Participation in Industrial Training Programs*

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ABSTRACT. Two questions suggested by the recent literature on the matching of workers and firms are examined. The first relates to differences in the proportion of workers that participate in industrial training programs in large and small firms. The second relates to the characteristics of workers who participate in such programs. The major finding of this study is that workers in large firms are more likely to participate in industrial training programs than similar workers in small firms; the large-small firm training program participation rate differential is less, however, among low productivity workers than among high productivity workers. Additionally, workers with vocational training received outside of a work setting are just as likely to find employment in small firms as in large ones.

I. Introduction

Training programs outside of work, principally in the form of vocational training, have been the subject of many studies, but only recently has attention been directed at industrial training. Little is known about who participates in industrial training and even less is known about who provides this form of training. Based on their analysis of Current Population Survey and National Longitudinal Survey data, Lillard and Tan (1986) suggest there is a complementarity between formal schooling and participation in a company training program, but they do not consider the relationship between this form of training and firm size. In separate studies of American and Canadian firms, Barron, Black, and Lowenstein (1984) and Simpson (1984), respectively, found that training programs are more prevalent among large firms than small ones. In the former study prevalency is based, in part, on the probability of a firm's most recently hired worker receiving formal training by management; in the latter study prevalency is measured by the duration, in months, of industrial nonapprenticeship training programs. Being based on employer surveys, the empirical data of these studies do not include information about worker characteristics. Like the Lillard and Tan study, this one is based on a household survey but it also contains information about the size of firm in which respondents are employed.

The size of firm information permits investigation of two questions suggested by the recent literature on firm heterogeneity and the matching of workers and firms.[1] The first question relates to whether large or small firms are more likely to offer industrial training programs.[2] The second relates to the characteristics of the workers who participate in industrial training programs. The major findings of the paper relating to these two question are (1) that large firms provide more formal industrial training than small ones and (2) industrial training is most often given to workers who have invested in human capital, and this is particularly so in large firms. As indicated below we also look at where workers who participate in a training program outside of work are employed, i.e., whether in large or small firms, and the extent to which firms of different size pay for training taken outside of the work place.

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II. Theoretical implications from economic theory

Among the more recent advances in economic theory is the development of economic models in which a market equilibrium occurs with firms of different sizes. Among other features the models

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of Lucas (1978), Rosen (1981, 1982) and Oi (1983a, b) predict that small and large firms will employ different types of workers. Consideration of these models also offers a useful point of departure for exploring the relationship between firm size and industrial training programs.

The model developed by Oi is particularly useful for this purpose. In this model entrepreneurs differ in their ability to coordinate production, but are alike in their ability to monitor workers. As a result entrepreneurial ability and firm size are positively related. However, a manager's ability to supervise an extra worker is negatively related to the number of workers being supervised; hence, the cost of monitoring an additional worker will be higher in a large firm than a small one. Insofar as large firms are at a comparative disadvantage in monitoring workers relative to small firms, it will be cost effective for the former to hire relatively high productivity workers who require less oversight, i.e., workers with characteristics associated with low monitoring costs as reflected by observable variables such as educational attainment. Small firms, on the other hand, will find it more economical to expand output by hiring relatively low productivity workers even though they may require additional monitoring.

Monitoring costs per worker depend not only on the type of worker hired, but also on the amount of training they receive. As Oi indicates, firm specific training, e.g., training relating to the maintenance of complex machinery not usually utilized in small-scale manufacturing processes, is a means of reducing the costs of monitoring the work force of large firms. Insofar as the benefits of reducing monitoring costs are greater for large firms, they should have a greater incentive to provide firm specific training. This suggests that the work force of a large firm should also be structured so as to maximize the returns of this training. For example, a large firm should have a greater propensity to hire full-time employees so as to capture more fully the benefits from training.

Because of economies of scale, large firms are more likely than small ones to provide training in a training program setting. But even apart from economies of scale, large firms may prefer to do their own training because workers who participate in training programs elsewhere may not have the specific skills that these firms need. Thus, it would not be surprising if a higher proportion of workers participate in industrial training programs in large firms than small ones.

Based on these considerations, we propose the following plausible propositions: (1) large firms are more likely to provide industrial training than small ones and (2) in large firms training programs are most likely to be provided to the workers who are most sought after by these firms, i.e., high productivity workers. Indeed, workers with these characteristics are also the most likely to participate in a training program in small firms. Not self-evident, however, is how the large-small firm differential in training program participation varies for given qualities of labor.

Where people who participate in away-from-work training programs find employment is also of interest, since this information provides insight into how the labor market allocates such persons among firms of different size. Small firms, where general training is more prevalent, may find it less costly to hire individuals who have already made this investment, say, by taking training at a vocational school, than to provide such training themselves. If so, large firms, even if they were to employ a larger fraction of workers who participate in in-house training programs, may not, compared to small firms, hire proportionately more workers who received their training elsewhere.

Although some of the findings presented in this paper can be inferred from what is known about firm size and job tenure, job tenure data convey only indirect information about specific training. Training program participation data yield a more direct, although incomplete, measure of specific training. For the purposes of this study, they provide explicit information about training program participation that cannot be derived from job tenure data, e.g., information about the proportion of the work force that has had such training and the length of this training.

III. The SIPP training program participation data

To provide empirical content for our discussion of training program participation, we examined data from the Bureau of the Census Survey of Income

and Program Participation (SIPP). A distinguishing feature of SIPP is that it is a longitudinal survey, and included in it are retrospective data that are pertinent to our analysis, namely, information about participation in training programs and the size of an employee's firm. Each SIPP panel is divided into four rotation groups. One rotation group is interviewed during the first two weeks of each month. Thus one cycle or wave of interviewing of the four rotation groups requires four months. The reference period of an interview is the four month period preceding the interview month.

In Wave 3 of the 1984 Panel,[3] SIPP respondents were asked "did [you] receive training designed to help [you] find a job, improve job skills or learn a new job?" Follow-up questions for those responding "yes" were "do [you] use this training on [your] (most recent) job" and "where did [you] receive this training?" The training programs referred to were training programs at work; training programs at a previous job; apprenticeship programs; military training programs; correspondence courses; specific occupational training received at business, commercial, and vocational schools or at junior and community colleges, four year colleges, and graduate schools (excluding courses leading to a degree); and government sponsored training programs.

Two types of questions are asked about training in SIPP. The first pertains to all training programs that an individual has ever participated in. The second, used in this study, pertains to an individual's most recent training program and where it was obtained, i.e., at work or elsewhere.[4] For the second set, information is also available about the length of training and who paid for it, provided the training occurred in 1980 or later.

For persons who began a job before 1980 there is some ambiguity about the source of their training program, since respondents were not asked if their most recent training program experience occurred while working for their current employer. Presumably this is what is meant by a response that training was received "at work" since an alternative response "at a previous employer" is also possible. The error introduced by this problem is probably small, however, since individuals tend to receive training soon after becoming employed by a firm and information about where a training program is taken is generally sufficient to determine whether the training was received at work or elsewhere and who paid for it.

Participation in a program at a junior college, for example, typically predates a person's current job, and is usually paid for by the participant. However, such training may have been obtained while working for one's latest employer and additionally may have been paid for by the employer. In the latter instance the training occurs outside of the work place but is provided by the employer and should be considered as on-the-job training.

Evidence is presented below indicating that our conclusions would remain unchanged were the SIPP training data tied more closely to an individual's current job. This evidence is based on the training program experience of persons who started their current job in 1980 or later for whom a precise determination can be made of whether their training occurred before or after they began work with their current employer.

Besides asking whether an individual participated in an industrial or other training program, in Wave 3 of the 1984 panel respondents were also asked about the number of workers employed by their firm at all of the firm's work sites. Since SIPP respondents are randomly sampled, it is possible, by using the sample weights assigned to each worker, to determine the proportion of workers participating in training programs by firm size class. Firms with fewer than 100 workers are defined as being small. Firms with 100 or more workers are designated as being large. Although the total sample size is large, consisting of 17,089 observations, cell frequencies for some categories of training were small, necessitating the use of only two firm size classes. In other studies of firm size data, the choice of fewer than 100 workers in defining a small firm was found to dichotomize numerous firm characteristics, e.g., the proportion of workers covered by employer provided health insurance, more satisfactorily than, say, the choice of fewer than 500 or fewer than 1000 workers. Hence, we have used the definitions of firms size noted above.

Owners of a business including incorporated businesses (except those who also had a job as a paid employee) are excluded from the data set. In SIPP owners of an incorporated business are

considered as "self-employed" rather than as wage and salary workers; size of firm information is missing for the former group. Unpaid family workers, government workers, private household workers, and workers in agriculture are also omitted from the analysis.

IV. The empirical data

The SIPP data on most recent training program experience are summarized in Table I. The figures in this table reveal several interesting relationships between participation in a training program and firm size. In 1984, approximately 18 million workers or 23.1% of all workers in private non-agricultural firms had participated in a training program at some time in their work career. While most workers never participate in a training program and the majority of those that do participate at a site other than at work, still a rather substantial proportion, 9.4%, participated in a training program in an industrial setting either at work (8.4%) or at a previous job (1.0%).

Of significance for this study, it is seen that the proportion of all workers who received their most recent training at work is higher among large firms, 10.5%, than small ones, 5.2%. In terms of those workers who participated in a training program, 11.9 million and 6.0 million workers in large and small firms, respectively, 41.8% of the former and 25.8% of the latter obtained their training at work. These findings support the proposition that firm-specific training is more prevalent among large firms than small ones.

Although small firms are less likely to engage in training programs, the data in Table I indicate that the likelihood of a worker with vocational training finding employment in a small firm is the same as in a large one. Among all employees in small firms, 13.9% participated in a vocational training program; the corresponding figure for large firms is 13.4%. This is a somewhat surprising finding in view of the fact that the training program data indicate that a smaller fraction of workers in small firms participate in training programs than their counterparts in large firms. An explanation for this apparent anomaly has been offered above: small firms find it economical to hire workers who have invested in general training in the form of vocational training. Such general training, on the other hand, is less likely to fit the needs of large firms who require specifically trained workers.

The findings from Table I are also reflected in Table II where the data are displayed in a somewhat different manner for individuals whose most recent training experience occurred in 1980 or later. For this group, it is possible to ascertain who paid for the training and the length of the training program, as well as where the training was obtained.

From Table II it is seen that for those with a training program experience in 1980 or later the proportion who received their training at work is again higher for large firms, 52.4%, than for small firms, 31.6%. The corresponding percentage for all workers in Table I were 41.8% for large firms and 25.8% for small firms. Thus the figures in Table II are in agreement with those for all workers who participated in a training program.

As might be expected, not all training programs at work are paid for by employers. In some instances individuals pay for such programs; in many, however, the program is government funded. The high percentage of employees in at-work training programs paid for by employers —

TABLE I
Most recent training program: All employees of small and large firms

	Firm size		
	Total	Small[a]	Large[b]
Number in sample	17,089	6,612	10,477
Number of employees (000's)	77,742	30,065	47,678
Number of employees who participated in a training program (000's)	17,955	6,013	11,942
Percent of all employees who participated in a training program	23.1	20.0	25.0
At work	8.4	5.2	10.5
Not at work	14.7	14.8	14.5
Previous employer	1.0	0.9	1.1
Other than previous employer	13.7	13.9	13.4

[a] Firms with 1—99 employees.
[b] Firms with 100 or more employees.

TABLE II
Most recent training program: Employees who participated in a training program in 1980 or later

	Firm size		
	Total	Small[a]	Large[b]
Number in sample	2,353	764	1,589
Number of employees who participated in a training program in 1980 or later (000's)	10,570	3,360	7,221
Percent distribution of training program participants whose most recent training program was			
At work	45.8	31.6	52.4
Paid by employer	42.8	27.8	49.7
Not paid by employer	3.0	3.8	2.7
Not at work	54.2	68.4	47.6
Previous employer	3.4	3.2	3.5
Other than previous employer	50.8	65.2	44.1
Paid by employer	15.5	15.7	15.4
Not paid by employer	35.3	49.5	28.7
Length of training program (in weeks)			
At work, paid by employer	5.6	7.0	5.3
Not at work (other than previous employer), not paid by employer	22.2	21.6	22.6

[a] Firms with 1—99 employees.
[b] Firms with 100 or more employees.

approximately 88% for small firms and 95% for large firms — is consistent with the response that a training program was offered at a work site.

It is noticed that the percentage of training program participants who have vocational training that was financed by their employer is the same for workers in small firms, 15.7%, as in large firms, 15.4%. The explanation for this is that although large firms are most likely to finance training at a site away from work, given that a worker participates in a vocational training program, this is counterbalanced by the higher fraction of workers in small firms that participate in vocational training. As can be inferred from Table II, among workers in large firms who had vocatonal training, about 35% reported that the training was employer financed; the corresponding figure for small firms was approximately 24%, consistent with the proposition that large firms are more likely to finance training at a site away from work. However, it is also seen from Table II that 65.2% of workers in small firms had vocational training compared to 44.1% in large firms.

Not surprisingly, length of vocational training programs whose cost is borne by individuals, 22.2 weeks, is substantially longer than the length of at-work training programs paid for by employers, 5.6 weeks, and this is the case whether an individual is employed at a large or small firm. It is also noticed from Table II that while the proportion of workers with some training program experience is positively related to firm size, the amount of training, as measured by duration, obtained by those who participate at work in employer-funded training programs or away from work in other than employer-funded training programs is about the same order of magnitude for both small and large firms.

Earlier in the discussion, it was suggested that workers with characteristics deemed desirable by large firms would be the ones to participate in training programs in such firms. In general it is to be expected that in large firms workers whose cost of training is low (high) will receive more (less) training — and that this is also the case in small firms. As indicated below when workers are classified by educational attainment it is indeed found that a higher proportion of more educated workers than less educated workers in large *and* small firms participate in training programs at work. But how does the differential (between large and small firms) in the proportion participating in such programs change as the level of educational attainment increases? One might suspect a widening of this differential as educational attainment increases if workers with little education are least likely to participate in training programs irrespective of the size of firm in which they are employed, and if relatively little specific training occurs in small firms so that in these firms training program participation is not a prevalent event among well-educated workers. Again the empirical data suggest this is the case.

The relationship between training program participation, worker characteristics, and firm size is shown in Table III. The proportions in this table

for the row "all employees" (except for the last two columns) are also found Table I. Thus the interpretation of the figures is the same as in the latter table. From Table III, for example, it is seen that 3.6% of workers age 16—24 years employed in small firms reported that their most recent training program experience occurred at work.

Several aspects of Table III are noteworthy. Looking first at training programs at work, i.e., training programs that are closely related to on-the-job training, the following conclusion can be drawn:

In no instance is the percentage of workers in large firms who participated in an at-work training program lower than the corresponding percentage for small firms.

As expected, those groups that tend to be hired disproprotionately by large firms, namely, well-educated workers, full-time workers, and workers in the prime age groups are most likely to participate in an at-work training program in large firms and in small firms.

Two groups of workers who may be perceived by employers to have low marginal productivity with respect to training are women and nonmarried individuals. Both, and particularly the latter, are less likely to participate in an at-work training program than their counterpart groups.

TABLE III

Most recent training program: all employees of small and large firms by worker characteristics

	Source of most recent training program (percent of specified group)						Percent of employees with other training[d] who used training on current job[e]	
	Total[a]		At Work		Other[d]			
	Small[b]	Large[c]	Small	Large	Small	Large	Small	Large
All employees	20.0	25.0	5.2	10.5	13.9	13.4	63.8	61.0
Age								
16—24 years	17.5	19.2	3.6	7.2	13.3	12.1	66.0	46.4
25—44 years	22.4	28.1	6.3	12.1	15.0	14.6	64.0	65.0
45 years and older	18.0	23.3	4.6	10.0	12.3	12.2	60.3	64.8
Gender								
Male	20.6	26.8	5.5	11.4	14.2	14.2	62.1	61.1
Female	19.2	22.9	4.7	9.3	13.5	12.5	65.9	60.8
Marital status								
Married, spouse present	20.6	26.9	5.6	12.0	13.8	13.7	65.4	63.6
Other	19.3	22.4	4.6	8.3	14.1	13.1	62.1	57.1
Education								
Less than 12 years	12.8	14.9	3.4	6.6	8.8	7.0	54.2	53.4
12—15 years	23.3	28.0	5.7	10.9	16.5	15.9	65.2	59.7
16 years or more	16.9	25.1	5.5	12.9	10.5	11.2	67.5	74.3
Hours worked								
Part-time	18.2	17.6	3.2	5.5	14.2	11.3	57.9	46.4
Full-time	20.7	26.6	5.8	11.5	13.8	13.9	66.2	63.6
Paid by the hour								
Yes	18.7	23.2	4.4	8.5	13.4	13.7	58.8	56.6
No	22.2	29.0	6.3	14.6	14.7	12.9	71.6	71.4

[a] Includes participation in a training program at work, at a previous employer, or other source of training.
[b] Firms with 1—99 employees.
[c] Firms with 100 or more employees.
[d] Source of training not at work but other than a previous employer.
[e] For workers who had only one training program experience.

Nonhourly workers, the bulk of whom are salaried, are more likely to have been in a training program than hourly workers. A likely explanation for this is that salaried workers tend to have more stable employment and hence employer investments in specific training can be more easily recouped.

Of some interest is the lower proportion of participants in at-work training programs among workers age 45 years and older *vis-à-vis* those 25—44 years of age. As the SIPP questions pertaining to most recent training program are asked of all recipients who ever participated in a training program, the at-work training program participation rate should increase with age. That this is not the case suggests that at-work training programs have been growing over time, and as a result the oldest cohort of workers has had fewer training opportunities than younger cohorts.

Examination of Table III also indicates a systematic relationship in large-small firm at-work training program participation rate differentials and worker characteristics. This is best illustrated when workers are classified by educational attainment. The large-small firm differential is 7.4,[5] 5.2, and 3.2 percentage points, respectively, for workers with 16 or more years, 12 to 15 years, and less than 12 years of school completed. While college graduates are almost twice as likely to participate in an at-work training program as high-school dropouts in large firms, they are only about one-half as likely to receive such training in small firms. Likewise, the large-small firm training program participation rate differential is relatively high for older workers; for men; married workers with spouse present; full-time workers; and salaried workers, i.e., workers who tend to have the most investment in human capital. Conversely, relatively low training program participation rate differentials between large and small firms are found for those with less education, young workers, women, nonmarried workers, and part-time workers, i.e., workers who tend to have the least investment in human capital. Thus, it appears that although high productivity workers are more likely to participate in industrial training programs than low productivity workers in both large and small firms, relatively more training is given to the latter group if they are employed in a small firm.[6]

The SIPP data also indicate an interesting difference between small and large firms with respect to whether vocational training is used on one's current job. One of the questions asked of persons who ever participated in a training program was whether they used the training on their current job. As can be seen from the last two columns of Table III, a higher proportion of young workers, women, workers other than those married with spouse present, workers with 12—15 years of education, and part-time workers were more likely to respond that they used their vocational training on their current job if it was with a small employer rather than a large one.[7] An explanation for this finding is the following: workers hired by small firms have less human capital than those hired by large ones. Because of this, small firms seek out workers with vocational training skills (even though other observable characteristics suggest their productivity may be low) that match the skills they require. Large firms, on the other hand, are not as successful at finding qualified workers with skills learned in vocationally oriented courses because of their firm-specific training needs. The net result of these matches, it appears, is that in small firms a higher proportion of workers with apparent low productivity use their vocational training at their current job. It should be noted that the small-large firm differential in the usefulness of vocational training at work is understated because large firms are more likely than small firms to finance vocational training and, hence, such training is more likely to be work related.[8]

We have mentioned that the SIPP training program data focus on where training programs are taken; nonetheless, as indicated, they yield important insights into the training market. Still, additional assurance that at-work training proxies on-the-job training would be welcome. Such additional assurance for the findings reported above is gained by looking at individuals who started their current job in 1980 or later. For this group the year in which an individual began work with their current employer can be compared to the year in which they undertook their most recent training program. If the latter occurred in the same year or a year subsequent to the one in which they started their current job, we defined the training program as having taken place at the current job. Only the latter which is paid for by the employer,

whether the training program occurred at work or elsewhere, constitutes on-the-job training.

The data for individuals who started a job in 1980 or later for whom participation in a training program can be rigorously associated with their current job (or another source) are presented in Table IV.[9] By comparing this table with Tables I and II it can be seen that although the levels are different the conclusions to be drawn are similar, namely: (1) a lower proportion of employees in small firms *vis-à-vis* those in large ones participate in at-work training programs paid for by their employer (2.6 vs. 6.3%); (2) the proportion who take vocational training while working at their current job which is employer financed is less in small firms than large ones (about 26 vs. 36%);[10] (3) the proportion of employees who obtain vocational training prior to being hired into their current job is the same in small firms, 9.2%, and large firms, 9.3%. Likewise, the conclusion that the length of at-work training programs paid by employers and vocational programs paid by employees is independent of firm size remains unaltered.

While the figures in Table IV show the proportion of workers who participate in training programs at work while employed at their current employer, they only partially reflect the proportion who receive on-the-job training. A definition of on-the-job training conforming more to economic theory would focus on training paid for by an employer rather than whether or not the training was conducted at work. The relevant figures for estimating the proportion of workers who participated in on-the-job training programs among workers who started their current job in 1980 or later are shown in Table V. As can be seen from this table the percentage participating in on-the-job training programs was about twice as high in large firms as in small firms (8.2 vs. 4.0%). It is to be recalled that these figures refer to

TABLE IV

Most recent training program: all employees of small and large firms who started their current job in 1980 or later

	Firm size		
	Total	Small[a]	Large[b]
Number in sample	9,611	4,459	5,152
Number of employees (000's)	43,669	20,118	23,551
Number of employees who started their current job in 1980 or later and participated in a training program (000's)	8,995	3,687	5,310
Percent of all employees who participated in a training program	20.6	18.3	22.6
Current job	10.2	8.3	12.0
At work	4.9	2.9	6.7
Paid by employer	4.6	2.6	6.3
Not paid by employer	0.3	0.3	0.4
Not at work	5.3	5.4	5.3
Paid by employger	1.6	1.4	1.9
Not paid by employer	3.7	4.0	3.4
Prior to current job	10.4	10.1	10.6
Previous employer	1.1	0.9	1.3
Other than previous employer	9.3	9.2	9.3
Length of training program (in weeks)			
At work, paid by current employer	6.2	7.4	5.8
Not at work (other than current or previous employer), not paid by employer	23.5	22.6	24.5

[a] Firms with 1—99 employees.
[b] Firms with 100 or more employees.

TABLE V

Most recent training program: all employees of small and large firms who started their current job in 1980 or later[a]

	Firm size		
	Total	Small[b]	Large[c]
Number of sample	9,611	4,459	5,152
Number of employees (000's)[d]	43,659	20,118	23,551
Percent of all employees whose most recent training program was at current job and			
Paid by employer (on-the-job training)	6.2	4.0	8.2
At work	4.6	2.6	6.3
Other than at work	1.6	1.4	1.9

[a] Derived from Table IV.
[b] Firms with 1—99 employees.
[c] Firms with 100 or more employees.
[d] Population weighted sample.

participation in formal training programs and exclude informal training that is firm specific or general.

V. Conclusions

The recent literature has established that the labor market operates to match workers with particular skills to firms in which those skills are needed. Because of the importance of monitoring costs and of efficiencies that result from the routinization of production when producing large, standardized volumes of output, large firms tend to provide firm-specific training. Small firms, on the other hand, can more easily adjust output between product lines; the skills required to facilitate such adjustments tend to be learned through general training.

An important source of specific training is at-work training programs. Consistent with the implications of the theoretical literature, a higher fraction of workers are found to participate in this form of industrial training at large firms than at small ones. Given that a worker participates in a training program, however, its length is no less in small firms than in large ones.

Several other findings warrant mention: (1) in both large and small firms, workers with relatively large amounts of human capital are most likely to participate in at-work training programs; (2) the gap in training program participation between large and small firms is positively related to human capital investment; put another way, differences in training program participation among workers employed in large and small firms are not as pronounced for those with relatively low amounts of human capital as for those with relatively high amounts of human capital; and (3) workers in small firms are more likely to participate in nonemployer-financed vocational training than workers in large firms.

The data of this study indicate that a substantial fraction of workers who participate in training programs do so at work. They also indicate that despite the fact that small firms do not engage in these programs to the same extent as large ones, workers with vocational training obtained outside of a work setting are just as likely to find employment in a small firm as a large one. Given the growing importance of small firms in recent years to the economic well-being of the nation, these findings suggest that strengthening the link between vocational education and the small business community can assist in assuming an adequate supply of labor to this sector of the economy.

Notes

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[1] For an empirical analysis of who is hired by small and large firms see Cordes, Barth, and Haber (1987).

[2] It is to be noted that this issue is quite different from the one of whether large or small firms provide more training — when training besides that obtained in a training program is considered. This latter issue is addressed in Haber (1989).

[3] The Wave 3 data were collected during May-August 1984 and cover reference months beginning in January, 1984 and ending in July, 1984.

[4] Since the bulk of training at a non-work site occurs in a vocational setting and what happens to persons who undertake vocational training is of interest, the terms "training received elsewhere" and "training not at work but other than at a previous employer" are hereafter used interchangeably with "vocational training" interpreted in its widest sense.

[5] The figure 7.4 is the difference between 12.9 (large firms) and 5.5 (small firms).

[6] An entirely different pattern is found for vocational training programs (classified as "other" in Table III), where except for educational attainment, vocational training participation rates vary little by worker characteristic.

[7] Little difference is found in the proportion using their vocational training on their current job among workers who did not complete high school, perhaps because they are least able to increase their productivity through vocational training, irrespective of where they work.

[8] As indicated in Table III, about 4 out of 10 workers reported they did not use their vocational training on their current job. Some of these workers obtained their vocational training while working for an employer other than their current one. Others may be undertaking vocational training in anticipation of a future change in jobs requiring new skills that are different from those of their current job.

[9] Two groups of workers are omitted from Table IV: (1) workers who said they received their most recent training at work, but the year in which this training was obtained is earlier than the year they started their current job; and (2) workers who said they received their most current training at a previous employer, but the year in which this training was obtained overlaps the years spent on their recent job. In both cases, the training and job tenure information are inconsistent with each other.

[10] The figure for small firms = $(1.4/5.4) \times 100$.

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