Strategic Management Journal
Strat. Mgmt. J., **21**: 1225–1237 (2000)

RESEARCH NOTES AND COMMENTARIES

THE IMPACT OF WORK-LIFE PROGRAMS ON FIRM PRODUCTIVITY

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This research examined the adoption of work-life programs and the impact of work-life programs on firm productivity. Human resource executives in a national sample of 658 organizations provided survey data on firm characteristics and work-life programs. In these 658 organizations, the percentage of professionals and the percentage of women employed were positively related to the development of more extensive work-life programs. Productivity data were obtained from CD Disclosure for 195 public, for-profit firms. Significant interaction effects indicated that in these 195 firms work-life programs had a stronger positive impact on productivity when women comprised a larger percentage of the workforce and when a higher percentage of professionals were employed.

Business scholars are increasingly examining human resource (HR) practices as a source of competitive advantage (Coff, 1997). In particular, much recent research has focused on high-commitment HR systems, which are designed to provide employees with development opportunities, participation in decision making, and high rewards for performance. In return for these investments, employers expect to attract and build a high-quality workforce that is committed and motivated (Huselid, 1995; Legge, 1998a; Pfeffer, 1994).

Scholars have also argued that work-life programs may help companies protect and leverage their general investments in human assets (e.g., Osterman, 1995). Work-life programs are initiatives adopted by organizations to help employees manage the interface between their paid work and other important life activities, including family (Lobel, 1999). Since conflicts between work and family life may lead to employee turnover and withdrawal, initiatives that reduce this conflict can help companies retain valuable workers they have recruited and trained. Work-life programs may also reduce other withdrawal behaviors that diminish the value of investments in employees such as reduced work effort, lateness, and absenteeism (Blau, 1985). Additionally, because many firms do not provide extensive work-life benefits, work-life programs may motivate employees to exert maximum effort on the job in order to stay with the firm and avoid layoffs during downsizing or restructuring actions.

Key words: work-life programs; firm productivity; strategic human resource management
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Received 29 June 1998
Final revision received 8 June 2000

Though work-life programs have potential to benefit firms, work-life initiatives can also be expensive investments, and thus companies are most likely to realize gains in situations where potential benefits outweigh expected costs. In this paper we argue that work-life benefits are likely to have a substantial marginal benefit for organizations that (1) have a high percentage of professional employees, (2) have invested substantially in workers' firm-specific skills, and (3) have a high percentage of female employees. As we explain below, work-life programs are likely to be an especially wise investment in each of these situations, and thus we predict that firms in such circumstances are likely to develop more extensive work-life programs. Additionally, we predict that work-life initiatives will have an especially positive impact on workforce productivity for such firms.

Our specific arguments are detailed below to develop hypotheses for this research. First, we outline reasons why work-life initiatives can improve workforce productivity. Then, we explain why work-life programs are more likely to be adopted and to produce productivity gains for firms with large numbers of professionals, large numbers of women, and/or large investments in employees' firm-specific skills.

WORK-LIFE PROGRAMS AND PRODUCTIVITY

Work-life initiatives encompass a variety of practices that aid workers in balancing the demands of work and personal life (Lobel and Kossek, 1996). Many of these practices are aimed in particular at helping workers to deal with family obligations. Some programs provide specific services such as on-site daycare for children or emergency daycare, where other programs provide flexibility in work hours and parental leaves. Though some programs may involve little cost on behalf of the organization, e.g., providing information about local daycare centers, many programs designed to significantly aid the worker are expensive. On-site childcare centers can be quite costly to set up and run, and implementing flexible hours may lead to problems with adjusting work schedules and changing managerial practices.

Many have argued that work-life programs generate performance benefits for firms by enhancing recruitment and reducing absenteeism and turnover (Greenhaus and Parasuraman, 1997, 1999; Hall and Parker, 1993; Lobel and Kossek, 1996; Lobel, 1999). Tensions between job demands and family life may lead employees to reduce those tensions by expending less time and effort on their current jobs (Brett, 1997; Konek and Kitch, 1994), moving to a position that generates less work–family stress (Felmlee, 1995; Greenhaus *et al.*, 1997), or leaving the workforce altogether (Klerman and Leibowitz, 1999; Oppenheim-Mason and Duberstein, 1992). Organizations can enhance their ability to recruit and retain a top-quality workforce if they provide employees with flexibility and resources to help them combine work and family more easily (Greenhaus and Parasuraman, 1999; Lobel, 1999).

To the extent that work-life programs are effective in reducing work–family conflict, they can also improve attitudes. A recent meta-analysis showed a consistent negative relationship between work–family conflict and satisfaction with the job and with life (Kossek and Ozeki, 1998). Providing work schedule flexibility reduces the level of work–family conflict (Hammer, Allen and Grigsby, 1997) and enhances satisfaction with family life (Parasuraman *et al.*, 1996). Providing on-site childcare has been linked to a variety of positive attitudinal outcomes (Lobel, 1999). Longitudinal research has shown that organizations providing longer parental leaves, greater flexibility in the location of work, and higher supervisor support generate greater job satisfaction among new mothers (Holtzman and Glass, 1999). Higher satisfaction should enhance the ability to hire and keep the best employees. Additionally, providing flexibility for employees can help organizations maintain the flexible structures they need to respond to variations in their environments (Hall and Parker, 1993).

Furthermore, work-life programs are thought to be one initiative that may encourage workers to put forth extra effort beyond the minimum required to retain the job (e.g., Osterman, 1995). Because not all firms provide extensive work-life programs (Goodstein, 1994; Ingram and Simons, 1995), a firm's work-life program provides an inducement to stay with the firm, especially for employees who value assistance with combining work and family life. Since job security has been eliminated for many employees (Christensen, 1997), the desire to stay with the current firm can motivate employees to perform to the best of their abilities. Employees who wish to survive

downsizing or restructuring actions are likely to exert the maximum level of effort rather than perform to the minimum acceptable standard (Osterman, 1995).

We argue that work-life initiatives can increase employee effort even though they are not tailored to individual employee contributions. There are several theories and some evidence to suggest that the provision of valuable benefits to employees as a group may increase overall effort by these employees on their primary job responsibilities and beyond.

An exchange framework is often used to explain the general mechanism underlying these effects. Many traditional motivational approaches are considered within a tight, purely economic exchange. Worker pay is determined by close supervision or output-based incentives and the goal is to reward employees as closely as possible for their specific contributions (Ouchi, 1980; Tsui *et al.*, 1997). Recently, there has been increased attention paid to broader exchanges between individual and organization. These broader exchange frameworks focus less on specific quid pro quo exchanges and more on a general exchange between worker and organization. In situations with a certain amount of mutual trust and commitment, more general investments and inducements on behalf of the employer may be rewarded with greater employee effort (Osterman, 1995; Tsui *et al.*, 1997).

Akerlof's (1982) gift exchange model provides one possible reason why work-life programs may generate added effort on the part of workers even though benefits are not contingent on individual contribution. The gift exchange model assumes that workers develop sentiments for the firm. Akerlof (1982) suggests that such sentiments lead people to develop utility for giving gifts to the firm. One gift workers can give to the firm is exerting discretionary effort to perform beyond minimum standards. Because gift giving is guided by the norm of reciprocity, the firm must respond with a gift of its own or else workers will curtail their efforts. The primary gifts firms can give to a worker are leniency in work rules and compensation in excess of that needed to obtain another similar worker. As nonpecuniary compensation, work-life programs can function as a gift given by the firm in exchange for extra productivity.

Similarly, more recent frameworks assume that a broad, general exchange between employee and employer is often necessary in situations where the organization can benefit from employee ideas and efforts that go beyond their specific job responsibilities. For example, Tsui *et al.* (1997) explain that in situations where organizational investments go beyond specific monetary rewards to general well-being and career advancement, organizations can expect to see greater discretionary effort in the form of organizational citizenship behaviors—activities that are important to organizational effectiveness but that are not explicitly required by the job (Moorman, Blakely and Niehoff, 1998). Likewise, Osterman (1995) argues that sharing ideas by its very nature is discretionary and requires a certain amount of employee volunteerism. The empirical results of Tsui *et al.* (1997) show that general investments can lead to high performance on both primary job responsibilities and voluntary organizational contributions. In sum, though work-life benefits may not be tightly linked to individual job performance, there are a number of arguments and some evidence that general investments on behalf of the organization may be rewarded with high discretionary effort by employees.

PROFESSIONAL EMPLOYEES

Professionals have been defined as an organized body of experts who apply some form of specialized, theory-based knowledge to a set of complex problems (Webster, 1999). Indicators of professionalism include education in an academic setting to degree level, existence of professional organizations, the development of a professional literature, and research activity supplying the discipline with new theoretical frameworks (Webster, 1999). Professionals are a critical resource because of their tacit knowledge, their expense, their recent scarcity (Cappelli, 1997), and the transferability of their skills. The specialized knowledge base commanded by professionals is difficult and costly to develop and allows them to reduce uncertainty for the firm by handling complex nonroutine problems (Friedson, 1970; Raelin, 1986).

Firms employing larger numbers of professionals are more likely to adopt extensive work-life programs because the expense, value, and scarcity of professionals help to justify the programs' costs and challenges. Management may be particularly concerned about the work–family conflicts experienced by professional employees because the dollar value of losses due to turnover, distraction, reduced

work hours, or reduced effort is greater for professionals than for less highly paid employees. Management might offer more extensive work-life programs when employing many professionals because their higher salaries allow them to take greater advantage of services such as on-site childcare, which can be quite expensive.

Furthermore, attracting and retaining a core group of talented professionals can be a significant issue for firms, because many of a professional's skills are generalizable and valued by other employers. Scholars have argued that generalizable skills are the most difficult to protect, since employees can more easily sell these skills outside the firm and competitors may be tempted to bid the best of these employees away (Coff, 1997). Retaining high-quality professionals has become a more critical issue because the demand for professionals is increasing relative to other workers. The relative scarcity of professionals is evidenced by their rising salaries between 1979 to 1993, a time during which managerial and other salaries were falling (Cappelli, 1997). Due to their scarcity and transferability of their skills, professionals may have greater power to influence firms to provide them with costly work-life benefits.

Hypothesis 1: Firms employing a larger percentage of professionals develop more extensive work-life programs.

Work-life programs may enhance professional productivity for a number of reasons. First, due to the relatively long years of education and training required for professional positions, the trend among many U.S. workers to delay the birth of the first child until achieving some measure of career and financial security is particularly acute among professionals. Research has consistently shown that a high level of education is associated with delayed family formation (Blossfield and Huinink, 1991; Blossfield and Jaenichen, 1992; Lehrer and Nerlove, 1986; Raymo, 1998). For this reason, work–family tensions tend to rise for many professionals as they reach their thirties and forties—often their peak productive years, which further increases the potential dollar value of losses to the firm.

Second, firms employing large percentages of professionals may find that monitoring and controlling their productivity is difficult and costly. Professional work involves applying abstract principles to a set of unique and changing problems, making it difficult for observers to differentiate between work and nonwork activities (Raelin, 1986). Professionals also tend to resist control attempts, viewing self-determination and the exercise of judgment as professional prerogatives (Friedson, 1970). Because it is difficult to effectively monitor professionals' work activities and because they tend to resist such monitoring, professionals tend to have greater autonomy and control over their own work habits than other employees.

The autonomous, hard-to-monitor nature of professional work suggests three reasons why work-life initiatives may be especially well suited for professional workers. First, in the absence of close monitoring, management may not be able either to observe or control the extent to which professionals turn attention away from work to manage work–family conflicts, and substantial work time may be lost to handling such issues. Second, because professionals tend to have greater control over their work, the challenge of implementing flexible schedules decreases. The autonomous, self-managed nature of professional work implies that shifting schedules is less likely to have an impact on other workers, and, likewise, the lack of close supervision implies that the meshing of managerial and professional schedules is less important.

Finally, work-life benefits may serve as an inducement to motivate worker effort that fits well with professional control systems. In addition to being hard to monitor, the complexity of professional work does not lend itself to defining concrete outputs necessary for individual productivity incentives. In the absence of close monitoring, management can use general incentives such as work-life programs as a less direct means for encouraging employee effort.

Hypothesis 2: When a firm employs a higher percentage of professionals, the extensiveness of its work-life program is more strongly positively related to productivity.

EMPLOYEES WITH FIRM-SPECIFIC SKILLS

Professionals are not the only workers who may be critical to the delivery of value-added for the firm. Legge argues that firms will provide incentives to 'any employee who possesses skills and knowledge that cannot easily be bought in and

yet on which the organization is highly dependent for achieving success' (Legge, 1998b: 9). We argue here that employers are dependent upon workers with firm-specific skills. As such, they may provide those workers with work-life benefits in order to elicit productivity gains.

Worker skills are firm-specific when they are highly unique to the setting (Cappelli, 1997). When firm-specific skills are needed to conduct work effectively, the firm must make training investments so workers can develop specific skills. Once workers obtain the firm-specific skills needed for effectiveness on the job, the employer must pay wages reflecting workers' higher productivity level. Often this is accomplished by promoting the employee on a career ladder as each new set of specific skills is attained (Pfeffer and Cohen, 1984). Without the career ladder and its accompanying wage increases, there would be no incentive for workers to develop specific skills and no way for the employer to assure that their skills investments won't walk out the door (Cappelli, 1997). The career ladder ties workers with firm-specific skills to the firm because their wages with the current firm are higher than the wages they could obtain on the external labor market. Firm-specific skills are of little value to other employers.

When employees accrue firm-specific skills, the firm becomes dependent upon them for effective performance because equivalent substitutes cannot be purchased in the labor market (Legge, 1998b). Though career ladders help to ensure that employees with firm-specific skills stay with the firm, other benefits, such as work-life programs, may induce these employees to put forth maximum effort on the job (Osterman, 1995). As argued above, work-life programs reduce productivity losses arising from work–family conflicts and motivate employees to exert discretionary effort as part of a generalized exchange process. Hence, although other companies may not try to win away employees with firm-specific skills, work-life initiatives guard against such employees leaving the labor force altogether or working below capacity.

Hypothesis 3: Firms investing in workers' firm-specific skills, as indicated by the presence of career ladders, develop more extensive work-life programs.

Discretionary effort, initiative, and suggestions from workers with firm-specific skills may be particularly valuable to the firm because these employees have the unique knowledge needed for effective problem solving and solution implementation. By comparison, workers without firm-specific skills are more easily replaced and may not have special contributions to make in the form of initiative and ideas. For these reasons, work-life programs may produce more productivity gains when firms make investments in workers' firm-specific skills.

Hypothesis 4: The extensiveness of a work-life program is more strongly positively related to productivity in firms investing in workers' firm-specific skills, as indicated by the presence of career ladders.

FEMALE EMPLOYEES

Because primary responsibility for homemaking and childcare tasks falls on women (Shelton and John, 1996), female employees face particularly strong work–family conflicts (Greenhaus and Parasuraman, 1999). Firms employing relatively large percentages of female employees are more dependent upon them and more likely to adopt extensive work–family programs as a result (Goodstein, 1994; Ingram and Simons, 1995). Organizations with a high percentage of female employees may adopt work-life programs to reduce costs by increasing commitment and retention and reducing lateness and absenteeism (Osterman, 1995).

Hypothesis 5: Firms employing a larger percentage of women develop more extensive work-life programs.

Firms that depend upon large numbers of female employees have greater concerns about productivity losses due to absenteeism and distractions arising from work–family conflicts. Because work–family conflict is greater for women (Greenhaus and Parasuraman, 1999), reduced work effort, distraction, lateness, and absenteeism resulting from work–family conflict has a greater productivity impact on firms dependent upon a largely female workforce. Work-life programs are likely to generate greater productivity gains for such firms.

Hypothesis 6: When a firm employs a higher percentage of female employees, the extensiveness of its work-life program is more strongly positively related to productivity

METHOD

Data

Towers Perrin, a human resources consulting firm, and the Hudson Institute, a research firm, conducted a survey in 1990 that examined a wide variety of human resource practices, with an emphasis on employers' responses to shifting demographics. The respondents represent a wide variety of industries, with both public and private sector firms included. The heterogeneous mix of organizations should help to maximize the variation in the study variables (Harrigan, 1983).

Questionnaires were sent to senior executives responsible for HR at almost 3000 organizations, and 849 replied, yielding a 28 percent response rate, similar to that of other research on HR practices (e.g., Huselid, 1995). Listwise deletion of missing data reduced the sample size to 658. We matched the public, for-profit firms to data from *CD Disclosure* in order to obtain information on productivity in 1990. The use of a separate, archival source for the productivity variable minimizes problems associated with common method variance. Approximately 303 of the 849 respondent firms matched on the productivity data. After listwise deletion for missing variables and the exclusion of financial services firms, a total of 195 respondents were left.

The strategy behind the sample was to identify as many large organizations across the United States as possible. The focus on large organizations is helpful, as they are more likely to have formal HR mechanisms for dealing with their HR challenges. We did not have access to the mailing list for the survey, so we could not formally examine the data for response bias. The mean organizational size of 7406 employees indicates a skew toward larger organizations—the sample average is close to the average number of employees for *Fortune* 1000 companies in the 1990s. The 195 firms in the productivity equation have an even larger average size of 16,338.

Measures

Professional employees

Respondents indicated the percentage of employees in each of the following categories: supervisory/managerial, administrative, sales, professional, technical/technical support, skilled crafts, secretarial/clerical, and other. We used the percentage of professionals in the analysis.

Presence of career ladders

The dummy variable for 'career ladders' is coded as 1 if the company has formal employee advancement programs.

Female employees

Respondents indicated the percentage of workers who were female.

Work-life programs

The survey listed 19 distinct work-life activities and asked respondents to indicate which were currently offered by the organization. The specific initiatives were: on-site daycare, near-site daycare, sick childcare, emergency childcare, sick days for childcare, on-site conveniences, extended maternity leave, gradual return to work, paternity leave, adoption leave, parental leave, spouse placement, supervisory training in work–family sensitivity, flextime, job sharing, part-year work, part-time workforce, voluntary reduced time, and part-time work for professionals. The central variable assessing the extensiveness of an organization's work-life program was a composite work-life index (WLI), which was a sum of the number of programs listed in the survey that were offered by the organization. The potential range of WLI was 0 to 19. This measure is similar to the summated measure used by Osterman (1995), but more detailed since his measure included only nine distinct work-life initiatives. Cronbach's alpha reliability for WLI is 0.77, which is comparable to the reliability of Osterman's (1995) index ($\alpha = 0.75$).

The mean WLI score in our sample was 2.8 out of a possible total of 19, and the distribution was significantly positively skewed (skewness statistic = 1.23, S.E. = 0.08). A logarithmic transformation successfully normalized the distribution (skewness

statistic = 0.03, S.E. = 0.08), and findings for the transformed WLI were virtually identical to those for the nontransformed index. We report the findings for the nontransformed data in the tables.

Productivity

For the public for-profit firms in the data base, we used a standard measure of productivity: the logarithm of sales per employee (Huselid, 1995; Pritchard, 1992).

Controls

Organization size is controlled for a number of reasons. First, large organizations may develop more comprehensive work-life programs due to economies of scale (Osterman, 1995). Large organizations are also more vulnerable to legitimacy pressures, and work-life programs may represent the organization's responsiveness to such pressures (Goodstein, 1994; Ingram and Simons, 1995). Organization size is measured by the logarithm of the number of full-time workers. Sector (public or private) is controlled in response to the argument that public sector organizations are more likely to adopt work-life programs because they have no financial performance pressures (Goodstein, 1994; Ingram and Simons, 1995).

Goodstein (1994) and Ingram and Simons (1995) argued that industry characteristics influence the likelihood that an organization will develop a work-life program. Specifically, when a relatively large number of organizations in the same industry adopt work-life programs, norms develop in that industry such that providing work-life benefits becomes expected. For this reason, industry category is controlled in our analysis. We created dummy variables for industry at the 1-digit level, as follows: Agricultural, Natural Resources, Manufacturing, Transportation/Utilities, Services, Financial Services, and Public Sector (Education and Government). Conglomerates are coded as 'other' and serve as the comparison standard (omitted category) in the regressions. Note that the Agricultural and Public industry dummies fall out of the models examining the impact on productivity, because no companies from these industries are in the data set that contains the productivity measure. We also removed the Financial Services companies from the equations examining productivity because the productivity measure—sales per employee—is not as good a proxy for productivity in the financial sector as it is for companies in other sectors.

RESULTS

Table 1 shows means, standard deviations, and correlations for the 658 organizations included in the study (the *n* for the productivity measure is 195). Table 2 shows the regression equations predicting the extensiveness of organizational WLI. We used one-tailed tests of our hypotheses since we indicated the directions of the predicted effects.

Model 1 shows that the control variable of size was the strongest predictor of WLI, replicating findings reported by Goodstein (1994) and Ingram and Simons (1995). Three of the industry controls were significant. Manufacturing and transportation/utility firms developed significantly less extensive work-life programs than others. Service firms developed more extensive work-life programs ($p < 0.10$). Whereas both Goodstein (1994) and Ingram and Simons (1995) found that public sector organizations developed more extensive work-life programs, in our data the public sector control was not a significant predictor of WLI.

Model 2 shows that the three hypothesized predictor variables together explained an additional 5 percent of the variation in WLI beyond that explained by the controls. Among the control variables, the effects of size and manufacturing remained statistically significant.

Hypothesis 1, which predicted that firms employing a higher percentage of professionals would develop more extensive work-life initiatives, was supported. The percentage of employees who were professionals was significantly positively related to WLI, and the β-value indicated that the presence of professionals was the third strongest predictor.

Hypothesis 3, which predicted that the presence of career ladders would be positively associated with extensive work-life initiatives, was not supported. Career ladders were not a significant predictor of WLI, a finding which replicates Osterman's (1995). Despite the fact that, theoretically, firms develop career ladders to protect their human resource base, they were not more likely than others to develop work-life programs. Career ladders tie workers to the firm to the extent that

Table 1. Mean standard deviations, and correlations

		Mean	S.D.	N	1	2	3	4	5	6	7	8	9	10	11	12	13
1	WLI	2.80	2.89	658													
2	Size	3.17	0.81	658	0.29												
3	Manufacturing	0.20	0.40	658	−0.16	0.06											
4	Food/Drug	0.06	0.24	658	0.02	0.08	−0.13										
5	Agricultural	0.01	0.08	658	−0.04	−0.01	−0.04	−0.02									
6	Natural Resources	0.02	0.12	658	0.06	0.13	−0.06	−0.03	−0.01								
7	Transportation/Utilities	0.09	0.29	658	−0.03	0.15	−0.16	−0.08	−0.03	−0.04							
8	Services	0.28	0.45	658	0.10	−0.23	−0.31	−0.16	−0.05	−0.08	−0.20						
9	Financial Services	0.18	0.38	658	0.02	−0.01	−0.23	−0.12	−0.04	−0.06	−0.15	−0.29					
10	Public	0.02	0.29	658	−0.04	−0.34	−0.16	−0.08	−0.03	−0.04	−0.10	0.43	−0.15				
11	% Female	49.79	22.54	658	0.19	−0.23	−0.37	−0.21	−0.04	−0.10	−0.26	0.51	.25	0.17			
12	Career Ladders	0.42	0.49	658	0.08	0.18	−0.01	0.11	0.01	0.10	0.05	−0.02	−0.03	−0.04	−0.13		
13	% Professionals	21.38	19.08	658	0.10	−0.36	−0.23	−0.13	−0.05	0.02	−0.13	0.46	−0.09	0.50	0.35	−0.08	
14	Productivity	5.08	0.65	195	0.11	0.08	−0.07	−0.10	–	0.20	0.12	−0.03	–	–	−0.12	0.13	−0.03

Table 2. Regressions predicting work-life index (WLI)

	Model 1				Model 2			
Variable	*B*	S.E.	β	*p*	*B*	S.E.	β	*p*
(Constant)	−0.75	0.53		n.s.	−3.07	0.64		<0.001
Size	1.18	0.14	0.33	<0.001	1.34	0.14	0.38	<0.001
Manufacturing	−1.26	0.35	−0.17	<0.001	−0.78	0.35	−0.11	<0.05
Food/Drug	−0.34	0.50	−0.03	n.s.	0.13	0.50	0.01	n.s.
Agricultural	−1.37	1.37	−0.04	n.s.	−0.90	1.34	−0.02	n.s.
Natural Resources	0.13	0.90	0.01	n.s.	0.14	0.88	0.01	n.s.
Transportation/Utilities	−0.95	0.43	−0.10	<0.05	−0.52	0.43	−0.05	n.s.
Services	0.64	0.34	0.10	<0.10	−0.27	0.36	−0.04	n.s.
Financial Services	−0.05	0.36	−0.01	n.s.	−0.48	0.36	−0.06	n.s.
Public	−0.11	0.42	−0.01	n.s.	−0.44	0.43	−0.04	n.s.
% Workforce Female					0.03	0.01	0.22	<0.001
Career Ladders					0.25	0.21	0.04	n.s.
% Employees Professional					0.03	0.01	0.17	<0.001
R^2 Change	0.14				0.05			
F Change	11.56				12.63			
	$p < 0.001$				$p < 0.001$			
Adjusted R^2	0.13				0.17			
N	658				658			

they are associated with the development of firm-specific skills (Doeringer and Piore, 1971), and may reduce the need for work-life programs to perform this function.

The fact that firms with career ladders are not *less* likely than others to develop work-life programs can be explained by the possibility that work-life programs enhance productivity. Despite the reduced threat of turnover among employees with firm-specific skills, investments in firm-specific skills need to be protected from other employee withdrawal behaviors (Blau, 1985) such as lateness, absenteeism, reduced work effort, or withdrawal from the paid labor force. As we argued above, work-life programs can reduce employee withdrawal behaviors by reducing the impact of work–family conflict and by increasing motivation to exert discretionary effort. Productivity inducements can be useful for motivating employees upon whom the firm has become dependent because they cannot be easily replaced on the external labor market.

Hypothesis 5, which stated that firms employing a larger percentage of women would develop more extensive work-life programs, was supported. The percentage of women employed was a significant positive predictor of WLI, replicating findings reported by Goodstein (1994) and Ingram and Simons (1995). The β-value indicated that the percentage of women was the second strongest predictor of WLI.

Table 3 shows the productivity equations. Hypotheses 2, 4, and 6 predicted conditions under which work-life programs have a greater impact on firm productivity, and we tested these hypotheses with interaction terms. Equations with interactions can have problems with multicollinearity that inflate standard errors, given the natural correlation between interaction terms and the component variables. To reduce the collinearity without otherwise altering the structural relationship among the variables, we performed a linear transformation known as centering (Aiken and West, 1991; Jaccard, Turrisis and Wan, 1990), which involves subtracting the mean value of the variable for each score prior to calculating the multiplicative interactions.

Model 1 shows the effects of the control variables, and firms in the Natural Resources industry had higher productivity levels than others. Model 2 shows that the main effects of WLI, percentage of professionals, percentage of women, and career ladders, did not add significantly to the percentage of variance explained in productivity. Model 3 shows that the three interaction terms together explained

Table 3. Regressions predicting productivity

Variable	Model 1				Model 2				Model 3			
	B	S.E.	β	*p*	*B*	S.E.	β	*p*	*B*	S.E.	β	*p*
(Constant)	4.88	0.23		<0.001	5.12	0.25		<0.001	5.16	0.25		<0.001
Size	0.05	0.06	0.06	n.s.	−0.01	0.07	−0.01	n.s.	−0.03	0.06	−0.03	n.s.
Manufacturing	−0.02	0.13	−0.02	n.s.	−0.05	0.13	−0.04	n.s.	−0.06	0.13	−0.05	n.s.
Food/Drug	−0.14	0.17	−0.07	n.s.	−0.24	0.17	−0.12	n.s.	−0.20	0.17	−0.10	n.s.
Natural Resources	0.58	0.23	0.20	<0.05	0.51	0.23	0.17	<0.05	0.55	0.23	0.19	<0.05
Transportation/Utilities	0.21	0.15	0.12	n.s.	0.15	0.16	0.09	n.s.	0.19	0.16	0.11	n.s.
Services	−0.02	0.19	−0.01	n.s.	0.00	0.19	0.00	n.s.	0.02	0.19	0.01	n.s.
WLI					0.02	0.02	0.08	n.s.	0.02	0.02	0.10	n.s.
% Female					0.00	0.00	−0.10	n.s.	0.00	0.00	−0.08	n.s.
Career Ladders					0.14	0.10	0.10	n.s.	0.14	0.10	0.11	n.s.
% Professionals					0.00	0.00	−0.06	n.s.	0.00	0.00	−0.03	n.s.
WLI ∗ % Female									0.001	0.001	0.10	<0.10
WLI ∗ Ladders									−0.008	0.035	−0.02	n.s.
WLI ∗ % Professional									0.003	0.002	0.17	<0.05
R^2 Change	0.07				0.03				0.03			
F Change	2.20				1.46				2.32			
	$p < 0.05$				n.s.				$p < 0.10$			
Adjusted R^2	0.04				0.05				0.07			
N	195				195				195			

an additional 3 percent of the variation in productivity beyond that explained by the controls and main effects ($p < 0.10$).

Hypothesis 2 predicted that firms employing a larger percentage of professionals would show a stronger relationship between the extensiveness of their work-life programs and productivity. The interaction between WLI and the percentage of professional employees was positive and significant, supporting Hypothesis 2's prediction.

Hypothesis 4 predicted that firms investing in employees' firm-specific skills would show a stronger relationship between work-life programs and productivity. This prediction was not supported. The interaction between WLI and career ladders was not significant.

Hypothesis 6 predicted that firms employing a larger percentage of women would show a stronger relationship between work-life programs and productivity. The WLI $\times$ percentages of women interaction term was significantly related to productivity in the predicted positive direction ($p < 0.10$). When the log-transformed WLI was used in the productivity equation, the WLI $\times$ percentage of women interaction term attained standard significance levels ($p < 0.05$).

DISCUSSION

Our research suggests that the productivity impact of work-life programs may be contingent on the type of workers employed by the firm. We found that firms employing higher percentages of professionals and higher percentages of women showed a stronger relationship between the provision of extensive work-life benefits and productivity. Hence, firms relying on a relatively large percentage of professionals appear to benefit from the provision of work-life benefits. On the other hand, for firms hiring less skilled, less autonomous, and less highly paid workers, the productivity benefits of work-life initiatives may be negligible. Firms employing larger percentages of women appear to achieve more productivity gains from work-life programs, possibly due to the fact that work–family conflicts cause greater interference in women's than in men's working lives. Previous research has shown that work-life programs can be successful in reducing work–family conflict (Lobel, 1999).

In our arguments, we identified several reasons why work-life programs can generate productivity gains for firms with a high percentage of professional employees. First, professionals are scarce, and hence, expensive and difficult to buy in the external labor market. As such, the firm becomes dependent upon them and must find ways to induce them to exert discretionary effort. Second, professionals often have childcare responsibilities during the years of their peak productivity, and helping them to manage work–family conflict is important for reducing lost productivity due to distraction and absenteeism. Third and finally, work-life programs fit well with the high level of autonomy enjoyed by professionals.

Theoretically, work-life initiatives can have positive productivity effects for any type of worker if the three factors of scarcity, autonomy and the productivity potential of workers with childcare responsibilities are fulfilled. A possible example of a situation fulfilling these criteria includes workers in self-managed teams whose broad, flexible skill sets, understanding of the firm's operations, and relationships with fellow team members may be difficult for firms to replace. Future research can make a contribution by examining the impact of work-life programs on productivity for firms utilizing self-managed teams and by identifying additional situations meeting the three criteria for enhancing the productivity impact of work-life programs.

Like all research, this study is not without its limitations. First, we only explained 17 percent of the variation in adoption of work-life programs and 7 percent of the variation in the productivity equation. A second limitation of this research is the relatively low response rate to the survey and the bias towards larger organizations. Hence, our findings should be generalized with caution and replicated on other data sets.

A third limitation of our work is the failure to directly measure the underlying mechanisms through which work-life programs increased productivity. Specifically, we argued that work-life programs enhance productivity by attracting and retaining high-quality employees, by reducing the extent to which work-life conflicts interfere with work (Greenhaus and Parasuraman, 1999; Lobel and Kossek, 1996; Lobel, 1999), and by inducing employees to expend discretionary effort on the job (Osterman, 1995). With our data, we were unable to measure these underlying mechanisms directly to determine whether they linked work-

life programs to higher productivity levels. Future research can contribute to the literature by directly examining workforce composition, work-life conflict, and discretionary effort to observe whether each mediates the relationship between work-life programs and productivity.

We found that factors associated with the importance of legitimacy issues for firms significantly predicted the adoption of extensive work-life programs. Specifically, larger organizations developed more extensive work-life initiatives, replicating previous findings (Goodstein, 1994; Ingram and Simons, 1995). Though we argued that firms employing larger percentages of professionals and women developed more extensive work-life programs to maximize productivity, these results may also be due to the fact that when firms employ larger percentages of professionals and/or women, these groups have greater power to extract costly benefits from firms. Our findings that firms employing large percentages of professionals and/or women had higher productivity levels if they developed more extensive work-life programs support our arguments but do not rule out the effects of power. Future research can contribute to the literature by measuring employees' ability to exert power over management to determine whether it mediates the relationship between the presence of professionals and/or women and the development of extensive work-life programs.

Whatever the mix of drivers behind the adoption of work-life plans, the productivity results here suggest that firms with a high percentage of professionals and/or women may benefit from adopting such plans. This finding helps to counter concerns that extensive work-life programs may lead to a type of adverse selection problem, whereby employees with high family demands may be attracted to firms offering generous work-life benefits. Recent practitioner literature has suggested that firms may work to avoid hiring employees with family responsibilities because they are concerned that such responsibilities will reduce efforts on the job (e.g., Morris, 1997). Though specifically denying employment for these reasons is illegal, companies who fear attracting employees with substantial family responsibilities may be hesitant to adopt work-life initiatives because they attract workers with such profiles. If future research supports the findings here, companies may find that the overall productivity benefits of providing work-life programs outweigh potential costs of such potential 'adverse' selection.

ACKNOWLEDGEMENTS

A previous version of this paper was presented at the Academy of Management's 1998 meeting in San Diego. The first author gratefully acknowledges support from the Fox School of Business and Management's Boettner Research Fellowship.

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