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Collaborative Job Training in Rural Areas

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We examine collaborative efforts by employers to provide job training in rural areas and assess how this collaboration affects the willingness of employers to train workers. Data are drawn from a telephone survey conducted in 2001 of a stratified random sample of 1,590 nonmetropolitan firms in the U.S. The literature on job training suggests that the primary reason why individual employers provide little general training is the "free labor contract." Workers are free to move from one firm to another, thus jeopardizing employers' ability to realize the returns from those investments. Employers are most likely to identify common skill requirements or develop training programs with other firms in their same industry, and are least likely to collaborate with firms in their marketing/supply chain. Collaboration among firms is positively correlated with the percentage of the workforce that is formally trained and per capita expenditures for formal training. Finally, small businesses and manufacturing firms are much less likely to participate in these collaborative efforts.

Introduction

Employers in rural communities often are faced with a basic dilemma. They must compete by either cutting production costs or increasing productivity through adopting new technology and investing in worker training. Many analysts have referred to this as a choice between "low road" and "high road" strategies. If employers pursue the low-road strategy, they find themselves competing against employers in other low-cost areas (overseas in many cases) and must continually keep costs low by limiting wage increases, benefits, or investments in new technology. The result is often relatively high rates of turnover, low levels of job satisfaction, and few opportunities for worker mobility. Seeing few opportunities, many young workers may choose to leave their communities in search of higher wages and better jobs, resulting in a loss of population and human capital.

Employers choosing to increase productivity may find it difficult to recruit workers with the necessary skills in the region. Rural areas generally have lower levels of formal education and training, and workers receive lower returns on their investments in human capital. Also, the high cost of new technology may be a constraint for some employers because access to capital markets is a problem in many rural regions.

The preferred solution to the problem is for employers to become more engaged in training their existing workforce (Streeck, 1989). The evidence suggests, however, that many employers in rural areas do not invest much in formal job training of their workforce (Swaim, 1995). Why do rural firms provide so little job training compared to urban employers? Streeck (1989) argues that the primary reason employers are reluctant to provide training is the "free labor contract." Because workers are free to move from one employer to another, employers are inevitably concerned that they will not obtain a return on their investment if they provide training to workers (Becker, 1962). In this regard, skills are a collective good. Employers need a skilled workforce, but it may be irrational for individual employers to make these investments. As Streeck (1989, p. 94) suggests, skills are "social production factors which capitalist firms, acting according to the rational-utilitarian model, cannot adequately generate or preserve." This does not mean that employers will not provide any training to their workers. They are most likely to provide training for specific skills that are not transferable to other firms. Employers in rural areas experiencing high rates of population out-migration may be especially reluctant to invest in general training.

There is a growing interest in inter-organizational and collaborative networks that may help overcome some of these obstacles (Harrison & Weiss, 1998). Workforce development networks can improve the functioning of local labor markets in three ways. First, workforce development

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networks can improve the flow of information to both employers and workers. Employers can get better information about the productivity of workers and job searchers can obtain information about job openings and the skills required for these positions. Second, workforce development networks can reduce the costs of employer-provided training by pooling resources across several firms with similar training needs. Collaborative efforts to provide training may increase the likelihood of individual firms to train workers because they are also likely to hire workers trained by other firms. Third, workforce development networks can improve the linkages between school and work, which may reduce some of the floundering that occurs among youth as they enter the workforce.

How are these networks organized? Community-based organizations may bring together several firms to identify common training needs and to share the costs of providing programs (Melendez & Harrison, 1998). Other strategies involve collaboration across firms in a single industrial sector so as to improve labor market information and help firms develop skills that are in demand in these industries (Parker & Rogers, 1996). Many efforts to establish industrial clusters rely on building common training programs that will serve as the "glue" to promote collaboration among potential competitors. Another approach is to coordinate training programs among firms within a market/supply chain. One of the best examples of this approach is a program offered by John Deere to promote training programs among firms that supply inputs into their production process. The training programs are offered as a way to improve efficiency among suppliers. It also offers the advantage of providing workers with routes of mobility and the necessary training for more skilled positions in the marketing/supply chain.

Workforce development networks have not been extensively studied. Most studies have focused on workforce development networks in metropolitan areas (e.g., Melendez, 1996). We attempt to build on this research by examining the role of collaborative efforts among employers to provide job training in nonmetropolitan or rural America. Rural areas may have more difficulty in implementing these workforce networks for two reasons: the types of employers locating in these regions (low-wage, low-skill) and the low density that exists in most rural areas. In addition, the regional nature of these networks in rural areas presents problems with communication and collaboration.

Empirical Research on Employer-Provided Job Training

Although the research on employer-provided formal training focuses on some common variables, there are significant differences embedded in the findings and general conclusions of this research. Firm characteristics (e.g., size, industry, and internal structure) as well as workforce characteristics (e.g., gender, race, and education) make up the core of independent variables that most studies consider. Lynch and Black (1998) suggest that some key characteristics accounting for divergent findings in this literature are the relative size and industry structure of firms included in the various data sets, and whether the job training data were collected in reference to the last person hired, the "core" employees, or all employees of a firm.

There is consensus in the literature about which firm characteristics are more likely to be associated with the probability of providing formal job training. Formal training is usually defined in these studies as requiring workers to attend formal classes or take courses to learn new skills and technologies. Studies have consistently found that larger businesses are more likely to offer formal training to workers than small establishments (Frazis, Herz, & Horrigan, 1995; Frazis, Gittleman, & Joyce, 2000; Knoke & Kalleberg, 1994; Lynch & Black, 1998). Lynch and Black (1998, p. 69) argue that this "may be because smaller employers face higher per-unit costs in the provision of formal training due to the high initial set-up costs or that they are more concerned about losing trained employees to competitors." Subsidiaries and branches are more likely to provide training than are independent organizations (Knoke & Kalleberg 1994). Service firms are more likely to offer formal training programs than are manufacturing firms, although there is no agreement on the magnitude of these differences (Frazis, Herz, et al, 1995; Frazis, Gittleman, Horrigan, & Joyce, 1998; Lynch & Black, 1998; Veum, 1995).

The firm's internal structure is another firm characteristic that is positively associated with the likelihood of providing job training. Knoke and Kalleberg (1994) find that establishments with a formalized internal structure (detailed definition of workers' rights and duties in each position) and internal labor markets (promotion trajectories) are more likely to provide formal training than establishments relying on external labor markets. By directly connecting training to job ladders, employers offer workers strong incentives to continue in the firm, increasing the likelihood of recouping their investments in human capital formation.

Finally, difficulty in hiring may influence training effort. Osterman (2001, p. 74) states that, in tight labor markets, "employers often reduce their hiring standards and compensate by increasing the amount or training they provide." Formal training is viewed as a way to retain good workers.

There is not a consensus in the literature regarding the relationships between worker characteristics and formal training, with the exception of education. Studies have consistently shown that more educated workers receive more training (Frazis, Gittleman, Horrigan, et al., 1998; Frazis, Gittleman, & Joyce, 2000; Lynch & Black, 1998; Swaim, 1995). This pattern of training by educational level suggests that less educated workers may become "trapped" in low-skill jobs.

The literature on the effects of unionization, gender, and race/ethnicity on the provision of training is quite mixed. Frazis, Gittleman, and Joyce (2000), for instance, find that the presence of a union at the firm tends to reduce the probability of firm-provided formal training. This result is inconsistent with those reported by Frazis, Herz, et al. (1995) and Knoke and Kalleberg (1994), who find a positive association between union presence and training, and with those of Lynch and Black (1998), who report no statistically significant effect of unions on training. Similarly mixed results are reported in the literature regarding the effects of race and ethnicity on training. Swaim (1995) reports that training rates in rural areas are much lower for racial and ethnic minorities—only 25% of Blacks and Hispanics report any training in their job compared with 41% of other, mostly white, workers. Knoke and Kalleberg (1994) find that the percentage of white employees in an establishment is negatively associated with the provision of training by the firm. Finally, Frazis, Gittleman, Horrigan, et al. (1998) do not find any statistically significant effect of race on training (either formal or informal).

Overall, the literature suggests that employer-provided training is influenced primarily by firm characteristics (with firm size and industry being the primary factors), internal structure, and labor market conditions. We extend this literature by also considering the relationship between collaboration among groups of employers and the provision of job training. We hypothesize that cooperation with other employers provides an incentive to offer formal job training to a larger percentage of their workforce and to make greater expenditures on formal job training.

Methods

Businesses were included in this survey only if they were operating in nonmetropolitan areas in the United States. The business sample was stratified by both industry (manufacturing and service industries) and the number of employees in the establishment (1-19 employees, 20-99 employees, and 100 or more employees). Approximately one half of the firms were manufacturing establishments and the other half were service establishments. Twenty-five percent of the sample was all firms, 35% medium-size firms, and 50% large firms. The respondent for the study was the person in charge of hiring, who was the personnel manager or human resource director in most cases. We only included cases if the establishment had hired workers in the past year for a position that did not require a college degree.

The interviews were conducted over the telephone between January and August 2001. Interviews averaged 18 minutes and a range of 1 to 47 calls was made to obtain a complete interview; the total number of completed interviews was 1,590. The overall response rate was 57.5%, which is rather good for employer surveys. We used several questions to screen the firms prior to the interview, so it is impossible to assess the representativeness of the sample.

We take two approaches toward measuring the extent of job training in the firm. First, we examine the overall level of formal and informal training. Our first dependent variable is the percentage of the firm's workforce that received formal training in the past two years. Formal training was defined as instances where workers attend classes or take courses to learn new skills and technologies. The second dependent variable is the firm's total expense for job training per worker in the past two. This figure includes staff time and all other costs. We used a 2-year period here because the expense may vary from year to year. These measures were chosen because they were frequently used in the job training literature.

Because training efforts may vary considerably within the establishment for different types of positions, we chose to ask questions about the last position filled (see Holzer, 1996). One reason for doing so was because we assumed that respondents would have information about this position. Our primary concern in the study was with low-skilled workers, so we limited the focus to that last position that did not require a college degree.

The literature suggests that local labor market conditions also may affect the level of job training. Osterman (2000) argues that in tight labor markets, employers may be more inclined to invest in training as a way to retain good workers. We asked respondents how much difficulty they faced in hiring qualified workers. We asked employers whether it is very easy, somewhat easy, somewhat difficult, or very difficult to find qualified applicants at the present time. This variable was coded on a four-point scale.

To assess the extent to which employers collaborate with other firms in their training efforts, we asked if they cooperated with firms in their industry, community, or marketing/supply chain. We asked whether they worked with other employers in their industry, community, and marketing/supply chain to identify common skills for workers in comparable jobs. These responses were coded as no (0) or yes (1). In addition, we asked if they cooperated with other firms in different industries to develop training programs to increase or improve workers' skills. Because these three variables are highly interrelated, we entered them separately rather than sequentially into the regression analysis. This strategy allows us to examine the independent effects of these variables without problems of multicollinearity.

To estimate job training effort, we used a two-stage least squares model. Only the results from the second stage are reported here. The two-stage regression model was used because of the simultaneity between collaboration and job training effort. In other words, cooperation raises training expenditures, but the choice to do the latter may raise incen-

Table 1
Descriptive Statistics

	M	*SD*
Workforce receiving formal training (%)	61.84	156.82
Expenditures for formal training ($/worker)	760.39	1769.81
Multi-establishment firm (1 = yes)	.53	.50
Manufacturing firm (1 = yes)	.49	.50
Firm size	155.71	330.95
% Unskilled workers	35.64	32.86
Difficulty recruiting (1-4)	3.01	.83
Cooperate with firms–industry (1 = yes)	.40	.49
Cooperate with firms–community (1 = yes)	.35	.48
Cooperate with firms–marketing/supply chain (1 = yes)	.29	.46

tives to lower costs and hence to cooperate. The two-stage least square model is the most appropriate way to handle the simultaneity.

Descriptive Findings

The average establishment had 156 employees (including permanent full- and part-time workers, as well as temporary or seasonal employees), with a range from 1 to 5,700 (Table 1). About one half of the establishments were branch plants. The average workforce is nonunion, with only about 10% of the establishments having current employees covered by a collective bargaining agreement. Approximately one half of the average workforce is female, and about 20% are from a minority ethnic or racial background. The average firm had five vacancies. Most employers reported that it was difficult to find qualified applicants at the present time. Almost half said it was somewhat difficult and one third (29%) reported that it was very difficult.

Most establishments have devoted resources toward job training during the past 2 years. Among those establishments that have invested resources in job training, the average amount is $50,000 for the 2-year period (median = $10,000). An average of 85 (median = 15) workers have participated in the training programs, which is about one half the average workforce.

How do employers provide training? Almost all (94%) of the establishments that provided training offered in-house (on-site) training programs by its own staff. Approximately one half (51%) provided in-house training programs by an educational institution or private trainer. Fewer (30%) employers used community-based organizations to provide in-house programs. About two fifths (38%) of the establishments offered off-site training, such as a headquarters or a training institution. Among those firms that use off-site training facilities, they are most likely to use an educational institution (56% of the cases) or a community-based organization (28% of the cases).

What types of training are provided by employers? Employers are most likely to provide training on group or team building. Approximately 63% of those establishments offering training provided these types of programs. One fourth (26%) provided training in computer skills, such as word processing or data management. About one half (49%) offered training programs in interpersonal skills; 11% provided training in basic economics; 12% provided training in basic arithmetic or math; and 6% offered training in improving reading skills.

For those employers providing training, we asked whether the amount of training for the last person hired had increased, decreased, or remained about the same over the past 3 years. Almost none of the employers reported that the amount of training had decreased. About one half said that it had increased and the other half said that it had stayed about the same. The most common reasons for increasing the amount of training were concern about the quality of

work and adoption of new management practices. About one half of the employers thought the amount of training would increase, half said it would remain about the same, and very few thought it would decrease.

How many employers coordinate their training efforts with other firms in their industry, marketing/supply chain, or community? One strategy for coordinating efforts with other employers is to identify common skill needs across several employers so as to design training programs that meet common needs. We also examined the extent to which firms develop training programs with other employers. Approximately 44% of the firms worked with other employers in their industry to identify common skills required for workers in comparable jobs. Almost as many (40%) reported that they worked with other employers in their industry to develop training programs aimed at increasing or improving workers' skills.

There is a growing interest in developing training programs within a marketing/supply chain as a way of increasing productivity. Fewer firms coordinate training programs along these lines. Twenty-six percent of the firms worked with other employers with whom they purchase or sell goods or services to identify common skills for workers in comparable jobs. About the same number (29%) reported they work with employers in their marketing/supply chain to develop training programs.

Finally, more than one third (38%) of the firms reported that they worked with other employers in their community to identify common skills required for workers in comparable jobs. Similarly, about 35% indicated they worked with other employers in their community to develop training programs aimed at increasing or improving their workers' skills.

A surprising number of employers reported they are engaged in collaborative efforts with other firms to train their workforce. Employers are most likely to work with firms in their industry, and least likely to cooperate with firms in their marketing/supply chain on issues related to training. Looking at bivariate analyses between collaboration and firm characteristics, we find that larger firms and firms in service industries are more likely to collaborate in job training than are small firms and manufacturing establishments.

Regression Analysis

We conducted a two-stage regression analysis of training effort to examine our central hypothesis that collaboration with other employers provides an incentive to offer formal job training to a larger percentage of their workforce and to make greater expenditures (per capita) on formal job training.

In Table 2, we report the results of the two-stage regression analysis of the percentage of the workforce that has received formal training in the last 2 years. As we expected, the key firm characteristics (firm size, industry, skill level of the workforce, and branch plant status) have strong effects on the percentage of the workforce that receives formal training. Large firms and firms in the service sector provide formal training to a larger percentage of their workforce than small firms and firms in the manufacturing sector. Multi-establishment firms and establishments with a higher percentage of skilled workers also tend to provide formal training to a larger percentage of their workforce than independent establishments and firms with a larger percentage of unskilled workers. Also, as we expected, employers experiencing greater difficulty hiring qualified workers train more of their workforce. These employers see these investments as a way to retain their workers in a relatively tight labor market situation.

Finally, we assessed whether collaborative training programs are correlated with the percentage of the workforce that is formally trained, while controlling for other firm characteristics. Collaboration with firms in their industry, community, and marketing/supply chain all are positively related to formal training. The effects for cooperation with firms in their industry and community is stronger than for cooperation with firms in the marketing/supply chain. Looking at the standardized regression coefficients (presented in the parentheses), we find that coordination with firms in the same industry or community has the strongest effects in the model, with the exception of firm size. These findings lend strong support to the argument that encouraging cooperation among employers will lead to higher levels of formal training in the workplace.

The next analysis examined expenditures on formal training per worker (Table 3). We used the same model as was used in the previous analysis. Overall, the model for expenditures does not perform as well as the one for the percentage of the workforce that is trained. There are a few differences in the effects of independent variables that are notable. Branch plant status and industry are not statistically related to expenditures on formal training. Not only do large firms train more workers, they also spend more on training per worker. Difficulty in recruiting qualified workers is strongly related to expenditures on formal training.

The relationship between cooperation and employer-provided training is significant for all three types of cooperation–industry, community, and marketing/supply chain. The effects are generally not as strong as some of the other firm characteristics, such as firm size and recruitment difficulty. One possible interpretation is that collaboration provides incentives to train more workers but it does not affect the resources devoted to training.

Discussion

This paper raises important theoretical, methodological, and practical issues regarding our understanding of formal job training. The evidence supports much of the literature

Table 2
Two-Stage Ordinary Least Squares Regression Analysis of Percentage of Workforce Receiving Formal Training (Log)

Multi-establishment firm (1 = yes)	.361***	.373***	.383***
	(.110)	(.114)	(.116)
Manufacturing firm (1 = yes)	-.563***	-.631***	-.639***
	(-.172)	(-.192)	(-.194)
Firm size (log)	.205***	.190***	.207***
	(.191)	(.177)	(.192)
% Unskilled workers	-.391**	-.368**	-.418**
	(-.079)	(-.074)	(-.084)
Difficulty recruiting	.133**	.153**	.152**
	(.066)	(.077)	(.076)
Cooperate with firms–industry	.564***		
	(.168)		
Cooperate with firms–community		.576***	
		(.167)	
Cooperate with firms–marketing/supply chain			.500***
			(.138)
Constant	-2.567***	-2.524***	-2.526***
F	40.557***	41.661***	38.148***
R^2	.150	.149	.142
N	1385	1388	1384

Note: Standardized regression coefficients are in parentheses.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

suggesting that firm characteristics have a strong influence on the willingness of employers to provide formal job training. In particular, firm size consistently has a strong, positive effect on formal job training effort. Service firms rely much more heavily on formal training and they find it easier to collaborate than do manufacturing establishments. It also appears that the market situation for firms affects their training effort–those firms facing difficulty in recruiting qualified workers tend to provide more formal training. Thus, job training can be interpreted as part of the strategy for employers to retain qualified workers in a tight labor market situation.

Our analysis confirms that focusing on place-based approach is a reasonable way to promote economic development. Community economic development may help to enhance the productivity of firms by focusing some of their effort on understanding the array of skills needed by employers and creating opportunities for firms to establish networks for job training issues. In addition, this analysis may support initiatives to develop industrial "clusters," especially within specific industries or localities.

The firm-level analysis provides rather strong support for the claims that employers cooperating with other firms tend to provide training to more workers and to spend more on formal job training. We did not examine the breadth of training in this analysis, but it does appear that many of the training programs are much more generalized than individual firms would offer.

Methodologically, the analysis suggests that researchers do need to be careful about measuring employer-provided training. We find somewhat different results when examining expenditures for training versus the percentage of the

Table 3
Two-Stage Ordinary Least Squares Regression Analysis of Expenditures on Formal Training Per Worker (Log)

Multi-establishment firm (1 = yes)	.419 (.060)	.419 (.060)	.439 (.063)
Manufacturing firm (1 = yes)	.137 (.019)	.137 (.020)	.131 (.019)
Firm size (log)	.390*** (.172)	.399*** (.172)	.401*** (.177)
% Unskilled workers	-.610 (-.057)	-.610 (-.057)	-.587 (-.055)
Difficulty recruiting	.584*** (.143)	.584*** (.143)	.593*** (.146)
Cooperate with firms–industry	.638*** (.087)		
Cooperate with firms–community		.637* (.087)	
Cooperate with firms–marketing/supply chain			.841** (.109)
Constant	1.141*	1.141*	1.041*
F	10.166***	10.166***	10.845***
R^2	.072	.072	.076
N	797	797	797

Note: Standardized regression coefficients are in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$.

workforce receiving formal training. Similarly, in an analysis not reported here we found differences in the firm-level versus worker-level training efforts. The factors influencing the aggregate effort by the employer do not have the same influence on the likelihood of individual workers receiving formal training. This difference bears some additional analysis in future research.

These results provide guidance for economic development practitioners. Rural areas are often disadvantaged because they tend to recruit low-wage, low-skilled employers. There may be several advantages to recruiting large firms. While some of the economic development literature suggests that communities should focus more on small firms (Birch, 1987), especially in the service sector, this analysis suggests they are the same firms that are not likely to be very productive because they invest less in training. Our analysis suggests that efforts by practitioners to promote collaborative strategies among employers may be successful in helping these firms invest more in their workforce. Firms that are most likely to participate in these cooperative efforts to provide training tend to be the ones that probably need it the least–independent firms in the manufacturing sector with a skilled workforce. The challenge for practitioners is to find ways of encouraging other firms to engage in these efforts.

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