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Abstract

The Targeted Jobs Tax Credit is probably the most outstanding example of a generous entitlement program with very low participation rates. Only about 10 percent of eligible youth are claimed. The causes of the low participation rate were analyzed by estimating a poisson model of the number of TJTC eligibles hired and certified during 1980, 1981 and 1982. Information costs, both fixed and variable, were found to be key barriers to TJTC participation. The cost effectiveness of TJTC is low because the stigma and recruitment costs of hiring additional TJTC eligibles are very high. Employers find it relatively cheap to passively certify eligible new hires who would have been hired anyway so this mode of participating in TJTC predominates.

Keywords

CAHRS, ILR, center, human resource, studies, entitlement, job, tax credit, youth, cost, employer, employee, hire, participation, TJTC

Comments

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**APPLYING FOR ENTITLEMENTS:
EMPLOYERS AND
THE TARGETED JOBS TAX CREDIT**

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Working Paper # 88-04

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Abstract of

**APPLYING FOR ENTITLEMENTS:
EMPLOYERS AND THE TARGETED JOBS TAX CREDIT**

The Targeted Jobs Tax Credit is probably the most outstanding example of a generous entitlement program with very low participation rates. Only about 10 percent of eligible youth are claimed. The causes of the low participation rate were analyzed by estimating a poisson model of the number of TJTC eligibles hired and certified during 1980, 1981 and 1982. Information costs, both fixed and variable, were found to be key barriers to TJTC participation. The cost effectiveness of TJTC is low because the stigma and recruitment costs of hiring additional TJTC eligibles are very high. Employers find it relatively cheap to passively certify eligible new hires who would have been hired anyway so this mode of participating in TJTC predominates.

**APPLYING FOR ENTITLEMENTS:
EMPLOYERS AND THE TARGETED JOBS TAX CREDIT**

Between 1979 and 1985 firms that hired eligible disadvantaged individuals were eligible for a tax credit that equaled one half of the first \$6000 wages paid in the first year of employment and one quarter of such wages in the second year. The eligible target groups were handicapped individuals, welfare recipients and economically disadvantaged youth, Vietnam veterans and ex-offenders. Between 1981 and 1985, the number of targeted individuals who were hired and determined to be eligible (certified) ranged between 200,000 and 586,000 annually. Large as these numbers may seem, they were only a small fraction of the total numbers of eligible individuals hired during this period. The Congressional Budget Office has estimated that Targeted Jobs Tax Credit (TJTC) helped less than 10 percent of the eligible young people who were hired during 1983 (Christensen 1984). Furthermore, the companies that participated in TJTC in 1982 accounted for only about 4 percent of the nation's employers and less than 20 percent of the nation's jobs. Seventy-three percent of the employers in a 1982 survey who had some familiarity with the program said they did not plan to ask the employment service for TJTC eligible referrals when they needed unskilled workers in the future.

Low take up rates for targeted hiring subsidies are not a uniquely American phenomenon, for European efforts to subsidize the employment of particular target groups have also had low participation rates (Schmid, 1981). Low take up rates have also occurred for other tax subsidies. The 1954 revision of the income tax code allowed firms to use accelerated depreciation schedules on all new investment but 6 years later only 21 percent of all proprietorships and 30 percent of all corporations were using an accelerated depreciation method on any component of their capital stock (Ture, 1967).

Why did the employer community turn such a cold shoulder on such a generous subsidy entitlement? Clearly, the expected costs of learning about and participating in this program must, for most firms, have been larger than the expected benefits of participating. What are these costs? Has, as Bishop and Haveman (1979) suggested, TJTC's highly targeted nature

stigmatized the workers it was designed to help? What implications do high nonpecuniary costs of participation and the resulting low participation rates have for the policy analysis of programs, like TJTC, which subsidize activities considered to be in the public interest such as hiring the disadvantaged or increasing R & D spending? These are the questions addressed in the paper that follows. The next section develops a very simple Poisson representation of employer participation in TJTC. The extent of participation is analyzed as an outcome of a comparison of the expected tax benefits of participating against the fixed and variable costs of learning about the program and participating in it. This model generates a number of predictions regarding which employers will be the heaviest users of TJTC and how these patterns will change over time. Section 2 presents the results of the analysis of data from a large scale employer survey on the use of TJTC. Section 3 examines whether most of the employers participating in the program are active users who try to increase their hiring of eligibles or whether they passively seek tax credits for people they would have hired even in the absence of the tax credit. Section 4 focuses on the effects of the stigma attached to being a TJTC eligible on the use and the effects of the program. Section 4 summarizes the empirical findings, discusses some options for reforming TJTC and then draws some conclusions regarding how prospective policy analysis should proceed in the future.

I. Model Specification

Bishop (1982), Ashenfelter (1983) and Moffitt (1983) have shown that the low rates of participation in many income maintenance programs can be explained by models in which participation stigmatizes the individual or entails other significant nonpecuniary costs. On the surface it might appear that decisions to participate in the Targeted Jobs Tax Credit are very different from decisions to participate in income tested transfer programs. Since employers make the participation decisions, factor demand theory rather than utility theory is relevant. In TJTC, the person who decides whether to participate and who receives the subsidy is not stigmatized by participation. It is the eligible job applicants who are stigmatized. The potential tax credit is very much larger than the payment

a poor family can receive from welfare so incentives to learn about the program would appear to be stronger. Nevertheless, nonpecuniary costs of participation are the primary reason why participation rates are so low. While they arise for different reasons, their structure is rather similar to the structure assumed by Moffitt's (1983) analysis of welfare participation. Nonpecuniary costs depend on both the fact of participation and on the extent of participation and the decision maker is able to change behavior in ways that increase the receipt of subsidy. And, as a result, the costs of TJTC participation affect employer behavior--lowering participation rates and reducing incentive effects--in much the same way that stigma affected individual behavior in Moffitt's analysis of welfare. We will return to these similarities in section 3 of the paper.

The nonpecuniary costs of participating in TJTC derive largely from the fact that it subsidizes the hiring of groups of workers who are both hard to identify and generally thought to be below average in productivity. The use of family income and receipt of welfare as targeting criteria means that government must certify whether each individual is eligible. Even if the firm has already hired eligibles, participation entails learning about the program, establishing a relationship with the administering agency and applying for certification of new hires thought to be eligible. Since September 1981, it has been necessary to apply for certification prior to the first day of work. The costs of passive participation--obtaining tax credits without changing how many eligibles are hired--are both fixed (C_p) and variable (c_p per eligible certified). Assuming homothetic technology and no TJTC induced change in the rate of turnover of targeted labor (t), in the growth rate of the establishment (g) and in who is hired, passive participation is preferable to nonparticipation if:

$$1) \text{ Net Benefits}_p = NB_p = (SW - c_p)(g + t)T_o - C_p > 0.$$

where W is the wage of target group labor, S is the rate of subsidy (0 if the firm has no tax liability) and T_o is the number of eligible workers employed in the base period.

The objectives of TJTC are realized only if firms respond to the incentive effect of the subsidy by increasing the hiring of targeted

workers. But such active participation is more costly than passive participation. These additional costs are to some degree fixed (C_a) for an increase in the hiring of eligibles necessitates a shift of recruitment efforts to labor market intermediaries that can refer eligibles and/or the development of a mechanism for screening all job applicants (not just those hired as in passive participation) for eligibility for TJTC. Giving hiring preference to those found eligible is costly as well. Prior to TJTC, asking job applicants whether they were a welfare recipient or disadvantaged was generally thought to be illegal, so people from stigmatized groups typically obtained jobs without the employer learning of their disadvantaged status. Even with the help of TJTC, many disadvantaged job seekers believe, probably correctly, that an early revelation of their disadvantaged status will reduce their chance of being hired (Burtless 1985; Moran et al 1982). If only a minority of eligibles are aware of their eligibility or willing to reveal it, finding additional TJTC eligibles who come close to meeting the firm's hiring criteria becomes very expensive. Thus, hiring additional TJTC eligibles may generate delays in filling openings and result in a higher proportion of the new hires performing poorly on the job. These variable costs of active participation are assumed to be a constant amount (c_a) per additional eligible hired. Whether a firm will choose active participation over nonparticipation can be judged by comparing the profits obtainable at the effective post-subsidy wage of $(1-S)W+c_p+c_a$ after subtracting participation costs and the subsidy on the previously employed workers to the profits obtainable if the firm does not participate (Ashenfelter 1978; Montgomery 1982)¹. Letting π be the profit function and P be the vector of all other prices, the net benefits to active participation, NB_a , can be expressed as:

$$2) NB_a = \pi(P, (1-S)W+c_p+c_a) - \pi(P, W) - C_p - C_a - (SW-c_p-c_a)(1-t)T_o + c_p(t+g)T_o$$

The firm participates if either (1) or (2) is positive. If (1) is larger than (2), the number of targeted workers certified is $(t+g)T_o$ and the employer is termed a passive participant. Otherwise, the number of targeted workers certified comes from maximizing (2) and the employer is termed an active participant.

Hypotheses to be Tested

Obviously a firm will not participate if it has no openings in a job classification for which subsidy eligible workers might qualify and is more likely to be a heavy user if it has large numbers of job openings for unskilled workers. Consequently, the following indicators of the potential scale of hiring of unskilled workers by the sampled establishment are hypothesized to have positive effects on TJTC usage:

- o Total employment at the establishment.
- o The growth rate of employment at that establishment.
- o The proportion of the work force in low-skill occupations.
- o The rate of turnover of unskilled workers.
- o The elasticity of demand for unskilled labor.

Firms that have shown a willingness to hire and train the unskilled in the past face lower incremental costs of active participation (c_a) than other firms. This increases the probability and amount of participation, so the following characteristics of the establishment are hypothesized to raise participation:

- o Nonunion firms with flexibility in terminating unwanted workers. Employers feel that hiring a subsidized worker increases the risk that things will not work out. If the firm can easily correct a hiring mistake by firing the worker, the costs of mistakes are reduced.
- o On-the-job training (OJT) that is general rather than specific. The turnover rates of TJTC eligibles are believed to be higher than for other competing workers. If OJT is extensive and specific to the firm, these higher rates of turnover will impose significant costs on the firm and raise the marginal cost of participation. If training is general and workers pay for the training, higher turnover rates will not be a serious problem.
- o Below average starting wage rates: The marginal costs of participation will be lower because the firm will already be accustomed to providing the additional training that TJTC eligibles might require.
- o Employers contacted by Employment Service officials offering to refer TJTC eligibles.
- o Employers who have used the Employment Service in the past.

Only one indicator of the incremental costs of passive participation (c_p) is in the data set:

- o Proportion of workers who are full-time: Marginal participation costs are the same for each worker, regardless of the numbers of hours worked. The subsidy is typically larger for full time workers. Consequently, the difference between subsidy and marginal participation costs is greater for full-time workers and incentives are stronger both to apply for certifications (passive participation) and to recruit additional eligibles (active participation).

Since lower fixed costs of participation (C_p and C_a) raise the probability of participation, establishments with the following characteristics are hypothesized to be more likely to participate in TJTC:

- o Establishments that are part of a large multiestablishment firm. Firms that have many establishments spread the fixed costs of learning how to use the program and revising internal administrative procedures over many establishments. All other scale variable refer to the establishment, not the firm.
- o Establishments that have personnel directors. The personnel directors have more time to learn about programs like TJTC than owners or plant managers, and they are also more likely to be targeted for outreach by agencies seeking to place TJTC eligibles.
- o Members of local business organizations. These employers are more likely to get a "sales pitch" about TJTC at meetings or in a newsletter.
- o Employers contacted by local program administrators.
- o Employers that have participated in this or similar programs in the past. Participation in one program teaches the firm how to handle the paper work and generates contacts which facilitate future use of TJTC. The experience with eligible workers may also result in the firm developing more favorable attitudes towards them. A variable for past participation may also pick up the effects of unobserved heterogeneity.
- o Employers with a positive attitude toward government.
- o Regular users of the employment service.

Participation is defined as the number of target group members hired and certified. In the sample of establishments studied about 90% did not hire and certify any TJTC worker, 5% hired and certified 1 to 5, and the remaining 5% hired and certified more than 6. Because of the highly skewed and discrete nature of the distribution, the Poisson specification proposed by Hausman, Hall, Griliches (1984) is employed.

The model is specified in terms of the establishment's probability of

hiring and certifying zero, one, two, . . . TJTC workers. The Poisson distribution gives the probability of nonnegative integer outcomes. The probability function is given by the following formula:

$$3) \quad \Pr(N_i) = \exp(-m_i) m_i^{N_i}/N_i! \quad (m_i \geq 0, N_i = 0, 1, 2, \dots)$$

For instance the probabilities of hiring zero, one, and two TJTC workers are given by:

$$\Pr(0) = \exp(-m_i)$$

$$\Pr(1) = \exp(-m_i) m_i$$

$$\Pr(2) = \exp(-m_i) m_i^2/2$$

The parameter m_i is assumed to be specific to the i 'th employer and is determined by the employer's characteristics. Specifically it is assumed that m_i is determined by the following formula:

$$4) \quad \log m_i = X_i B$$

X_i is a vector of the variables representing the i 'th employer's characteristics and B is a vector of coefficients. One of the very attractive features of the Poisson specification is that the partial derivative of m_i with respect to the j 'th explanatory variable, X_{ij} , is

$$5) \quad \partial m_i / \partial X_{ij} = \partial E(N_i) / \partial X_{ij} = b_j \exp(X_i B) = b_j E(N_i)$$

where $E(N_i)$ is the expected number of TJTC certifications for the i th employer. Consequently, when X variables are logs, the b_j coefficients are elasticities of TJTC use. When X variables are categorical or range between zero and one, b_j measures the proportionate response of TJTC certification to the j 'th characteristic. Estimates of B are obtained by maximizing the log likelihood function which is written as,

$$(6) \quad L(B) = \sum_{i=1}^N (-\log N_i! - \exp(X_i B) + N_i X_i B).$$

II. Results

This section presents the results of a multivariate analysis of the determinants of TJTC use. The database analyzed is a 1982 survey of 3412 employers designed by staff at the National Center for Research in Vocational Education and conducted by the Gallup Organization. This survey was a reinterview of the 1980 Employment Opportunity Pilot Projects employer

survey. The original sample was a stratified random sample of establishments (with higher probabilities of selection for large establishments in low wage industries) paying unemployment insurance taxes in 10 pilot sites and 18 comparison sites selected for their similarity to the pilot sites. A complete description of the sample, the survey and copies of all relevant questions is available in Bishop (1985) and Bishop and Hollenbeck, (1986). Models were estimated predicting the number of TJTC eligibles hired and certified in 1980, 1981 and 1982. The definition, means, and standard deviations of the variables used in the models are presented in Appendix Table 1 which can be obtained from the authors. The explanatory variables have been classified into 5 categories: indicators of the number of job openings at the establishment that could potentially be filled by eligibles, characteristics of the employer that relate to the fixed and variable cost of obtaining certifications, measures of government effort to encourage firms to hire TJTC workers, and the firms' past experience with government sponsored employment subsidy programs. Except for the variables that pertain to the previous experience with TJTC, we do not have yearly observations on the right hand side variables.

The model was estimated separately for each of the 3 years in order to capture how the employer response to the TJTC program changed over time. Changes in employer response to the program are to be anticipated because (1) the program was new in 1979 and many of the employers learned of the program after 1980, (2) response to the program evolves over time as the firm becomes more familiar with its paperwork and how to recruit and train members of the target groups, (3) the rules of the program changed significantly in 1981 and (4) efforts of local administrators to promote the program changed over time. The estimation results are presented in Table 1.

Indicators of the Number of Job Openings That May Be Filled by Eligibles

The indicators of the number of unskilled job openings during the year included in the regression are the log of establishment employment in 1980, the new hire rate in the fourth quarter of 1979, the proportion of the workers under age 25 in 1979, and the proportion of unskilled workers in 1979. The 1979 values of these variables are used because later values

TABLE 1
DETERMINANTS OF TJTC HIRING
(Number of Observations = 2,621)

Variables	1980		1981		1982	
<u>Indicators of the Number of Eligibles</u>						
Log estab. empl. in 1980	0.761***	(26.9)	.855***	(31.63)	.462***	(12.65)
New hire rate in 1979: IV	1.101***	(3.10)	3.139***	(11.48)	3.606	(11.66)
Proportion under 25 in 1979	-1.125	(.65)	1.113***	(6.90)	.702***	(3.48)
Proportion unskilled in 1979	0.266**	(2.17)	-.195*	(1.70)	1.468***	(9.53)
<u>Indicators of Incremental Participation Cost</u>						
Log index of general training	.280***	(7.49)	.218***	(6.12)	-.106**	(2.04)
Log index of specific training	-.130*	(1.79)	-.318***	(4.71)	-.084	(.90)
Unionized	-.271**	(2.37)	.409***	(4.00)	-1.040***	(6.19)
Proportion part-time	-.237	(1.28)	-.284*	(1.73)	.193	(1.13)
Log cost of machine	-.075***	(3.86)	-.103***	(5.43)	.157***	(6.17)
Wage Residual	-.347***	(3.57)	.051	(.54)	.162	(1.22)
Someone fired in 1979	.144*	(1.83)	.233***	(3.09)	-.557***	(5.60)
Layoff based on seniority	.111	(.98)	-.191*	(1.80)	.322**	(2.23)
<u>Indicators of Fixed Cost</u>						
Log firm/estab. employment	-.071	(2.08)	.083***	(3.26)	.364***	(12.85)
Has personnel office	-.120	(1.43)	.201*	(2.50)	.263***	(2.29)
Member of local busi- ness organization	.310***	(4.17)	.006	(.08)	.146	(1.65)
Listed opening with employment service in 1979	-.503***	(6.92)	-.167**	(2.49)	.467***	(4.78)
<u>Outreach</u>						
Government office of eligibility referral	2.467***	(20.9)	1.58***	(18.25)	2.204***	(17.83)
Conversation about TJTC not initiated by firm	.626***	(3.74)	.358***	(3.00)	.563***	(3.06)
Both a conversation and a referral offer	-.937***	(5.18)	-1.019***	(7.40)	-1.222***	(5.82)
<u>Previous Receipt of Subsidies</u>						
New jobs tax credit	.376***	(4.31)	.250***	(2.97)	.928***	(8.62)
WIN in 1977, 78, or 79	.122	(1.04)	.064	(.63)	.290**	(2.16)
CETA-OJT in 78 or 79	.614***	(6.23)	.891***	(10.85)	1.092***	(9.06)

t-value in parenthesis

*significant at the 10% level (two sided)

**significant at the 5% level (two sided)

***significant at the 1% level (two sided)

have been found to be influenced by the extent of participation in the program (Bishop and Montgomery 1987) and their inclusion in the model would probably cause simultaneous equations bias.

Since the log of the ratio of firm and establishment employment is also included in the model, the pure effect of establishment size is the coefficient for establishment size minus the coefficient for log of the ratio of firm size to establishment size. The difference gives the elasticity of the number of certified workers with respect to establishment size while holding firm size constant. The elasticity estimates are 0.83 and 0.78 in 1980 and 1981 but the estimate dropped to 0.10 in 1982.

The new hire rate in the 4th quarter of 1979 had a large positive effect on TJTC use, as hypothesized. A one percentage point increase in the new hire rate was associated with a 1% increase in TJTC employment in 1980 and a more than 3 percent increase in 1981 and 1982. The share of employees that were under age 25 in 1979 had the hypothesized large positive effects on use of TJTC in 1981 and 1982 but inexplicably not in 1980. The proportion of the firm's jobs that were unskilled (i.e., in laborer, operative, or service occupations) also had the hypothesized positive effect on TJTC use in 1980 and 1982 but not in 1981.

Indicators of the Incremental Cost of Active Participation

The indicators of low skill, low wages, and lack of job security that were hypothesized to be associated with low incremental costs of active participation and therefore with high utilization of TJTC did have the expected effects on TJTC use in 1980 and early 1981. The big users of TJTC tended to:

- o offer new employees more than the usual amount of general training
- o offer new employees less than the usual amount of specific training
- o have low capital investment per worker
- o have lower than average wage rates
- o offer less job security (as indicated by having fired someone in the 4th quarter of 1979)

Nonparticipants had the opposite set of characteristics.

After September 1981, however, the pattern changed and the firms that were big users of TJTC tended to:

- o offer new employees less than the average amounts of training
- o be nonunion
- o have high capital investments per employee
- o offer more job security (as indicated by not having fired someone in the 4th quarter of 1979)

- o lay off workers on the basis of seniority rather than productivity

The results for the post ERTA period support our hypotheses about unionization but contradict our hypotheses regarding the effect of the other indicators of participation costs. One can only speculate as to why indicators of incremental participation costs which had the predicted effects on utilization in 1980 and 1981 should no longer have such effects after the ERTA amendments went into effect. The ERTA amendments made two major changes in TJTC: the blanket eligibility of cooperative education students was ended and retroactive certifications abolished. The first change might very well have reduced the training content of the typical TJTC subsidized job. Since cooperative education placements can be thought of as low skilled workers being placed in and trained for medium skilled jobs, another consequence of the decrease in the number of the cooperative education students getting TJTC certifications might have been a shift towards firms with predominantly unskilled jobs. This might explain the big increase between 1981 and 1982 in the response of TJTC hiring to the proportion of the firm's jobs that are unskilled.

Indicators of Fixed Cost

The results reported in panel 3 of table 1 provide support for the hypothesis that fixed costs are an important determinant of TJTC use and that the pattern of fixed costs have substantially changed. Being a member of a local business organization had a big effect on participation in 1980 but not in later years. Having a personnel office did not increase utilization at first, but it became important in 1981 and 1982. Probably the most dramatic change in the pattern of use of TJTC has been the growth in the use of TJTC by multi-establishment firms. In 1981, establishments which were part of a chain were less likely to use TJTC. This changed in 1981 and in 1982 the ratio of firm to establishment employment had become one of the most important determinants of TJTC use. Apparently, the managers of the establishments that were part of large corporations were

at first reluctant to get involved in TJTC because the tax benefits did not get passed through to their establishment's profit and loss statement. In 1981 the corporate staff of many of these companies started to encourage their local managers to use TJTC and promoted its use by offering incentives to local managers for hiring TJTC eligibles. Multi-establishment firms now account for most TJTC certifications. The size of the establishment is no longer a primary determinant of TJTC usage. Turnover rate, proportion unskilled or young and the size of the firm (rather than the establishment) seem to now be the primary determinants of the use of TJTC.

The impact of being a user of the employment service during 1979 on later use of TJTC changed dramatically between 1980 and 1982 as a result of the ERTA amendments. Government contacts about TJTC and offers of eligible referrals are positively associated with having listed job openings in 1979. Holding referral offers constant, listing with the employment service apparently reduced use of TJTC in 1980 but increased it in 1982. This change is no doubt due to the abolition of retroactive certification and the resulting greater use of employment service referrals to identify TJTC eligibles prior to hiring. Prior to September 1981, 18 percent of the TJTC workers known to be eligible when hired were recruited through the employment service. In the 6 months following that date 28.5 percent were recruited through the employment service.

Outreach

Because it lowers the costs of participation, government outreach efforts should have major effects on TJTC use. The analysis of the first wave of the employer survey found that firms that first learned of the WIN program from a personal contact by a representative of a government agency or local business organization were 84 percent more likely to participate in WIN during 1979, and 63 percent more likely to participate in TJTC than firms that had first heard about it from other sources (Bishop and Montgomery 1986). Having first heard of CETA-OJT from a personal contact more than doubled the chances of participating in CETA-OJT during 1979.

In the second wave of the survey employers who had heard of TJTC were asked two questions about government-initiated contacts endeavoring to promote the TJTC program. The first question was: "Have you or any of your staff spoken to a representative of government, a trade association,

or a local business organization about these tax credits?" If so, they were asked who initiated the contact? Thirteen percent of the sample of employers had a governmental official initiate a conversation with them about TJTC. The second question about government contacts was, "Have you been asked by the employment service or any other agencies to accept referrals of job applicants who are eligible for Targeted Job Tax Credits or Work Incentive tax credits?" Twenty-one percent responded that they had received such a request. Approximately 10 percent reported both types of interactions.

The coefficients reported in Table 1 measure the expected proportionate increase in certification of TJTC eligibles induced by each type of government-initiated contact. Contacts with an employer that include an offer to refer TJTC-eligible job candidates to the firm had a much larger impact on TJTC certifications than conversations that promoted the program but did not offer a referral. The coefficient on the dummy variable indicating that the government offered to refer an eligible is 2.467. This implies that making such an offer increases the expected number of TJTC certifications at that establishment by a factor of 12. In the next two years the coefficients are positive and highly significant, the point estimates in 1981 and 1982 are 1.58 and 2.201, respectively.

Previous Receipt of Other Subsidies

As hypothesized, participation in similar subsidy programs prior to 1980 had a large statistically significant impact on TJTC certifications. The effects of participation prior to 1979 did not diminish with time. They were even larger in 1982 than they were in 1980. Firms that participated in all three of the programs prior to 1980 certified 10 times as many TJTC eligibles as firms that had participated in none.

III. Evidence of the Extent of Active Participation

We now turn to the effects of nonpecuniary participation costs on the effectiveness of the program? As Moffitt (1983) points out, the effects of participation costs on labor supply or in this case the hiring of disadvantaged workers depends on whether these costs are primarily fixed or variable. From the perspective of the Moffitt model what has been called fixed costs of active participation (C_a) are really variable costs which

experience a discrete jump when the firm chooses to consciously increase its hiring of eligibles. The fixed costs of passive participation (e.g., the costs of learning enough about the program to use it, establishing a system to identify which new hires are eligible, and risking greater scrutiny from the Equal Employment Opportunity Commission or the Internal Revenue Service) discourage participation, but for those who do participate, they should have no systematic effect on the impact of the subsidy on employment. Consequently, cost effectiveness is not diminished. Employer characteristics associated with low fixed costs -- membership in business organizations, a personnel officer, and previous use of the program -- had large effects on participation. But these variables could be proxying for the fixed and variable costs of active participation as well so this fact should not be interpreted as favorable news regarding cost effectiveness.

The variable participation costs are the costs of making arrangements for the referral of eligible workers, identifying and certifying eligible workers and the risk of hiring workers who are less productive than the typical unsubsidized new hire. These costs lower the net benefit of hiring extra subsidized workers and, therefore, increase the chances the firm will only passively participate in the program and reduce its response when it is an active participant. Since some windfall payments are inevitable, anything that reduces the behavioral response tends to reduce cost effectiveness as well. The foregoing analysis provides evidence that the incremental costs of participation are quite large for many firms. Various indicators of these costs -- training costs, unionization, the cost of machinery and willingness to fire, past use of the employment service and contacts by the employment service offering to refer eligibles -- had significant effects on participation.

This evidence that the costs of active participation are large suggests that passive participation may be the predominant form of participation in TJTC. However, the evidence is by no means definitive. Better evidence on the issue comes from studying the administrative mechanisms that firms have established to participate in TJTC. The mechanism that now produces the great majority of certifications is as follows: employers who believe that some of their new hires are eligible send a letter to the Employment

Service requesting certification for each new hire. This letter must be sent before the new hire begins work but the determination of the worker's eligibility by the employment service may occur many weeks later. Sometimes employers make application for everyone they hire. In most cases, however, the new hires are screened for eligibility by the employer or over the phone by an outside contractor. This screening generally occurs after the hiring decision is made. The evidence that screening comes after hiring comes from two surveys. During the summer of 1985 staff of the National Center for Research in Vocational Education interviewed corporate, regional and local managers of 35 large multiestablishment firms in industries that are heavy users of TJTC. These firms account for about 15 percent of all TJTC certifications. Those interviews revealed that screening takes place after the hiring decision in 5 of the 8 fast food chains, 5 of the 7 hotel chains and 17 of the 20 other firms studied (Hollenbeck 1985).

In many states consulting firms handle the screening and certification paperwork for more than half of the TJTC certifications. During March 1986 a second series of telephone interviews was conducted with 13 outside contractors that did TJTC screening and paperwork for the original sample of 35 firms. Ten of these contractors reported that over 95 percent of their clients screen for TJTC eligibility after rather than before the hiring decision. One consulting firm thought a significant number of its clients were prescreening but could not estimate how many. Another encouraged its clients to screen prior to making selections and thought that three-quarters were doing so. The third firm had developed a proprietary screening procedure that was apparently administered by the firm prior to the hiring decision. Most of these consulting firms are apparently marketing systems that greatly simplify passive participation but which do not appear to stimulate the active forms of participation which were desired by the designers of the program.

The final bit of evidence on the issue comes from the 1982 survey. Employers who knew or thought they were hiring TJTC eligibles were asked directly, "How much did this possibility of eligibility increase the applicants chances of being hired?" Only 18 percent reported they were influenced "a great amount" and only 15 percent reported being influenced a moderate amount. "Not very" was selected by 23 percent and "not at all"

was selected by 46 percent. In summary, the evidence clearly indicates that the predominant mode of participation in TJTC is passive.

IV. The Stigma Problem

One of the most important determinants of TJTC utilization is employer beliefs regarding the productivity of individuals who are eligible for subsidy. In the survey all employers who had heard of TJTC were asked if they thought "that tax-credit-eligible people usually make better or poorer new employees than people who are not tax-credit eligible." Despite the fact that the socially acceptable response is clearly "don't know," "no difference," or "better," 28 percent of our respondents admitted to believing they were poorer than average. Only 7 percent said they made better workers.

A stigma index was constructed assigning +1 for employers who thought eligibles made better-than-average workers, 0 for those who thought it made no difference, and -1 for those who thought eligibles made poorer workers. For non participating firms who answered the question, the unweighted mean of this stigma index was $-.46^2$. The views of participating employers were less negative. Their unweighted mean on the stigma index was $-.17$. Weighting the participants by the number of subsidized hires significantly raised the average opinion of TJTC eligibles. When weighted by usage of TJTC, the mean of the stigma index was roughly zero ($-.05$ and $.04$ depending on whether before ERTA or after ERTA usage of TJTC serves as the weighting factor). There is a strong negative correlation between stigmatizing beliefs about eligibles and employer use of TJTC. No doubt these beliefs influence participation. But does participation also influence these beliefs? It is to this question we now turn.

Is TJTC Reducing Stigma?

Since most employers do not know when they have hired someone on welfare or from a disadvantaged background, they have no empirical basis upon which to reevaluate their prejudices about these workers, and so the prejudice is perpetuated. However, when a firm receives a tax credit for hiring a TJTC eligible, it learns which of its employees are in TJTC target groups.

As a result it gains an empirical basis for revising its opinions about target group members. When employers were asked to compare a specific TJTC eligible they hired to others hired for the same job, the TJTC eligibles were reported to be just as productive and often more so. This suggests that among those who use TJTC, prejudices against TJTC eligibles should diminish over time. While repeated measures of prejudice are not available to test this hypotheses, we do have repeated measures of TJTC utilization. The 1982 employer survey also contains data on the success of a TJTC eligible who was hired in 1980 or early 1981. The impact of success (or non success) with a previous TJTC eligible on later utilization of TJTC can therefore be examined.

This was done by reestimating the models in Table 1 with additional variables representing past use of TJTC and the success of past use of subsidy programs. The model predicting TJTC certification after September 1981 contains 3 additional variables: a dummy for TJTC participation in 1980, a dummy for TJTC participation in the first 9 months of 1981 and a continuous variable measuring the relative productivity of a subsidized worker who was hired in 1980 or the first nine months of 1981. The model predicting TJTC hiring between December and September 1981 contains two additional variables: a dummy for TJTC participation in 1980, and a continuous variable measuring the relative productivity of a TJTC eligible hired in 1980 or the first 3 months of 1981.

The coefficients on these additional variables are presented in table 2. Not surprisingly, participation in TJTC at one point in time is associated with greater TJTC hiring in later time periods. Having participated in 1980 quadrupled TJTC certifications in 1981 and doubled it in 1982. Certifying one or more TJTC eligible in the first 9 months of 1981 multiplies expected TJTC certifications after September 1981 by 6. The coefficients on Favorable Past Experience are positive as hypothesized and in 1982 statistically significant. The coefficient implies a modest response of TJTC use to successful past experience with a subsidized employee.³ Bishop (1985) found that TJTC eligibles in the retail and service sector were reported by their supervisor to be an average of 9 percent more productive in the third through twelfth week than unsubsidized workers doing the same job. A nine percent productivity

TABLE 2

THE EFFECT OF FAVORABLE PAST EXPERIENCE ON FUTURE USE OF TJTC

	<u>TJTC Certifications in</u>	
	<u>1981</u>	<u>1982</u>
Participated in TJTC in 1980	1.307*** (18.3)	.829*** (7.15)
Participated in TJTC in 1981	-----	1.777*** (14.0)
Favorable Past Experience (subsidized workers relative productivity)	.042 (1.49)	.028*** (2.85)

T statistics are in parenthesis under the coefficient. The variables reported in this table were added to the specification reported in Table 1.

advantage by an early TJTC hire is predicted by the equation to increase TJTC hiring by 29 percent in 1981 and 18 percent in 1982.

IV. Summary and Conclusions

In fiscal year 1985 the ratio of TJTC certified new hires to total private sector employment was only about 0.7 percent while unemployment was averaging 7 percent. Since many more people are unemployed at some point during the year than are unemployed at a point in time, it is clear that relative to the problem it is addressing, TJTC is of quite modest scale. At such a scale it clearly cannot end welfare dependency and structural unemployment. Limitations on eligibility and small budgets do not account for the modest scale of the program, for it is an entitlement and the pool of potential eligibles is quite large. The low rates of participation in TJTC by firms that hire unskilled workers appear to be a consequence of high nonpecuniary costs of participation. Models predicting which establishments choose to participate in TJTC offer considerable support for this view. The primary source of the high participation costs appears to be the complicated eligibility rules which make it difficult to identify and to recruit eligible disadvantaged workers and the stigma attached to being a member of TJTC's target groups.

These problems are not solved easily for they are inherent in a targeted employment subsidy. The very rationale of the program rests on its being targeted on hard to employ workers. Targeting, however, means that eligibility certification must be done by government agencies and that employers are likely to perceive those eligible for subsidy as less productive than other job applicants. This reduces participation. If less stigmatizing criteria were used to define target groups, eligibility would have to be broadened and the program's cost effectiveness would be reduced.

An important implication of this study is that the magnitude and structure of participation costs are critical to both the scale and effectiveness of tax subsidies designed to change firm behavior. A policy analysis based on a simulation of response based on standard income and substitution parameters of production and utility theory can be very misleading. Policy analysis needs to incorporate the administrative and

information costs involved in running and participating in the program into the simulations before accurate predictions of the scale and impact of tax subsidies can be made.

The nonpecuniary cost of active participation--consciously trying to recruit and hire additional disadvantaged workers--appears to be particularly high. This suggests that much of the participation that does occur is probably of the passive variety and thus does not contribute to the social goal of increasing job opportunities for the disadvantaged. Stigma is clearly an important reason why employers perceive the costs of active participation to be so high. Most employers say they have no plans to ask the employment service for referrals of TJTC eligibles when they "need to hire unskilled workers" in the future. When asked to explain why, employers cited the anticipated low quality or inappropriate skills of the people they expected would be referred. Together with the fact that the great majority of employers report that they screen for TJTC eligibility after making the hiring selection, these findings suggest that the cost effectiveness of TJTC is quite low.

It would appear that TJTC scores very poorly on a static cost effectiveness criterion. Does it do better from a more dynamic perspective? If as we speculated in section 4, it were inducing employers to upgrade their opinions of the productivity of people from targeted groups, the great cost of the program could be justified. No direct tests of this hypothesis were feasible in our data but an indirect test -whether positive experiences with a subsidized worker increases future use of TJTC -- did yield results consistent with the hypothesis. More evidence is needed on this issue.

Despite this possibility, it would appear that consideration should be given to reforming TJTC to increase its cost effectiveness. One simple but effective reform would be to make TJTC a marginal tax credit. To receive a tax credit in 1989, a firm would have to exceed the number of certifications it obtained in 1987 and only the excess of tax credit claims in 1989 over claims in 1987 would generate a tax credit. The cost of the program would decline but the incentive to increase TJTC hiring would remain. The 1987 tax credit claims would also serve as the threshold in later years. It should not be updated yearly to reflect the firm's most

recent use of the program because updating rules substantially reduce incentive effects and invite strategic behavior which consciously lowers the hiring of targeted labor in one year to enhance subsidy eligibility in later years (Bishop and Wilson 1982).

Another alternative would be to drop the employer subsidy approach altogether and subsidize instead the wages of unemployed disadvantaged individuals who find and keep a job (Lerman 1982). The employer would not know whether any of their employees were being subsidized so the stigma would not affect the employer response to the program. Two randomized experiments using this approach have found that offering job seekers a very modest reward for finding and keeping a job has substantial short and medium term effects on employment and earnings (Rivera-Casale, Friedman and Lerman 1982; Spiegelman and Woodbury 1987). There is no subsidy scheme that does not generate windfalls for someone. Probably the most important difference between a wage supplement and an employment subsidy is who receives the windfalls. In an employment subsidy, the employers of low wage workers receive the windfalls. In a wage rate supplement low wage disadvantaged workers receive any windfalls. They get nothing if they do not work. The windfall arises when individuals who would have worked in any case without the wage supplement get higher take home pay as a result of the supplement.

FOOTNOTES

1. Note that it has been implicitly assumed that the firm is constrained from firing all of the low skill workers currently employed and replacing them with subsidized new hires. Most firms are at least partly constrained from simply firing workers without apparent cause. This assumption is reasonable because the training costs for new workers often exceed the magnitude of the subsidy, and because there have been as yet no documented cases of experienced workers being fired to hire a subsidy-eligible worker.
2. Employers who had not participated in the program typically did not know which of their current employees are eligible for TJTC and may not even have known what makes a person eligible. Their opinions may more often reflect prejudice rather than actual experience. Although the employers who participated in the program typically had a chance to observe directly how well particular TJTC eligible employees did, subjective productivity measures are not very reliable so their opinion is probably some mixture of previous prejudices and recent experiences.
3. The relative productivity of the subsidized employee is the difference in reported productivity during the 3rd through 12th week between a specific randomly selected subsidized new hire and the typical new hire for that job. The scale on which productivity was reported ranged from zero for absolutely no productivity to 100 for the highest productivity ever achieved by a worker in the same job. CETA/JTPA-OJT workers were included among the subsidized workers because it was thought that positive (or negative) experiences with either program would color opinions of the other program. The mean of the productivity variable is 6.7. If we randomly select two of a firm's new hires for a particular position, the typical magnitude of the difference between the productivity of these two workers is 15 points. Since the favorable past experience variable is based on the experience with only one of possibly many TJTC hires, it is probably measured with a good deal of error. This should bias coefficients toward zero, so the long run impact of making successful placements of disadvantaged workers on future willingness to participate in TJTC is probably greater than that suggested by the results just reported.

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TABLE 1
DESCRIPTIVE STATISTICS FOR INDEPENDENT VARIABLE

Variable	Mean	Standard Deviation	Description
<u>Employment Size</u>			
Log establishment size	2.912	1.475	Number of employees plus one
Log firm/est. emp.	.490	1.188	Ratio of firm to establishment employment for multiestablishment firms.
<u>Composition of Work Force</u>			
Unionized	.103	.280	Collective bargaining coverage of nonsupervisory workers.
Proportion new hires	.233	.200	Ratio of new hires in 1979 to sum of Dec. 79 emp. and new hires in 1979.
Proportion under 25	.271	.256	Proportion work force under 25 in 1980.
Proportion craft	.162	.254	Proportion work force that are craft workers in 1979.
Proportion white-collar	.470	.360	Proportion white-collar in 1979.
Proportion managerial	.163	.204	Proportion managerial in 1979.
Proportion part-time	.179	.274	Proportion part-time in 1979.
<u>Personnel Policies</u>			
Has personnel office	.115	.319	Dummy for respondent worked in the personnel office.
Log length probationary period	2.806	1.242	Number of weeks in probationary period.
No probationary period	.241	.428	Dummy for no probationary period.
Layoff based on seniority	.410	.271	If there had to be permanent/temporary layoff of one-third of staff would it be based on seniority or productivity from one to zero.
<u>Other Firm Characteristics</u>			
Log cost of machinery	1.699	1.492	Cost of the most expensive machinery the new hire will work with if purchased today.
Log weeks to be fully trained	1.844	1.283	Weeks for a new employee to become fully trained and qualified if he/she has no previous experience.
Member of business organizations	.510	.500	Firms or respondent a member of a local business organization.
Avoids dealing with bureaucrats	.659	.315	Responses to "as much as possible I try to avoid having to bureaucrats" scaled from one to zero.
Profitable last year	.535	.310	Responses to "from a profit point of view, was 1981 a very good year, not a good year, or a year of losses?" scaled from one to zero.

APPENDIX

The Poisson Specification

The first derivative of the likelihood is given by

$$\frac{\partial L}{\partial B} = \sum_{i=1}^N (-X_i \exp(X_i B) + N_i X_i),$$

and the Hessian is

$$\frac{\partial^2 L}{\partial B \partial B} = - \sum_{i=1}^N X_i X_i' \exp(X_i B).$$

The log likelihood is globally concave in B and so standard nonlinear maximization routines yield the MLE of B . Under the Poisson specification, the expected value of the variance is given by m_i . Therefore, a unit increase in the explanatory variable will influence both the expected values and the variance of the outcomes. So b_j represents relative increase in the mean and the variance of the outcome in response to the unit change in the right hand side variable X_{ij} .

Another measure of the impact of the change in firm characteristics is the change in the probability of participation. In particular, since 90 percent of the firms do not hire any TJTC workers, it is useful to obtain the change in the probability of hiring TJTC eligibles. The change in probability is obtained by differentiating the probability of not hiring any TJTC worker ($\text{Pr}(0)$) by X and then taking its negative value. The formula is given by the following:

$$\frac{\partial \text{Pr}(\text{Participation})}{\partial X_{ij}} = \text{Pr}(0) m_i b_j = \Delta P_i b_j$$

where $\Delta P_i = \text{Pr}(0) m_i = m_i / \exp(m_i)$

Since ΔP_i is a function of m_i only, for each value of the probability

of no participation, the corresponding value of ΔP_i can be obtained.

The next table shows the values of ΔP_i corresponding to various levels of $\Pr(O)$:

Change in Probability of Participation	
Pr(no participation)	ΔP_i
0.95	0.049
0.90	0.095
0.80	0.179
0.70	0.250
0.60	0.306
0.50	0.347

The marginal effect of the 'j'th characteristic on the probability of participation is obtained by multiplying ΔP_i by b_j .