea that the gender composition of managers is key to understanding the rate at which U.S. work establishments desegregated after 1975. Our within-establishment change models forcefully support the conclusion that non-managerial workers are less gender segregated when they work under female managers. This finding is consistent with the strength-in-numbers view (Kanter, 1977) and perspectives from organizational demography that stress the increased political and organizational power that accrues to minority groups as they ascend workplace hierarchies.

Although we lack the requisite measures for testing specific mechanisms that underlie this association, previous research is useful. First, in addition to the benefits of increased power to mobilize against gender discrimination, increased concentrations of women in management can provide benefits to subordinate women through mentoring and homophily (Beckman and Phillips, 2005). Second, the benefits of having women in management roles can operate indirectly, through social cognitive avenues, by decreasing the salience of sex as a relevant category (Ely, 1995), promoting gender-neutral leader subschemas (Perry, Davis-Blake, and Kulik, 1994) and altering the structural context of workplaces such that the advantage of being male is weakened (Ridgeway and Smith-Lovin, 1999; Lucas, 2003). Thus women's increased managerial representation can shape all workers' perceptions and beliefs surrounding women leaders.

Second, we found strong positive effects of both workplace size and growth on gender integration, net of a host of other factors. The integrating effect of size is consistent with neo-institutional theory stressing organizations' desire to appear legitimate in the face of societal expectations (Meyer and Rowan, 1977; Salancik, 1979). This finding echoes recent work showing increased opportunities, in the form of greater access to managerial jobs, in larger establishments (Stainback and Tomaskovic-Devey, 2009). It also is consistent with the role of formalized personnel policies and practices that reduce gender bias, which are most common in large establishments (Konrad and Linnehan, 1995; Reskin and McBrier, 2000). In contrast, population ecology models, which predict that larger organizations will be slower to integrate, were not supported. Thus, if structural inertia restricts some aspects of organizational adaptation and change, our analysis suggests that gender integration may not be one of them.

Third, our results reveal important insights into temporal change in gender segregation by explicitly attending to cohort

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replacement as a potential mechanism underlying integration. Desegregation trends have not been driven by cohort replacement, that is, by new, relatively integrated establishments entering the labor market. Rather, our results underscore the importance of within-establishment desegregation dynamics. Ours is the first large-scale study of workplace-level segregation to offer such a decomposition, and we hope it will pave the way for future studies of organizational change. Although beyond the scope of our analysis, an analysis of period effects would compliment our organizational focus. For example, changes in establishments' legal or institutional environment have been shown to strongly shape both organizational policies and access to managerial jobs (Dobbin et al., 1993; Skaggs, 2008). Variation in establishments' institutional, legal, or labor market context is strongly related to the capacity for organizational change, thereby affecting both levels of integration and the relationship between internal demographic processes and gender-based ascription.

Finally, our analysis reveals the conditions under which female managers are most efficacious, providing theoretical leverage on the processes concerned. Regarding size, we found support at both the establishment and firm level for the managerial formalization hypothesis, which predicted that in larger organizations female managers are able to take advantage of formal human resource procedures to improve opportunities for non-managerial women. At the firm level, those with fewer than 100 workers do not exhibit beneficial female representation effects, suggesting the possibility of a threshold below which the number of female managers is too small to make a difference. Our expectation that women's representation would have a greater impact in the context of workplace growth—captured by the managerial opportunity hypothesis—was also supported. This finding suggests that female managers' have greater potential for influence when opportunities for upward mobility are created through job growth. These results are the first to specify how the effect of female managers on patterns of inequality depends on the workplace context.

We also found a strong time dependency in the effect of female managerial representation on gender desegregation, consistent with the gender-stall hypothesis. Our results point to the importance of women's access to organizational power structures, consistent with previous, cross-sectional studies (Hultin and Szulkin, 1999; Cohen and Huffman, 2007), but the effect has now disappeared. This finding can be thought of as an additional indicator of stalling progress toward gender equality. Although further research is clearly needed to explain the weakening effect of women's representation over time, it may be a result of women's increasing representation in low-status managerial jobs with little authority. Cohen and Huffman (2007) reported that female managers were associated with lower gender wage gaps, but only when those women were in relatively high-status managerial positions. Women's declining relative status within management, even as their overall representation increases, could help explain our findings on the gender stall.

Our results have provocative policy implications. Specifically, the finding that the entrance of women into managerial roles

improves the status of other women at the establishment speaks directly to debates about the role of affirmative action in employment. To the extent that affirmative action and EEO/anti-discrimination programs are associated with women's entry into management and increased workplace opportunity more generally (Donohue and Siegelman, 1991; Kalev and Dobbin, 2006; Skaggs, 2008), more rigorous enforcement could represent a mechanism for jump-starting the gender stall we document. But, as we suggest above, women's increased managerial representation may be a necessary but not a sufficient condition for them to have effects on inequality. To address the gender stall, policies must also target women's status in organizational hierarchies and not merely their representation in management. In addition, over and above any effectiveness that affirmative action may have for managerial integration, an argument could be made that it has the potential to prevent discrimination more broadly (Kang and Banaji, 2006). As Yelnosky (2003) noted, the use of such a prevention justification is consistent with the Supreme Court's Title VII jurisprudence on affirmative action. Thus our findings imply that policies that help integrate an organization's managerial ranks, in addition to helping correct historical inequalities, may also help prevent a variety of other forms of workplace gender discrimination. A more fine-grained examination of historical ebbs and flows in affirmative action support and anti-discrimination enforcement would be a promising focus for future research and could partially account for the gender stall we document.

We conclude with a note of caution. It is naturally possible that the managerial gender composition effects we have documented are not causal. For example, many of the women in management that we identify were presumably hired as human resource managers, more than two-thirds of whom are women (Cohen, Huffman, and Knauer, 2009), charged with managing diversity efforts. Such efforts, when directed by managers with personal responsibility for their success, may increase gender integration, regardless of managers' gender (Kalev, Dobbin, and Kelly, 2006). Thus female managers may be an indicator of better motivated diversity initiatives from above. Our fixed effects models should control for such factors, however, and although they are greatly reduced, the female manager effects remain robust to that specification. Similarly, there are other establishment-level characteristics that we cannot measure, such as the presence of formal hiring mechanisms, unionization, work-family policies, or exposure to legal pressures; these confounding factors may also be controlled in the fixed effects framework. Finally, constraints on the data limit the generalizability of our analysis to larger, private-sector establishments; smaller and public-sector workplaces—which employ a large portion of the labor force—might operate under different dynamics. Given the sparse workplace-level longitudinal research on ascriptive inequality, however, we are confident that our contribution advances the literature and hope our findings motivate further scholarship on the role of organizational change in shaping the contours of workplace inequality.

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