DOCUMENT RESUME

ED 297 156 CE 050 673

AUTHOR Hollenbeck, Kevin
TITLE The Aggregate Employment Effects of TJTC. Task 5 Final Report. Revised.
INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.
SPONS AGENCY Employment and Training Administration (DOL), Washington, D.C.; Macro Systems, Inc., Silver Spring, Md.
PUB DATE Aug 86
CONTRACT 99-4-576-77-091-01
NOTE 75p.; For related documents, see ED 268 381 and CE 050 671-672.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Case Studies; Disabilities; *Disadvantaged; *Dislocated Workers; Economically Disadvantaged; Eligibility; Employer Attitudes; *Employment Patterns; *Employment Practices; *Federal Legislation; Personnel Selection; Program Improvement; Salary Wage Differentials; *Tax Credits; Veterans; Welfare Recipients
IDENTIFIERS *Targeted Jobs Tax Credit

ABSTRACT

A study examined the effects of the Targeted Jobs Tax Credit (TJTC) on employment patterns among those eligible for and those ineligible for TJTC. The rate at which TJTC-eligible persons penetrated the labor market and the resultant displacement of persons not eligible were examined in terms of TJTC-related variables, personal characteristics, and state employment characteristics. It was discovered that although TJTC eligibility helped eligible youth find employment during the TJTC's initial years, this advantage has since vanished. The TJTC vouchering of disadvantaged youth did not appear to result in any labor market displacement of nondisadvantaged youth. In fact, the TJTC appeared to have the effect of creating jobs. The overall job creation effects of TJTC range from 200,000 to 300,000 additional jobs. However, most of the additional employment accrued to those not eligible. The vouchering employment creation effect among noneligible persons occurred for females, whereas the employment enhancement that occurs for eligible persons due to certification was stronger for males. (MN)

THE AGGREGATE EMPLOYMENT EFFECTS OF TJTC

Task 5 Final Report

by

Kevin Hollenbeck

Revised August 1986

The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

FUNDING INFORMATION

Project Title:	Impact Study of the Targeted Jobs Tax Credit (TJTC)	
Subcontract Number:	TJTC-Sub-OSURF-9/1/84	
Project Number:	716696	
Source of Contract:	Prime Contract	Subcontract
	Employment and Training Administration U.S. Department of Labor 601 D St., N.W. Washington, D.C. 20013 Contract No. 99-4-576-77-091-01	Macro Systems, Inc. Suite 300 8630 Fenton Street Silver Spring, MD 20910
Project Officer:	Robert Crosslin	
Subcontractor:	The National Center for Research in Vocational Education The Ohio State University Columbus, Ohio 43210-1090	
Executive Director:	Robert E. Taylor	
Disclaimer:	The research reported herein was performed pursuant to a contract from the U.S. Department of Labor. The opinions and conclusions expressed herein are solely those of the authors and should not be construed as representing the opinions or policy of any agency of the United States Government.	
Discrimination Prohibited:	Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance." Therefore, the National Center for Research in Vocational Education, like every program or activity receiving financial assistance from the U.S. Department of Labor must be operated in compliance with these laws.	

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF EXHIBITS--CONTINUED

LIST OF FIGURES

I. INTRODUCTION

I. INTRODUCTION

To introduce this study and acquaint the reader with its purpose, we provide the following heuristic. Consider the labor force in a given period as a queue of individuals rank-ordered by potential productivity. The first individual in line has the greatest potential productivity; the next has the second highest potential productivity; and so forth. Employers will fill a certain number of openings in that period and so they hire workers according to their position in the queue.

When all the openings are filled, we can imagine a line is drawn and the individuals behind that line remain unemployed. Policymakers (and labor economists) have noted that the individuals who tend to remain behind the line tend to belong to certain disadvantaged groups of the population and often require public income support. Policymakers instituted the Targeted Jobs Tax Credit (TJTC) to attempt to influence the way employers choose workers from the queue so that more members of the disadvantaged groups would be employed. In fact, the policymakers divided the labor force queue into two queues--eligible workers and ineligible workers. We depict this transformation in figure 1.

In figure 1, the employment rate of the labor force is AB/AC and the unemployment rate is BC/AC. The employment rate of the targeted groups is A'B'/A'C' (unemployment is B'C'/A'C') and the employment rate of all workers ineligible for TJTC is A"B"/A"C". Clearly our employment policy goal should be to push the dividing line B as far leftward as possible.[1] Without TJTC, the unemployment rate of the TJTC eligible labor force (B'C'/A'C') would

[1]Actually, we want B to move toward the point where unemployment is a minimum without accelerating inflation. This is called the non-accelerating inflation rate of unemployment (NAIRU) (see Baily and Tobin 1977). See also our Employer Analysis report (Bishop and Hollenbeck 1986).

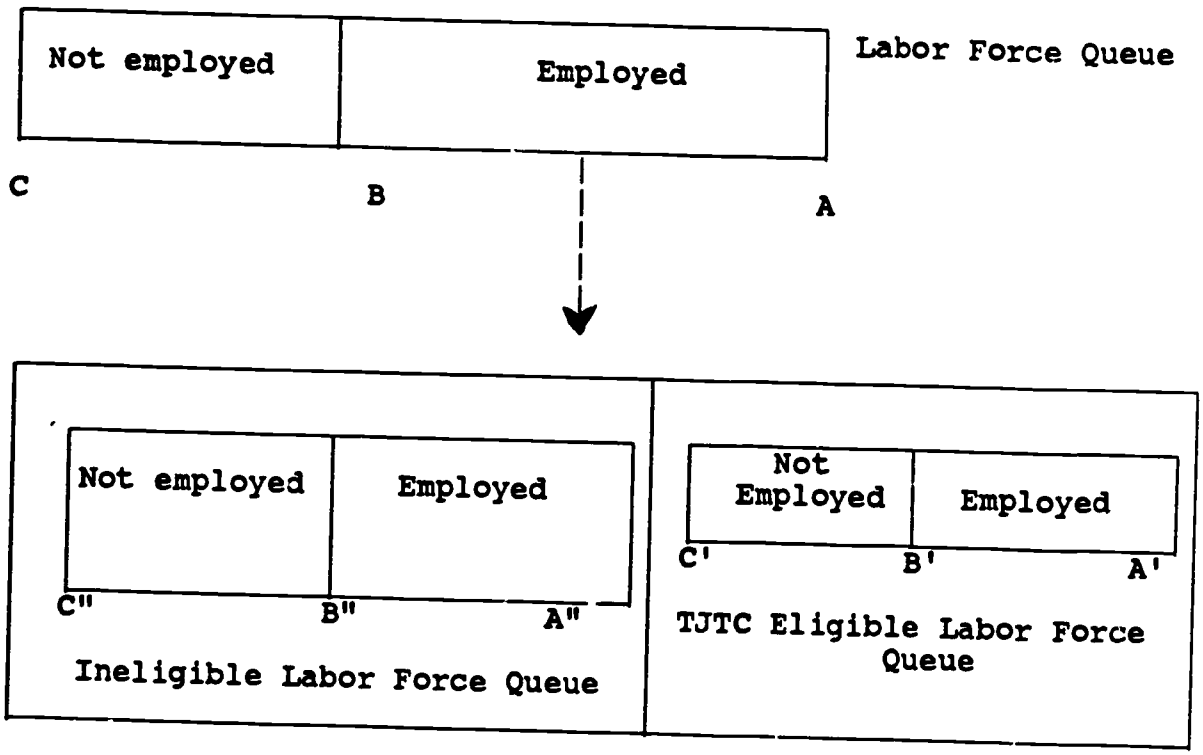

Figure 1. TJTC division of the labor force queue

be quite high. TJTC undoubtedly pushes B' to the left and fewer eligible workers will be unemployed.[2,3] But what effect does TJTC have on B"?

A priori, the answer is unclear. If employers simply hire TJTC eligible workers instead of equally or better qualified ineligible workers, then B" will move to the right and substitution occurs. TJTC eligible workers are being substituted for ineligible workers.[4] However, because labor costs are subsidized, employers may expand employment and hire additional TJTC eligible and ineligible workers (after all, the ineligible workers who were displaced by the TJTC certified workers were more productive by assumption). Furthermore, the ineligible workers displaced by TJTC eligibles may reduce their asking wages and be hired by employers not using the program. Thus as shown in figure 2, there is a direct substitution effect of the program causing B' to move leftward and B" rightward (all other things equal) but there may also be an indirect employment effect which will presumably push B' further leftward and will exert a leftward push on B". Ultimately, both B' and B" may move to the left, i.e., TJTC may cause employment expansion for both eligible and ineligible workers.

---

[2]It is not a foregone conclusion that B' will move to the left with the advent of TJTC. First of all, employers may not alter their hiring decisions, but rather, simply receive a subsidy for hiring individuals they would have hired anyway (B' would remain the same). Second, TJTC may stigmatize workers and make it more difficult for them to find employment (B' would move rightward). Our analysis of employer behavior (Bishop and Hollenbeck 1985) suggests that neither of these scenarios occur, but rather some workers do become employed who would not have, absent the program.

[3]A rigorous analysis of the earnings and employment impact of TJTC on target group members is being undertaken in another task.

[4]It is conceivable that eligible and ineligible workers are complementary factors of production and not substitutes. For example, eligible workers may require more training and supervision, which may be provided by ineligible workers.

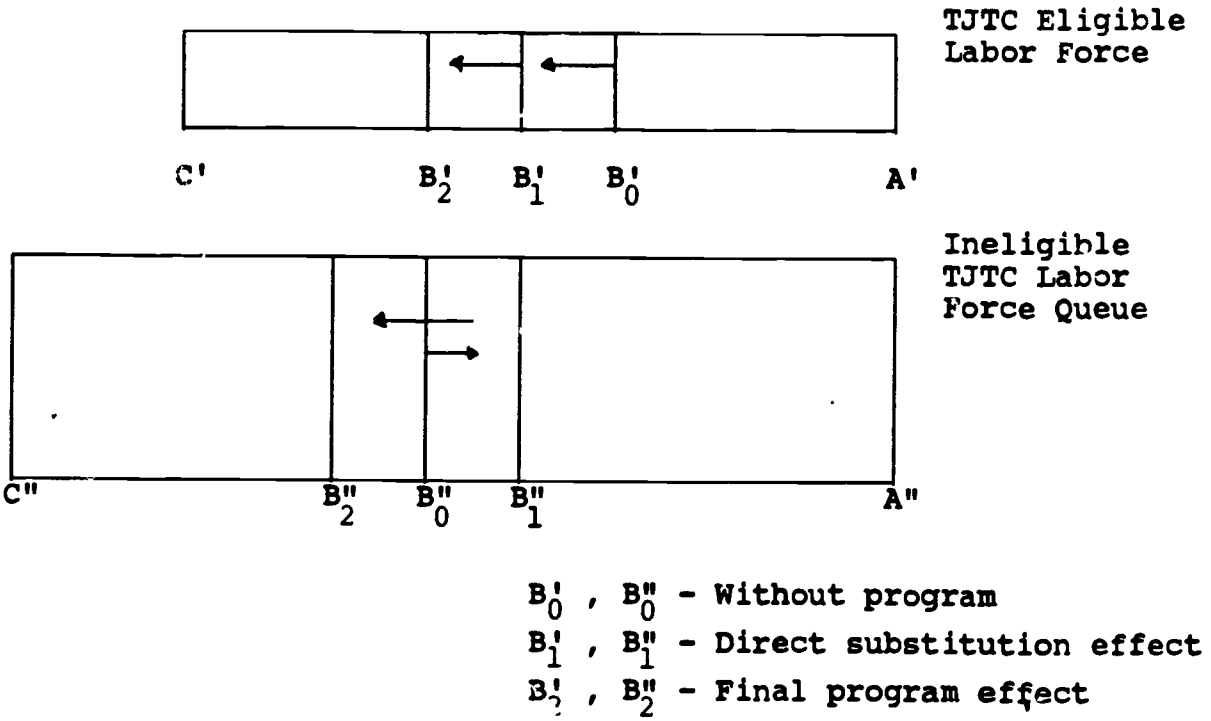

Figure 2. Direct and indirect employment effect of TJTC

To our knowledge, Christensen (1984) is the only study that attempts to estimate the substitution and indirect employment impacts of TJTC. She found, that among disadvantaged youth, there is evidence of a positive indirect employment effect and among other youth (ineligible), the indirect employment is essentially null. The data which Christensen examined were collected in March 1983 and she looked at two employment outcomes--(2) employed at the time of data collection in 1983 and (2) employed at all during the prior calendar year (1982).

The current study replicates the Christensen study using data from March 1984 but, in addition, it uses a model that is more robust. By pooling data from the earliest years of TJTC with the 1984 data, we are able to estimate program and indirect effects that more carefully control for business cycle or aggregate demand influences. Our methodology is described in the next section of this report. The analyses undertaken hinge, importantly on variables we have called TJTC penetration rates; so in Chapter 3 we document how those rates were constructed. Chapter 4 presents the results of our analysis and the final chapter draws conclusions for policymakers.

II. METHODOLOGY

II. METHODOLOGY

The strategy used by Christensen (1984) and replicated here to estimate the substitution and indirect program effects is to regress various employment outcomes of individuals on indicators of TJTC activity in the state where the individuals reside while statistically controlling for individual characteristics, state economic/unemployment measures, and state Job Service activity. If the TJTC indicators are (conditionally) correlated with the likelihood of employment or hours worked or other employment outcomes, then we assume that TJTC was the cause and the coefficient can be translated into an estimate of substitution.

The general theoretical model used in this study may be written as follows:

$$(1) \quad Y_{jkt} = f(X_{jt}, EMP_{kt}, TJTC_{jkt})$$

where,

- Y_{jkt} = employment outcome for individual j who resides in state k in time period t (e.g., employed or not, unemployed or not, employed in private sector or not, hours worked/week, wage rate, etc.)
- X_{jt} = vector of socioeconomic characteristics thought to influence employment of individual j in time period t (e.g., family income, family status, age, race, sex, education, etc.)
- EMP_{kt} = vector of aggregate economic variables thought to influence employment in state k in time period t (e.g., average wage rates, employment growth, CETA/JTPA funding, Job Service activity, etc.)
- $TTJC_{jkt}$ = TJTC status of individual j in state k in time period t

The model may be thought of as a standard equilibration of labor demand and supply with TJTC influencing the effective wage offered in the demand model. The X_{jt} variables generally

influence supply, while EMP_{kt} influences demand. TJTC is indexed by individual because of the targeted eligibility--some groups are eligible, others are not. It is indexed by state because different states administer the program differently. Some states voucher individuals sparingly, perhaps only on employer request. Others attempt to voucher a significant number of the eligible individuals who encounter the system.

We will attempt to use two strategies for estimating (1). The first strategy will be to use pooled cross-sectional data and include fixed time period and state of residence effects:

$$(2)\ Y_{jkt} = a_0 + a_1X_{jt} + a_2EMP_{kt} + a_3\ (PEN1_{kt}*MEMB_{jt}) + a_4(PEN1^2_{kt} * MEMB_{jt}) + a_5\ MEMB_{jt} + a_6\ PEN1_{kt} + a_7(PEN2_{kt} * MEMB_{jt}) + a_8\ PEN2_{kt} + a_9\ DISADV_{jt} + a_{10}DSTATE_k + a_{11}t + e_{jkt}$$

where,

Y_{jkt}, X_{jt}, EMP_{kt} = defined above

$PEN1_{kt}$, $PEN2_{kt}$ = TJTC penetration rates in state k in time period t; PEN1 measures the "target effectiveness" of vouchering (ratio of vouchers to eligibles) while PEN2 measures the penetration of TJTC certifications into the low wage labor market

$MEMB_{jt}$ = dummy variable set to 1 if individual j is a member of a target group in time t; 0 otherwise

$DISADV_{jt}$ = dummy variable set to 1 if individual j is economically disadvantaged in time t; 0 otherwise.

$DSTATE_k$ = dummy variable unique to each state with values ranging from 0 to 50

e_{jkt} = random error term

a_i, i=0,. . . ,11 = coefficient vectors.

When the dependent variable is "employed/not employed", then the coefficients represent the marginal effect of the variable on the likelihood of employment. The coefficients on the TJTC penetration rates thus represent the effect that that program has

on the likelihood of employment. The TJTC penetration rates roughly measure the intensity of use/outreach by a state and so if TJTC is effective in stimulating employment, we expect a positive correlation between employment likelihood and penetration rates. Specifically a_3 and a_4 represent the effect of vouchering. The intent of the program is to improve the job finding likelihood for target group members, but we suggest that there may be decreasing returns to vouchering (the larger the share of individuals encountering the ES that are vouchered, the less likely the probability of employment). In other words, we hypothesize that for all target groups analyzed, a_3 will be positive and a_4 will be negative. The coefficient a_5 might be interpreted as the eligibility effect of TJTC and will be positive if TJTC has typically altered employer behavior to favor job seekers who may be eligible for TJTC, irrespective of whether they have a voucher. On the other hand, it may be negative if the existence of TJTC is stigmatizing. We have no priors on a_6 since it may be positive or negative depending on whether vouchering displaces noneligibles or creates employment.

The coefficient on the certification penetration rate interacted with target group membership a_7, represents a certification effect for target group members, while a_8 represents a displacement effect. Our hypothesis is that a_7 will be positive, while a_8 may be positive or negative.

From the empirical observation that disadvantaged groups tend to have employment difficulty vis-a-vis other members of the labor force, our expectation is that the a_9 coefficients will be negative. The theoretical reason for this expectation lies in a likely statistical association between target group membership and lower achievement in education, and less prior work experience, or perhaps in discrimination or the part of employers (all factors that are not controlled in the X_{jt} vector). The state level variables included in the model, EMP_{kt}, capture local

labor market characteristics--wage rate, unemployment rate, rate of growth of employment, JTPA/CETA program activity, and employment service activity. Except for the unemployment rate, all of these variables (lagged) are theorized to have a positive effect on employment likelihood.[5] Unemployment rates should be negatively related to employment likelihood.

We do not expect state level variables mentioned above to completely capture the influence of local characteristics on individuals' labor market outcomes. Unmeasured local labor market characteristics (e.g., effective community based organizations or affirmative action programs) should influence individual workers' labor market outcomes, and may quite well be correlated with TJTC use and employment opportunities for disadvantaged youth. In order to control for unobservable state specific effects, state dummies, $DSTATE_k$, are introduced in the model. State specific effects are assumed to be constant over time but vary across states.[6] The advantage of introducing state and time dummies is that they can absorb possible correlations between observed explanatory variables and unobserved variables and the resulting coefficient estimates will be consistent. The data obtained from the observation periods will be pooled and the common slope coefficients $a_1,\ldots,a_{11}$ will be obtained.

In model (2), it is assumed that the TJTC effects (a_3, a_4, a_5, a_7) and the marginal indirect employment effect (a_6 and a_8) do not change over time. This assumption, however, may not be

---

[5]The JTPA/CETA program activity variable will be measured by fund allocations which are, of course, dependent on the unemployment rate. This confounds the interpretation of the coefficient because part of the CETA/JTPA effect should be attributed to the unemployment rate (lagged 2 periods.)

[6]See Maddala (1981) and Mundlak (1961, 1978) for discussions of this type of model.

true and is subject to empirical testing. Our alternative estimation approach is to assume that these effects are different between 1979 and 1984. This assumption may be justified by the following fact: in 1979 the program had just started, half of all certifications were of cooperative education students, and two-thirds of the remaining certifications were retrospective.

The alternative model is written as follows:

$$(3)\quad Y_{jkt} = a_{0t} + a_{1t}X_{jkt} + a_{2t}EMP_{kt} + a_{3t}(PEN1_{kt}*MEMB_{jt}) + a_{4t}(PEN1^2_{kt}*MEMB_{jt}) + a_{5t}MEMB_{jt} + a_{6t}PEN1_{kt} + a_{7t}(PEN2_t*MEMB_{jt}) + a_{8t}PEN2_{kt} + a_{9t}DISADV_{jt} + a_{10t}DSTATE_k + e_{jkt}$$

Note that the coefficients for the TJTC effects and the indirect employment effects now have subscripts for time periods. If these coefficient estimates are significantly different over time; we have evidence that the marginal effects of TJTC have changed.

In summary, for purposes of this paper, we can use equations (2) or (3) for three purposes. First of all, we want to test hypotheses about the coefficients on the TJTC-related variables. In particular, our hypotheses are as follows:

- $a_3 > 0$
- $a_4 < 0$
- $a_5 \gtrless 0$
- $a_6 \gtrless 0$
- $a_7 > 0$
- $a_8 \gtrless 0$
- $a_9 < 0$

A second type of analysis is to accept the point estimates and calculate the difference in predicted outcomes for eligibles at the mean penetration rates from zero penetration and the same difference for noneligibles. These two calculations might be entitled <u>program effects</u> (the assumption is that the X_{jt}, EMP_{kt},

and disadvantagedness dummy appropriately control for selection). These two program effects may be represented as follows:

Eligibles

(4) $$\hat{Y}\Big|_{\substack{\overline{X},\overline{EMP}\\ \overline{PEN1},\overline{PEN2}}} - \hat{Y}\Big|_{\substack{\overline{X},\overline{EMP}\\ PEN1=PEN2=0}}$$

$$= (a_3 + a_6)\overline{PEN1} + a_4\,\overline{PEN1}^2 + (a_7 + a_8)\overline{PEN2}$$

Noneligibles

(5) $$\hat{Y}\Big|_{\substack{\overline{X},\overline{EMP}\\ \overline{PEN1},\ \overline{PEN2}}} - \hat{Y}\Big|_{\substack{\overline{X},\overline{EMP}\\ PEN1=PEN2=0}}$$

$$= a_6\overline{PEN1} + a_8\overline{PEN2}$$

Finally, we can use equation (2) to estimate the total magnitude of jobs created and employment displacement in the population by integrating the total differential of (2) with respect to PEN1 from 0 to its mean and multiplying by the total population. That integral is as follows:

$$(6)\quad \int_0^{\overline{PEN1}} \frac{\partial Y}{\partial \overline{PEN1}}\, dY\ POP = \int_0^{\overline{PEN1}} (a_3 MEMB + 2a_4 MEMB*PEN1 + a_6 +$$

$$a_7 kMEM3 + a_8 k)\ dPEN1 * POP$$

$$= [(a_3\ S_m + a_6 + a_7 k\ S_m + a_8\ k)\ \overline{PEN1} + a_4\ S_m\ \overline{PEN1}\ ] * POP$$

where Sm= share of total population that are target group members

$k = \frac{\partial PEN2}{\partial PEN1}$, a constant equal to $\overline{PEN2}/\overline{PEN1}$, by assumption

In the next chapter, we examine the construction of the penetration rate variables and then chapter IV provides the estimated program effects and net employment generation.

III. PENETRATION RATES

III. PENETRATION RATES

As described in the previous chapter, key assumptions underlying the analyses are that TJTC penetration rates could be constructed accurately and could reflect the influence of the program on employment outcomes. The purpose of this chapter is to document the development of the penetration rates and to present a correlational analysis which indicates how alternative penetration rate constructs relate to each other. Alternative empirical definitions of the penetration rate can be defended; but if the various alternatives are highly correlated, then the estimate of the effects of TJTC on aggregate employment outcomes will be robust. If little correlation holds, then the employment impact estimates must be subjected to sensitivity analyses.

1. CONSTRUCTION OF PENETRATION RATES

Two types of penetration rates were developed. First of all, a target effectiveness-type statistic estimating the proportion of eligible individuals actually served by the program was constructed. The numerator of this proportion could be a count of vouchers or certifications while the denominator would be a count of eligibles. The ratio of vouchers to eligibles measures TJTC client outreach of the Employment Service (ES) and other vouchering agencies and the extent to which these entities issue vouchers to their clients. The ratio of certifications to eligibles is determined by the vouchering ratio, the rate in which vouchered individuals find employment, and propensity of firms to have the vouchered individuals they hire actually certified.

Under current law,[7] employers could claim a tax credit for wages paid to new hires from any of the following nine target groups:

[7]Up until December 31, 1985.

- Economically disadvantaged students age 16 to 19 who are in cooperative education programs;
- Economically disadvantaged youth age 18 to 24;
- Ex-convicts who are economically disadvantaged;
- Vietnam-era veterans who are economically disadvantaged;
- Handicapped persons referred from vocational rehabilitation programs;
- Recipients of general assistance payments;
- Recipients of supplemental security income;
- Participants in the Work Incentive (WIN) program and other recipients of Aid to Families with Dependent Children (AFDC);
- Economically disadvantaged students age 16 or 17 newly hired for employment during any 90-day period between May 1 and September 15.

Note that only 5 of the target groups require the criterion of being economically disadvantaged in determining eligibility. However, three of the other four target groups use recipiency of an income-tested income maintenance benefit as a criterion. Thus, only the handicapped target group may be classified as non-income-tested.

For the economically disadvantaged groups, the definition used is that family income during the preceding six months (times 2) must be less than 70 percent of the "lower living standard" based on the lower family budget compiled by the Bureau of Labor Statistics. These standards vary by state and rural/urban residence and have not been revised since 1981.

Using an algorithm supplied to us by Christensen, we estimated the eligible population for the youth target group, the economically disadvantaged Vietnam-era veterans, and AFDC recipients by state using the March Income Supplement to the Current Population Survey for 1979, 1980, and 1984. For the latter year, data on vouchers and certifications by target group by state were

available from the U.S. Employment Service Office of Planning and Review. In Exhibits III-1 to III-3, the 1983 penetration rates for economically disadvantaged youth and Vietnam-era vets and AFDC recipients are presented using both vouchers and certifications as numerators.

Considerable variation across states in these penetration rates can be observed in the three tables. Nationally, the penetration rates for the youth target group, using vouchers, averaged about 9.7%. Examining individual states, it is observed that the lowest rates were approximately 3% in Colorado and Pennsylvania while the highest rates were around 30% in Maine, North Dakota, and Maryland. Few generalizations can be made between state characteristics and the voucher penetration rate. The variation across Census divisions was modest, the ratio ranged from .0734 to .1426. The Western divisions tended to be lower than the rest of the country. The ratio of the penetration rate using certifications to the penetration rate using vouchers is identical to the certification rate, i.e., the share of vouchers that result in a certification. As shown in Exhibit III-1, the national certification rate for youth target group is 47.5%. But across the states, that percentage ranges from about 30% in Vermont, Indiana, and Ohio to almost 90% in Mississippi and Colorado.

Exhibit III-2 arrays the penetration rate data for disadvantaged Vietnam-era veterans. As a group, this population is less than a tenth the size of the youth target group. However, the TJTC outreach to these individuals seem g. eater. The average

EXHIBIT III-1(1)

Employment and Training Administration

ESTIMATED ELIGIBLES, PROGRAM DATA ON VOUCHERS AND CERTIFICATIONS, AND ESTIMATED 1983 PENETRATION RATES FOR THE YOUTH TARGET GROUP

(1) State	(2) 1978 Eligibles	(3) 1979 Eligibles	(4) 1983 Eligibles	(5) 1983 Vouchers[b]	(6) 1983 Certifications[b]	1983 Penetration Rates (5):(4)	(6):(4)
ME	22,196	24,974	18,118	5,387	1,863	.2962	.1028
NH	10,171	10,672	9,956	1,515	814	.1522	.0817
VT	14,283	10,285	13,783	3,026	827	.2195	.0600
MA	118,726	98,325	85,868	12,055	6,848	.1407	.0799
RI	11,972	8,837	29,362	1,579	746	.0538	.0254
CT	35,867	17,108	54,772	2,571	1,171	.0469	.0214
NY	355,988	389,281	445,604	51,559	21,023	.1157	.0472
NJ	120,662	123,576	130,033	10,651	5,595	.0819	.0430
PA	233,499	185,029	289,131	8,947	4,771	.0309	.0165
OH	138,497	174,109	279,306	18,168	6,245	.0650	.0224
IN	103,444	75,845	135,032	22,017	6,707	.1631	.0497
IL	151,118	207,790	273,839	27,399	11,565	.1001	.0422
MI	122,946	168,979	255,841	19,829	8,241	.0787	.0322
WI	62,340	77,163	106,899	14,103	5,389	.1319	.0504
MN	64,730	77,991	78,354	9,009	5,446	.1150	.0695
IA	52,206	41,581	80,858	8,308	3,543	.1027	.0438
MO	119,354	92,479	137,497	25,153	8,859	.1829	.0630
ND	8,973	11,519	9,149	2,614	1,021	.2857	.1116
SD	15,820	18,071	17,357	3,511	1,551	.2023	.0894
NE	22,782	25,800	40,840	3,579	1,307	.0876	.0320
KS	43,871	38,781	46,029	6,315	2,849	.1372	.0576
DE	6,343	5,583	13,092	721	350	.0551	.0267
MD	61,225	80,749	43,072	14,000	5,648	.3250	.1311
DC	23,378	20,446	30,304	2,996	1,198	.0989	.0395
VA	94,905	78,379	118,245	15,237	6,562	.1289	.0555
WV	28,546	30,509	85,881	4,115	1,442	.0625	.0219
NC	126,063	121,981	174,882	17,818	8,407	.1019	.0481
SC	74,981	74,439	95,134	8,785	4,606	.0923	.0484
GA	129,513	102,588	186,409	20,643	11,017	.1107	.0591
FL	147,382	177,497	163,996	36,538	18,063	.2228	.1101
KY	42,569	41,536	110,198	15,536	5,633	.1410	.0511
TN	103,131	77,940	124,017	9,865	5,914	.0795	.0477
AL	99,961	110,892	134,500	11,015	5,954	.0819	.0443
MS	69,082	47,175	91,843	5,904	5,062	.0643	.0551
AR	56,831	46,042	81,401	10,988	3,635	.1347	.0447
LA	62,389	127,289	159,288	16,992	11,846	.1067	.0744
OK	48,670	60,885	88,732	4,763	2,397	.0537	.0270
TX	236,341	347,797	333,740	28,380	15,681	.0850	.0470
MT	11,576	19,573	34,185	1,828	965	.0534	.0282
ID	14,310	20,048	32,218	3,785	1,409	.1176	.0437
WY	4,603	10,472	12,810	703	370	.0557	.0283
CO	59,120	33,136	72,952	2,026	1,868	.0278	.0256
NM	28,173	35,211	77,233	5,152	2,088	.0667	.0270
AZ	46,188	59,723	82,019	7,198	3,597	.1161	.0580
UT	31,239	21,048	47,918	4,024	2,047	.0840	.0427
NV	18,350	13,514	20,862	1,730	981	.0829	.0470

EXHIBIT III-1(2)

(1) State	(2) 1978 Eligibles	(3) 1979 Eligibles	(4) 1983 Eligibles	(5) 1983 Vouchers[b]	(6) 1983 Certifications[b]	1983 Penetration Rates (5):(4)	(6):(4)
WA	74,047	73,949	95,852	13,904	6,915	.1454	.0723
OR	49,242	43,967	71,527	11,957	5,128	.1672	.0717
CA	520,596	530,902	684,737	38,398	22,201	.0561	.0324
AK	13,063	12,454	19,314	1,934	1,196	.1001	.0619
HA	22,910	17,495	34,507	1,373	618	.0398	.0179
TOTAL	4,118,147	4,324,202	5,817,859	564,735	268,579	.0971	.0462

[a]Calender year basis. Weighted estimate from succeeding year's March Income Supplement to the Current Population Survey using algorithm supplied by the Congressional Budget Office. Does not include cooperative education students.
[b]Calender year basis. Interpolated from program data supplied by the U.S. Department of Labor.

EXHIBIT III-2(1)

Employment and Training Administration

ESTIMATED ELIGIBLES, PROGRAM DATA ON VOUCHERS AND CERTIFICATIONS, AND ESTIMATED PENETRATION RATES FOR THE VIETNAM-ERA VETERANS TARGET GROUP

(1) State	(2) 1978 Eligibles[a]	(3) 1979 Eligibles[a]	(4) 1983 Eligibles[a]	(5) 1983 Vouchers[b]	(6) 1983 Certification[b]	Penetration Rates[c]	
						Vouchers[d]	Certs.[e]
ME	2,986	3,835	3,848	777	208	.2185	.0585
NH	1,219	545	1,025	196	59	.2108	.0635
VT	1,815	226	327	460	112	.5818	.1419
MA	12,103	13,631	2,838	1,676	571	.1760	.0600
RI	2,545	811	748	173	72	.1365	.0527
CT	4,786	749	1,499	346	100	.1476	.0426
NY	24,783	28,010	31,213	6,921	1,460	.2472	.0521
NJ	7,250	5,235	1,926	1,024	375	.2132	.0781
PA	26,608	19,412	25,842	1,508	608	.0624	.0253
OH	19,562	16,294	21,699	3,626	774	.1890	.0403
IN	4,788	15,866	20,222	4,983	989	.3657	.0726
IL	17,012	12,687	13,280	3,270	1,046	.2283	.0730
MI	24,126	22,186	32,270	3,460	1,067	.1321	.0407
WI	2,944	4,802	11,836	3,235	720	.5033	.1120
MN	10,437	8,786	15,210	1,333	532	.1161	.0464
IA	8,484	3,774	4,735	1,442	372	.2546	.0657
MO	7,041	7,935	5,289	3,478	1,011	.5149	.1497
ND	512	1,212	529	451	105	.6005	.1398
SD	2,255	3,566	2,372	546	163	.1999	.0597
NE	4,816	3,401	2,235	607	132	.1742	.0379
KS	5,455	3,531	8,060	933	287	.1551	.0477
DE	2,351	0	1,[illegible]2	85	29	0470	.0209
MD	4,816	8,687	2,128	2,016	550	.3637	.0992
DC	2,162	347	1,056	149	31	.254	.0261
VA	3,475	12,047	7,866	1,386	443	.767	.0573
WV	3,411	6,954	6,704	1,542	178	.2710	.0313
NC	1,628	9,164	5,266	2,090	779	.3405	.1455
SC	7,676	4,845	4,273	751	363	.1342	.0648
GA	13,787	6,122	4,835	2,275	784	.2758	.0451
FL	16,387	7,439	8,038	3,436	1,330	.3452	.1336
KY	6,886	1,005	3,578	2,123	549	.5553	.1436
TN	10,221	14,315	8,369	915	445	.0810	.0394
AL	5,286	11,602	7,000	1,091	505	.1370	.0634
MS	4,247	4,427	2,726	317	260	.0834	.0684
AR	4,582	4,530	4,420	1,207	362	.2676	.0803
LA	4,321	4,588	3,937	920	784	.2149	.1784
OK	1,290	1,478	7,571	601	199	.1744	.0577
TX	18,612	27,422	18,388	2,035	903	.1063	.0473
MT	1,287	3,187	2,816	257	113	.1058	.0465
ID	1,062	3,063	850	851	218	.5031	.1285
WY	785	639	1,385	81	46	.0472	.0491
CO	12,413	6,955	6,348	327	257	.0381	.0300
NM	5,714	3,065	4,180	586	168	.1357	.0389
AZ	4,036	5,456	8,569	920	314	.1448	.0494
UT	2,829	3,258	4,574	694	188	.1990	.0568
NV	1,845	811	1,040	340	116	.2760	.0942

WA	7,386	10,385	13,863	3,080	961	.2939	.0917
OR	13,637	9,762	9,423	3,351	1,032	.3063	.0943
CA	40,998	31,014	34,040	4,379	1,675	.1239	.0530
AK	2,527	3,132	1,61[illegible]	325	151	.1223	.0568
HA	2,001	1,266	1,590	212	55	.1309	.0340
TOTAL	399,985	384,859	387,951	78,757	24,735	.2014	.0633

[a]Calender year basis. Weighted estimates from succeeding year's March Income Supplement to the Current Population Survey. These counts are derived from small samples and should be treated as if they have very large standard errors.

[b]Calender year basis. Interpolated from program data.

[c]Because of large standard errors in estimates of eligibles, more stable estimates were derived by using the average eligible estimate.

[d](5)=1/3[(2)+(3)+(4)]

[e](6)=1/3[(2)+(3)+(4)]

EXHIBIT III-3(1)

Employment and Training Administration

ESTIMATED ELIGIBLES, PROGRAM DATA ON VOUCHERS AND CERTIFICATIONS, AND ESTIMATED 1983 PENETRATION RATES FOR THE AFDC TARGET GROUP

(1) State	(2) 1978 Eligibles[a]	(3) 1979 Eligibles[a]	(4) 1983 Eligibles[a]	(5) 1983 Vouchers[b]	(6) 1983 Certifications[b]	1983 Penetration Rates (5)÷(4)	(6)÷(4)
ME	17,177	17,498	17,217	1,36[illegible]	404	.0793	.0235
NH	5,379	4,200	5,854	472	222	.0793	.0373
VT	8,298	7,562	7,677	5,355	472	.6975	.0615
MA	95,484	120,955	83,957	8,220	2,109	.0978	.0332
RI	16,326	16,822	20,813	0	0	0	0
CT	41,734	26,583	35,816	3,407	507	.0951	.0142
NY	343,430	369,043	377,467	30,872	4,533	.0818	.0120
NJ	116,776	140,297	108,935	5,327	771	.0489	.0071
PA	214,230	196,354	154,362	7,004	1,718	.0454	.0111
OH	130,753	134,482	202,751	8,398	1,891	.0414	.0093
IN	42,430	47,755	72,660	11,122	1,464	.1531	.0201
IL	185,220	256,808	233,385	9,757	2,172	.0418	.0093
MI	183,845	193,996	287,040	9,834	2,900	.0343	.0101
WI	74,472	82,876	106,199	19,494	2,117	.1836	.0199
MN	40,601	39,827	50,455	1,416	729	.0281	.0144
IA	31,568	30,593	42,671	1,792	493	.0420	.0116
MO	65,921	68,026	48,879	4,550	891	.0931	.0182
ND	7,155	6,176	2,571	469	111	.1824	.0432
SD	8,529	7,121	8,478	806	278	.0951	.0328
NE	11,710	12,164	13,153	559	227	.0425	.0173
KS	26,973	27,028	25,056	3,053	553	.1219	.0221
DE	8,368	6,487	6,137	500	133	.0815	.0217
MD	50,536	30,733	32,282	7,731	1,649	.2395	.0511
DC	12,438	17,079	18,855	4,904	589	.2601	.0312
VA	65,766	65,960	52,950	8,829	1,223	.1667	.0231
WV	15,646	21,257	22,845	743	151	.0325	.0066
NC	62,390	61,223	57,918	7,023	1,826	.1213	.0315
SC	48,990	47,671	59,582	1,833	564	.0308	.0095
GA	64,419	52,390	86,742	7,702	1,900	.0888	.0219
FL	90,830	116,975	95,861	13,132	1,886	.1370	.0197
KY	50,804	42,408	45,238	4,701	785	.1039	.0174
TN	71,810	71,430	88,958	1,357	634	.0156	.0073
AL	75,908	54,935	48,955	16,248	709	.3319	.0145
MS	50,016	44,282	45,298	1,032	878	.0228	.0194
AR	57,501	37,901	25,733	2,567	316	.0998	.0123
LA	83,678	75,233	82,533	4,044	1,808	.0647	.0289
OK	37,022	35,911	21,241	4,123	650	.1941	.0306
TX	137,236	145,798	147,473	8,375	1,866	.0568	.0127
MT	11,585	7,822	7,808	551	216	.0724	.0284
ID	5,885	8,388	12,626	928	264	.0735	.0209
WY	1,851	1,915	2,855	471	162	.1774	.0810
CO	28,891	17,288	22,087	1,192	734	.0540	.0332
NM	15,692	13,087	13,692	1,652	226	.1207	.0165
AZ	12,206	13,876	34,609	3,590	984	.1037	.0279
UT	12,944	8,676	10,158	1,178	342	.1161	.0337
NV	4,780	4,045	2,824	927	41	.3283	.0145

EXHIBIT III-3(2)

(1) State	(2) 1978 Eligibles[a]	(3) 1979 Eligibles[a]	(4) 1983 Eligibles[a]	(5) 1983 Vouchers[b]	(6) 1983 Certifications[b]	1983 Penetration Rates (5)÷(4)	(6)÷(4)
WA	75,716	59,027	49,195	4,590	1,204	.0933	.0245
OR	49,004	31,580	49,179	7,644	2,123	.1554	.0432
CA	390,806	447,828	467,344	39,721	6,487	.0851	.0139
AK	3,413	4,290	10,121	112	53	.0111	.0052
HA	21,283	13,661	10,478	404	130	.0245	.0079
TOTAL	3,263,417	3,345,123	3,500,669	289,040	55,485	.0826	.0158

[a]Calender year basis. Weighted estimate from succeeding year's March Income Supplement to the Current Population Survey.

[b]Calender year basis. Interpolated from program data supplied by the U.S. Department of Labor.

voucher-defined penetration rate is approximately 1 in 5. Recognizing that there may be considerable statistical error in our eligible estimate, we note that 5 states have penetration rate estimates of over .50: Vermont, Missouri, North Dakota, Kentucky and Idaho. Low voucher penetration rates occur in Pennsylvania, Delaware, and Colorado. The overall certification rate for veterans is lower than for youth--31.4% compared to 47.5%. Certification rates for veterans are lowest in West Virginia and Indiana and were highest in Mississippi, Louisiana, and Colorado.

The 1983 penetration rates for the AFDC target group are shown in Exhibit III-3. The national average voucher penetration rate is just over 8 percent, but the certification penetration rate is just over 1.5 percent. This relationship suggests that certifications are more difficult to achieve for the AFDC target group than either the youth or veterans' target groups. In examining the voucher penetration rate column, substantial variation across states can be seen--from zero in Rhode Island to almost 70 percent in Vermont. Nevada, Maryland, Alabama, and the District of Columbia voucher more than 25% of eligibles, while Minnesota, Tennessee, Mississippi, Alaska, and Hawaii in addition to Rhode Island voucher less than 3 percent.

One can get a feel for how some states administered TJTC just by examining these data. The higher the voucher penetration rates, the higher the likelihood that the state "pushes" the program. North Dakota, Vermont, and Maryland have relatively high voucher penetration rates in all 3 exhibits; Colorado and Pennsylvania have low rates. Presumably higher rates also increase the likelihood that the states are blanket vouchering, i.e., vouchering a high number of eligibles. Further evidence of blanket vouchering would be relatively low certification rates coincidental with high voucher penetration rates. Vermont and Kentucky fit this description the best. The opposite administra-

tive behavior would be manifested in low voucher rates and relatively high certification rates. Here the states are probably vouchering only in response to employer requests. Colorado, Mississippi, and Louisiana fit this description.

The second type of penetration rate in our analysis measures the degree to which certified workers entered the low-wage labor force. The difficulty in constructing this statistic comes in defining and measuring the low-wage labor force. Bishop (1984) used employment in the wholesale and retail trade and service industries as the denominator, because the largest share of certifications occur in these industries. However many occupations in these industries cannot be classified as in the low-wage labor market. Furthermore alternative sources of data on employment by industry exist. For the Current Population Survey, individuals report the industry in which they were primarily employed during the year. These data, particularly on a state level, are subject to reporting and sampling error. The Bureau of Labor Statistics also collects employment data from establishments. These data are less subject to sampling error, but they double count individuals who hold multiple jobs, which may be a significant share of individuals in the TJTC target groups.

An alternative measure of the low-wage labor market is employment in certain low-wage occupations--especially semi-skilled and unskilled service workers. The main source of occupational data is the Current Population Survey, so such data are also subject to the reporting and sampling errors discussed above. Yet another measure of the low-wage labor market would be labor force members from households in poverty--again measured in the Current Population Survey.

In Exhibit III-4, we display two alternative state-by-state estimates of what might be entitled the youth low-wage labor market and corresponding labor market penetration rates (youth

certs divided by the youth labor market). The first estimate includes youth (18-24) who are not enrolled in school and who are employed in "low-wage industries" plus unemployed youth not enrolled in school. The second column provides youth in "low-wage occupations" plus unemployed youth. The overall youth labor market penetration rate is approximately 2.5 - 3.0 percent. Our expectation is that displacement will be more likely in states with higher penetration rates like Georgia, Mississippi, and Louisiana where the ratio is over 7 percent (using the low-wage industry definition). On the other hand, when the ratio is down around 1 percent as it is in Pennsylvania, Delaware, and Hawaii, it is unlikely that certifications are "felt" in the youth low-wage labor market.

Under the argument that <u>all</u> TJTC target group members compete with each other and all other low wage workers, we have also constructed estimates of the <u>total</u> low-wage labor market under various conceptual definitions and correspondingly, <u>total</u> TJTC labor market penetration rates. These data for 1983 are displayed in Exhibit III-5. The first column presents total employment in low-wage industries as reported by employers to the Bureau of Labor Statistics (the ES 202 data). The second and third columns are estimates of the low-wage labor market using adults in the labor force (employed or unemployed) who are not enrolled in school and reside in families where the total family income is less than 100%, 125% of poverty. Columns 4-6 of the table provide the penetration rates for each of these low-wage labor market concepts using total certifications as the numerator.

EXHIBIT III-4(1)

Employment and Training Administration

THE YOUTH LOW-WAGE LABOR MARKET AND TJTC YOUTH PENETRATION RATES

State	(1) Youth Employed in Low-Wage Industries or Unemployed	(2) Youth Employed in Low-Wage Occupations or Unemployed	1983 Youth Labor Market Penetration Rates	
			Youth Certs ÷ (1)	Youth Certs ÷ (2)
ME	38,087	55,899	.0489	.0333
NH	30,112	43,899	.0204	.0140
VT	25,177	27,412	.0328	.0302
MA	190,237	295,454	.0360	.0232
RI	28,096	53,083	.0266	.0141
CT	71,220	97,933	.0164	.0120
NY	513,371	735,678	.0410	.0286
NJ	247,353	316,505	.0226	.0104
PA	444,554	536,858	.0107	.0089
OH	415,284	516,911	.0150	.0121
IN	256,850	313,363	.0261	.0214
IL	448,111	516,399	.0258	.0224
MI	387,077	407,251	.0213	.0202
WI	189,348	228,525	.0285	.0236
MN	196,109	237,844	.0278	.0227
IA	118,521	131,481	.0299	.0270
MO	178,202	243,732	.0486	.0355
ND	19,768	20,099	.0518	.0508
SD	26,152	27,403	.0593	.0566
NE	45,826	66,977	.0285	.0195
KS	72,383	94,943	.0366	.0279
DE	26,735	33,789	.0122	.0104
MD	163,146	172,347	.0346	.0328
DC	37,550	40,741	.0319	.0294
VA	229,494	281,009	.0286	.0234
WV	87,652	100,012	.0165	.0144
NC	175,008	291,576	.0480	.0288
SC	120,849	186,918	.0381	.0246
GA	149,339	248,643	.0738	.0447
FL	330,770	413,093	.0546	.0437
KY	133,300	145,609	.0423	.0387
TN	178,854	225,595	.0329	.0262
AL	134,162	168,201	.0444	.0354
MS	89,767	109,460	.0726	.0462
AR	109,148	131,590	.0333	.0276
LA	148,695	192,248	.0797	.0616
OK	127,478	176,574	.0188	.0136
TX	572,658	747,356	.0274	.0210
MT	36,500	48,989	.0265	.0197
ID	40,196	41,907	.0351	.0336
WY	18,411	21,446	.0201	.0173
CO	98,380	141,147	.0190	.0132
NM	49,017	50,568	.0426	.0413
AR	101,243	136,648	.0355	.0263
UT	50,016	68,249	.0409	.0300
NV	38,313	45,940	.0250	.0214

EXHIBIT III-4(2)

State	(1) Youth Employed in Low-Wage Industries or Unemployed	(2) Youth Employed in Low-Wage Occupations or Unemployed	1983 Youth Labor Market Penetration Rates	
			Youth Certs ÷ (1)	Youth Certs ÷ (2)
WA	141,858	187,275	.0487	.0413
OR	88,729	133,424	.0578	.0384
CA	860,707	1,104,894	.0256	.0201
AK	24,431	28,156	.0490	.0425
HA	50,046	44,583	.0123	.0139
TOTAL	8,338,350	10,683,504	.0322	.0252

EXHIBIT III-5(1)

Employment and Training Administration

LOW-WAGE LABOR FORCE ESTIMATES AND ASSOCIATED TJTC PENETRATION RATES FOR 1983

State	(1) Employment in Low-Wage Industries	(2) Adults in the Labor Force from Families with Income Less than 100% of Poverty	(3) Adults in the Labor Force from Families with Income Less than 125% of Poverty	1983 Penetration Rates		
				Cartes(1)	Cartes(2)	Cartes(3)
ME	125,327	48,180	73,457	.0197	.0514	.0337
NH	123,578	26,730	44,790	.0072	.0335	.0200
VT	62,717	26,793	34,424	.0225	.0527	.0410
MA	883,127	116,956	188,220	.0108	.0815	.0506
RI	121,854	37,338	48,515	.0067	.0219	.0169
CT	430,231	75,395	118,397	.0041	.0236	.0150
NY	2,210,443	805,158	850,935	.0122	.0446	.0318
NJ	960,730	215,435	309,381	.0070	.0312	.0218
PA	1,374,869	453,680	591,681	.0052	.0159	.0120
OH	1,250,918	405,795	557,555	.0071	.0220	.0160
IN	588,051	296,010	397,780	.0161	.0309	.0230
IL	1,218,133	487,383	603,965	.0112	.0318	.0245
MI	982,356	436,007	531,153	.0124	.0200	.0230
WI	574,085	157,398	226,652	.0143	.0523	.0363
MN	560,005	191,444	271,504	.0120	.0350	.0247
IA	321,786	193,372	230,848	.0127	.0228	.0191
MO	804,952	278,194	382,105	.0174	.0300	.0292
ND	80,931	44,091	54,760	.0153	.0281	.0228
SD	77,173	46,152	83,989	.0258	.0432	.0311
NE	192,882	86,062	127,157	.0086	.0194	.0131
KS	277,382	126,913	177,461	.0178	.0275	.0197
DE	79,024	18,800	31,582	.0065	.0272	.0182
MD	581,238	87,211	114,478	.0135	.0900	.0685
DC	135,359	38,883	54,003	.0134	.0468	.0337
VA	847,003	218,758	317,969	.0127	.0378	.0259
WV	163,182	113,159	150,152	.0109	.0157	.0118
NC	573,571	328,557	437,238	.0192	.0337	.0252
SC	283,565	179,201	247,941	.0195	.0309	.0223
GA	593,925	313,267	434,720	.0231	.0437	.0315
FL	1,442,640	492,462	718,328	.0148	.0432	.0296

III-15

EXHIBIT III-5(2)

State	(1) Employment in Low-Wage Industries	(2) Adults in the Labor Force from Families with Income Less than 100% of Poverty	(3) Adults in the Labor Force from Families with Income Less than 125% of Poverty	1983 Penetration Rates Certs+(1)	Certs+(2)	Certs+(3)
KY	337,443	198,344	277,367	.0756	.0351	.0251
TN	482,773	214,747	358,481	.0145	.0326	.0195
AL	330,822	257,194	352,176	.0217	.0279	.0203
MS	190,706	168,354	249,266	.0325	.0368	.0249
AR	205,845	135,037	202,144	.0210	.0319	.0213
LA	454,981	241,732	317,440	.0319	.0600	.0457
OK	330,632	178,264	245,192	.0098	.0182	.0132
TX	1,837,161	759,301	1,047,540	.0101	.0243	.0176
MT	91,384	44,640	70,708	.0142	.0290	.0183
ID	94,253	59,971	84,679	.0201	.0315	.0223
WY	54,535	28,609	36,505	.0106	.0202	.0158
CO	423,922	139,994	183,781	.0062	.0204	.0156
NM	152,537	109,893	140,768	.0163	.0226	.0176
AZ	362,399	142,441	189,244	.0134	.0342	.0258
UT	157,181	70,194	99,479	.0164	.0369	.0260
NV	218,189	36,629	51,887	.0052	.0311	.0219
WA	485,626	151,767	227,384	.0187	.0598	.0399
OR	298,590	176,800	221,510	.0277	.0468	.0374
CA	3,279,495	1,008,682	1,382,748	.0093	.0303	.0221
AK	54,419	21,084	27,947	.0257	.0664	.0501
HA	158,439	38,544	48,401	.0051	.0208	.0166
TOTAL	27,296,577	10,304,999	14,185,745	.0128	.0338	.0246

Again, considerable variation across the states can be observed. Using the counts of adults in the labor force with family income less than 100% poverty, the national penetration of TJTC certifications is about 3.4%. The range runs from 1.56% in Pennsylvania to 9.0% in Maryland. But as with the other penetration rate measures, there appears to be no particular state characteristic that explains the variance. The regional variation (using Census divisions) for the above discussed rate is quite small, ranging from 2.8% in the Rocky Mountain states to 5.1% in New England. These are reasonably close to the national level of 3.38%.)

Notable in analyzing these data is the fact that certain states are consistently in the high or low ranges of the TJTC penetration distributions. For example, using all of the penetration rates presented in Exhibits III-1 through III-5 (a total of 11 penetration rates), Pennsylvania is among the lowest 5 states a total of 9 times, Connecticut 6 times, Hawaii and Delaware 5 times, and Colorado 4 times. On the other hand, Vermont is among the highest ranking 5 states a total of 7 times, Louisiana 6 times, Maryland 5 times, North Dakota 4 times, and Mississippi and Oregon 3 times.

Observing these types of variation in the data bolsters our confidence that we will be able to identify covariation with employment rates under the assumption that TJTC, in fact, has an influence. But because penetration rates are not unambiguously defined, we need to test whether the various concepts of the penetration rate are highly correlated with each other (in which case, we don't need to worry about which penetration rate measures to use in our analyses) or not. The next section discusses these correlational analyses.

2. CORRELATIONAL ANALYSIS

To test the degree of correlation among the various concepts and measures of penetration rates, we calculated the bivariate correlations among the eleven rates provided in Exhibit III-1 through III-5 plus we used other combinations of numerators and denominators, such as youth, Vietnam-era veterans, and AFDC certifications over the 4 estimates of total low wage labor market. Because of the consistency among states discussed above, and more fundamentally, because the different ratios involve identical numerators or denominators, we expected quite high correlations. Indeed the results bore out this expectation.

With only one exception, all of the bivariate correlations among the "target effectiveness"-type penetration rates in Exhibits III-1 - III-3 were statistically significant at less than .01 (recall half of these involved using vouchers in the numerator and half involved using certifications). Among the labor market-type penetration rates, the bivariate correlations were again quite high. The two variables in Exhibit III-4 correlated at .93 ($p < .001$) and the 3 series in Exhibit III-5 all correlated at levels that were significant at the .01 level. The only anomalies that showed up in the correlational analysis were a zero correlation between AFDC certs as a proportion of the total low-wage market and youth certs as a proportion of the total low-wage labor market. Those anomalies aside, the correlations indicated that our estimates would be robust using almost any of the penetration rate concepts. As a consequence in the next section presenting the results of the analysis, we use the following definitions:

Y_PEN1_{kt} = youth target group target-effectiveness penetration rate defined as youth vouchers in state k in year t divided by youth eligibles (estimated from the CPS) in state k in year t (National mean in 1983 = .0971).

V_PEN1_{kt} = Vietnam-era veterans target group target-effectiveness penetration rate defined as veterans vouchered in state k in year t divided by veteran eligibles (estimated from the CPS) in state k in year t (National mean in 1983 = .2014)

A_PEN1_{kt} = AFDC target group target-effectiveness penetration rate defined as AFDC vouchers in state k in year t divided by AFDC eligibles (estimated form the CPS) in state k in year t (National mean in 1983 = .0826)

$PEN2_{kt}$ = low-wage labor market penetration rate of TJTC defined as total certifications divided by the total low-wage labor market defined as employment in low-wage industries (from BLS establishment data) in state k in year t (National mean in 1983 = .0128)

IV. RESULTS

IV. RESULTS

This chapter provides a discussion of the econometric estimates of the employment displacement and/or creation effects of TJTC. Recall that three CPS data sets were used in the analyses: the March 1979 CPS, the March 1980 CPS, and the March 1984 CPS.[8] For all intents and purposes, TJTC was not in effect and could not have influenced the survey week or retrospective employment data in the March 1979 file. TJTC was new and the number of certifications was of limited size by March 1980, so the data collected in that month should reflect only a limited impact of the program. However, by March 1984, TJTC was well established and relatively sizable, so if TJTC had employment displacement or creation impacts, they should be captured in the model estimated from that data.

The presentation of results in this chapter is organized as follows: First the employment displacement estimates from the March 1984 data are given. The results are presented for the entire adult population between 19 and 35,[9] for that population disaggregated by sex and race, and finally for disadvantaged and nondisadvantaged youth. Next, estimates from the March 1980 CPS are presented. Thirdly, the displacement estimates from a fixed effects specification estimated from data merged from all three CPS files are given.

---

[8]These particular data sets were chosen because the March 1984 CPS was the most recent March CPS available at the time and the proposed methodology required earlier CPS's to test for structural changes over time. Furthermore, Christensen (1984) used the March 1983 CPS, so we did not want to duplicate her effort.

[9]The age limit of 35 was arbitrarily set to limit sample sizes. The underlying (strong) assumption is that any displacement or substitution that occurs does not affect individuals over the age of 35.

1. EMPLOYMENT LIKELIHOOD ESTIMATES FROM THE 1984 CURRENT POPULATION SURVEY

By limiting the analysis to a single year, we are in effect, positing (3) above as our structural model in this section, i.e., allowing the TJTC impact coefficients to vary with time. We are further delimiting the analysis here to using probability of being employed as the dependent variable. A distinction is made between current year employment likelihood -- the respondent indicated that she or he was working during the survey week (in March) -- and retrospective employment likelihood. The latter is defined as 1 if the respondent reported working at least 1 week during the previous calendar year; 0 otherwise.

(a) Results for Total Population Aged 18-35

Exhibit IV-1 presents the coefficient estimates for the model estimated using a logit technique since the dependent variable is limited to 0 or 1. The sample is limited to all individuals between the ages of 18 and 35 inclusive and the effects of membership in the economically disadvantaged youth and the AFDC target groups could be identified. The estimated coefficients and standard errors are presented. A transformation of the coefficients to the marginal impact on the probability of employment can be performed by multiplying the coefficient by P(1-P), where P is the probability of being employed (approximated by the share of the population with the dependent variable equal to 1).

Among the TJTC related variables, the effect of being economically disadvantaged was strongly negatively related to a probability of employment as would be expected. Relative to the rest of the population, being economically disadvantaged in 1983 implied about a 40 percentage point (-1.99 * .69 * .31) smaller likelihood of reporting being employed during the survey week in

EXHIBIT IV-1

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PROBABILITY OF EMPLOYMENT (1984)
(Standard errors in parentheses)

Variable	Dependent Variable			
	Current Employment (t=1984)		Last Year's Employment (t=1983)	
TJTC related variables				
Economically disadvantaged	-1.89+	(.098)	-4.96+	(.144)
Economically disadvantaged youth	-.25	(.480)	-.38	(.585)
Received AFDC in 1983	-1.68+	(.228)	-1.07+	(.271)
Youth target group member *Y_Pam1_t	3.57	(8.390)	7.74	(9.635)
Youth target group member *Y_Pam12_t	-16.83	(22.010)	-37.53	(35.384)
AFDC * A_Pam1_t	1.85	(2.516)	-.87	(2.825)
AFDC * A_Pam12_t	-3.00	(4.568)	3.03	(5.417)
$Pam1_t$	.54**	(.249)	-.08	(.352)
$Pam2_t$	-1.46	(2.198)	1.58	(3.637)
Eligible *$Pam2_t$	18.82***	(7.230)	31.14***	(11.868)
Personal characteristics				
Age	.39+	(.033)	.22+	(.044)
Black[a]	-.34+	(.044)	-.63+	(.056)
Other, nonwhite[a]	-.55+	(.067)	-.78+	(.084)
Female, nonmarried, no children[b]	.26+	(.045)	-.09	(.064)
Female, nonmarried, child[b]	-.06	(.050)	-.11	(.069)
Female, married, no child.[b]	-.18+	(.058)	.10	(.085)
Female, married, children[b]	-1.48+	(.042)	-1.34+	(.057)
Male, nonmarried, children[b]	-.29+	(.054)	.12	(.072)
Male, married, no children[b]	.91+	(.081)	1.27+	(.141)
Male, married, children[b]	.82+	(.057)	1.52+	(.108)
Log (Income)	.29+	(.017)	-.27+	(.021)
Grade	.09+	(.006)	.16+	(.007)
Enrolled currently	-.85+	(.030)	-.54+	(.041)
Central city[c]	-.01	(.033)	-.25+	(.044)
NonSMSA[c]	-.00	(.033)	-.05	(.044)
State employment characteristics				
Per capita $JTPA_{t-1}$	-.008*	(.004)	-.005	(.006)
Per capita ES_{t-1}	.00	(.006)	.010*	(.008)
Unemployment $rate_t$	-.04+	(.012)	-.09+	(.016)
Ave. mfg. wage	-.01	(.013)	.04**	(.018)
Employment $growth_t$	3.17+	(.802)	.40	(1.083)
Sample size	38,845[d]		32,148[e]	
Emp = 1	25,304	(P=.6805)	26,119	(P=.8125)
R^2	.193		.296	

Notes:
[a]Omitted group is whites
[b]Omitted group is nonmarried males with no children
[c]Omitted group is SMSA, not central city residents
[d]Random sample of .80
[e]Random sample of .70

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

1984. As discussed in the methodology chapter, being a member ofone of the target groups may affect the probability of employment over and above the effect of being economically disadvantaged. This might be thought of as an "eligibility effect". Employers may favor hiring an individual from one of the target groups on the basis that they would receive the credit. On the other hand, eligibility may stigmatize workers if employers have generally poor perceptions of them. The estimates in Exhibit IV-1 suggest that the latter is the case--eligibility because of AFDC recipiency and youth disadvantagedness is stigmatizing, although the latter is not statistically significant.

The penetration rate main effects and interactions provide estimates of the vouchering and certification impacts on employment likelihood. The eligibility-Pen1 interactions provide evidence of decreasing returns to vouchering as hypothesized, although the coefficients are not statistically significant. The coefficient on the vouchering penetration rate is positive and significant for the current employment outcome suggesting that vouchering does not cause displacement but rather enhances the probability of employment among the population. The certification penetration rate coefficients indicate significant increases in the likelihood of eligibles finding employment, while no statistically significant displacement or job creation for noneligibles.

If we accept the point estimates in Exhibit IV-1 and use equation (6) from chapter II to calculate total jobs created, we would derive an estimate of about 400,000 in 1984 and 200,000 in 1983. A large share of those jobs would go to noneligibles, so that we estimate that between 20-50 percent of certifications are for individuals who would not otherwise be employed.

The coefficient estimates for the personal characteristics are almost all highly statistically significant and are of the expected signs. Blacks and other minorities can be seen to have lower employment likelihoods than whites, holding other variables constant, by about 8-12 percentage points. Single females without children are about 5 percentage points more likely to be employed during the survey week than single males but there is no statistically significant differences in their employment likelihood using the retrospective employment concept. Married males (with or without children present) are about 20 percentage points more likely to be employed than single males. Married females with children have considerably lower probabilities of being employed than single males.

Age and education are positively related to employment likelihood as would be expected. Current enrollment in school is negatively related to employment likelihood. Previous year's family income (logged) is positively related to survey week employment. Previous year's family income less the individual's earnings is negatively associated with retrospective employment likelihood.

Among the statewide employment characteristics, the unemployment rate and employment growth rates have the expected signs and statistical significance. Interestingly, the previous year per capita administrative expenditure for the employment service (ES) had a positive influence on the retrospective employment likelihood. The per capita state allocation for JTPA was negatively related to employment likelihoods, although this was expected due to the allocation formulas for the Act.

(b) Results by Race and Sex

In this section of the report, we investigate whether TJTC has different impacts for males and females or different impacts by race.[10] In Exhibit IV-2, we present the results of logit estimates of the probability of survey week employment disaggregated by sex. That is, the dependent variable corresponds to the left hand column of Exhibit IV-1. As we compare the coefficients in Exhibit IV-2, it is clear that there are only a few gender differences in the structural model, which of course, buttresses our confidence in the Exhibit IV-1 estimates.

Of most interest are the coefficients on the PEN1 and PEN2-eligibility interaction. For males, the PEN1 coefficient is small and statistically insignificant; however for females it is much larger and significant. On the other hand, the certification effect as represented by the target group membership-PEN2 interaction, is larger for males than females. These differences suggest that the vouchering employment creation effect among noneligibiles occurs for females, while the employment enhancement that occurs for eligibles due to certification is stronger for males.

The coefficients for personal characteristics are quite similar, although the effect of being married on employment likelihood is of opposite sign as would be expected. An unanticipated difference between males and females lies in the non-SMSA coefficients. Apparently, outside of SMSAs, males have more

[10] A possible explanation for differential effects by gender is that employers who are knowledgeable about the program and who either stigmatize voucherees or who attempt to hire eligibles may assume low income females are eligible.

EXHIBIT IV-2

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON CURRENT EMPLOYMENT LIKELIHOOD, BY SEX
(Standard errors in parentheses)

Variable	Sex			
	Male		Female	
TJTC related variables				
Economically disadvantaged	-2.01+	(.155)	-1.97+	(.135)
Economically disadvantaged youth	.11	(.706)	.02	(.541)
Rec'd AFDC in 1983	-2.41**	(.971)	-1.49+	(.247)
Youth target group member * Y_Pen1_{1984}	.84	(13.20)	2.85	(7.945)
Youth target group member * Y_Pen2_{1984}	-1.64	(52.66)	-13.55	(25.798)
AFDC * A_Pen1_{1984}	-2.98	(18.76)	1.98	(2.801)
AFDC * A_Pen2_{1984}	1.82	(77.93)	-3.47	(4.653)
$Pen1_{1984}$	.23	(.396)	.81**	(.321)
$Pen2_{1984}$	-.95	(3.432)	-2.48	(2.867)
Eligible * $Pen2_{1984}$	33.96*	(19.49)	14.44*	(7.92)
Personal characteristics				
Age	.32+	(.053)	.46+	(.044)
Blacka	-.64+	(.068)	-.12*	(.060)
Other, nonwhitea	-.78+	(.099)	-.38+	(.090)
Nonmarried, childrenb	-.31+	(.056)	-.33+	(.054)
Married, no childrenb	.90+	(.082)	-.45+	(.083)
Married, childrenb	.83+	(.061)	-1.72+	(.052)
Log (Income)$_{1983}$	.26+	(.025)	.31+	(.022)
Grade	.05+	(.008)	.10+	(.008)
Enrolled currently	-.93+	(.043)	-.78+	(.041)
Central cityc	-.08	(.052)	.04	(.043)
NonSMSAc	-.16***	(.052)	.10**	(.042)
State employment characteristics				
Per capita $JTPA_{1983}$	-.013*	(.006)	-.003	(.006)
Per capita ES_{1983}	.00	(.008)	.00	(.007)
Unemployment $rate_{1984}$	-.05***	(.018)	-.04**	(.016)
Ave. mfg. $wage_{1984}$	-.03	(.021)	-.00	(.017)
Employment $growth_{1984}$	3.57***	(1.265)	2.99***	(1.041)
Sample size	17,636d		19,009d	
Emp = 1	13,671	(P=.7752)	11,633	(P=.6120)
R^2	.184		.168	

Notes: aOmitted group is whites
bOmitted group is nonmarried, with no children
cOmitted group is SMSA, not central city residents
dRandom sample of .80

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

difficulty finding employment while females have a greater likelihood of employment relative to their within SMSA, non-Central City counterparts.

Among the state aggregate variables, the only difference between males and females comes from the JTPA per capita allocation. The overall negative relationship between this allocation and employment likelihood stems from males, while the effect is essentially zero for females.

In Exhibit IV-3, we array the results from estimating the same model as reported in Exhibit IV-2, only using retrospective employment likelihood for the dependent variable. The logit estimation procedure would not converge for males , so the exhibit only presents the results for females. We can get a sense of how different coefficients would be for males, by comparing the results in the exhibit to the right-hand column of Exhibit IV-1. If the coefficients are reasonably equal, then the male coefficient must approximate the coefficient for females. Otherwise, structural differences exist. Specifically, we were looking for further confirmation of a positive effect of PEN1 on females and Eligible*PEN2 on males and, by inference, we found these effects to be present.

In addition to disaggregating the effects by sex, we also estimated the model separately for whites and nonwhites. The results of this disaggregation are presented in Exhibits IV-4 and IV-5 for current and prior year employment, respectively. The coefficient estimates shown in these tables indicate very little

EXHIBIT IV-3

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PREVIOUS YEAR EMPLOYMENT LIKELIHOOD, FOR FEMALES
(Standard errors in parentheses)

Variable	Female	
TJTC-related variables		
Economically disadvantaged	-4.73+	(.184)
Economically disadvantaged youth	-.99	(.805)
Rec'd AFDC in 1983	-.89***	(.293)
Youth target group member* Y_PEM1_{1983}	11.31	(12.304)
Youth target group member* Y_PEM12_{1983}	-41.48	(41.43)
AFDC *A_PEM1_{1983}	-.70	(2.869)
AFDC * A_PEM12_{1983}	3.01	(5.228)
$PEM1_{1983}$	.28	(.423)
$PEM2_{1983}$	-2.43	(4.374)
Eligible *$PEM2_{1983}$	16.30	(12.985)
Personal Characteristics		
Age	.22+	(.055)
Black[a]	-.41+	(.074)
Nonblack, nonwhite[a]	-.51+	(.107)
Nonmarried, children[b]	-.04	(.074)
Married, no children[b]	.21**	(.092)
Married, children[b]	-1.22+	(.069)
Log $(Income)_{1983}$	-.29+	(.027)
Grade	.18+	(.010)
Enrolled currently	-.43+	(.051)
Central City[c]	-.15***	(.054)
NonSMSA[c]	-.01	(.052)
State employment characteristics		
Per capita $JTPA_{1983}$	-.006	(.007)
Per capita ES_{1983}	.006	(.009)
Unemployment $rate_{1983}$	-.07+	(.020)
Average mfg. $wage_{1983}$	.05**	(.022)
Employment $growth_{1983}$	1.32	(1.301)
Sample size	16,682[d]	
Emp = 1	12,289	(P=.7367)
R^2	.246	

Notes: [a]Omitted group is whites
[b]Omitted group is nonmarried, with no children
[c]Omitted group is SMSA, not central city residents
[d]Random sample of .70

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-4

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON CURRENT EMPLOYMENT LIKELIHOOD, BY RACE
(Standard errors in parentheses)

Variable	Race			
	Nonwhite		White	
TJTC related variables				
Economically disadvantaged	-2.32+	(.216)	-1.84+	(.116)
Economically disadvantaged youth	.63	(.758)	-.16	(.498)
Received AFDC in 1983	-1.33+	(.491)	-1.88+	(.282)
Youth target group member * Y_Pem1	2.31	(11.128)	4.16	(7.946)
Youth target group members * Y_PEM12	-13.38	(35.484)	-18.36	(28.231)
AFDC * A_Pem1	3.78	(7.661)	1.31	(3.202)
AFDC * A_Pem12	-13.34	(29.803)	-2.12	(5.344)
Pem1	.58	(.850)	.78**	(.273)
Pem2	-1.81	(5.982)	-2.04	(2.421)
Eligible * Pem2	13.89	(12.350)	22.04	(9.217)
Personal characteristics				
Age	.64+	(.089)	.38+	(.038)
Female, nonmarried, no children	.17	(.113)	.27+	(.049)
Female, nonmarried, children	.15	(.113)	-.11**	(.058)
Female, married, no children	-.29	(.202)	-.22+	(.061)
Female, married, children	-.69+	(.114)	-1.59+	(.045)
Male, nonmarried, children	-.22	(.132)	-.30+	(.059)
Male, married, no children	.71***	(.244)	.80+	(.086)
Male, married, children	.71+	(.148)	.82+	(.062)
Log (Income)	.39+	(.043)	.27+	(.018)
Grade	.11+	(.016)	.07+	(.006)
Enrolled currently	-.90+	(.077)	-.85+	(.033)
Central cityb	-.09	(.082)	.02	(.037)
Non SMSAb	.16	(.109)	-.01	(.034)
State employment characteristics				
Per capita $JTPA_{1983}$	.014	(.009)	-.014	(.005)
Per capita ES_{1983}	-.01	(.015)	.00	(.008)
Unemployment $rate_{1984}$	-.08**	(.038)	-.03**	(.013)
Ave. mfg. $wage_{1984}$	-.09**	(.038)	.00	(.015)
Employment $growth_{1984}$	-3.67*	(2.144)	4.58+	(.878)
Sample size	4,842c		31,703c	
Emp = 1	2,734	(P=.5532)	22,570	(P=.7118)
R^2	.232		.180	

aOmitted group is nonmarried males, with no children
bOmitted group is SMSA, not central city residents
cRandom sample of .80

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-5

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PREVIOUS YEAR EMPLOYMENT LIKELIHOOD, BY RACE
(Standard errors in parentheses)

Variable	Race			
	Nonwhite		White	
TJTC related variables				
Economically disadvantaged	-5.74+	(.389)	-4.81+	(.159)
Economically disadvantaged youth	-4.75	(2.912)	-.06	(.634)
Received AFDC in 1983	-.23	(.524)	-1.33+	(.332)
Youth target group member * Y_Pan1	——d	(——)	.58	(10.172)
Youth target group member * Y_Pan12	——d	(——)	-15.74	(36.968)
AFDC * A_Pan1	-2.12	(5.572)	-1.28	(3.605)
AFDC * A_Pan12	7.44	(14.018)	3.30	(6.108)
Pan1	.37	(.863)	.10	(.393)
Pan2	-2.66	(8.634)	1.33	(4.135)
Eligible * Pan2	10.86	(21.167)	37.27**	(14.870)
Personal characteristics				
Age	.29***	(.109)	.20+	(.049)
Female, nonmarried, no children	-.14	(.145)	-.09	(.073)
Female, nonmarried, children	-.09	(.149)	-.13	(.079)
Female, married, no children	-.43	(.240)	.12	(.092)
Female, married, children	-.69+	(.142)	-1.42+	(.063)
Male, nonmarried, children	.05	(.151)	.16*	(.084)
Male, married, no children	.84**	(.356)	1.31+	(.154)
Male, married, children	1.24+	(.241)	1.57+	(.122)
Log (Income)	-.26+	(.049)	-.28+	(.024)
Grade	.18+	(.021)	.18+	(.008)
Enrolled currently	-.80+	(.096)	-.46+	(.045)
Central city[b]	-.34***	(.104)	-.22+	(.049)
Non SMSA[b]	-.07	(.138)	-.03	(.048)
State employment characteristics				
Per capita $JTPA_{1983}$	.012	(.012)	-.011	(.007)
Per capita ES_{1983}	.01	(.018)	.01	(.009)
Unemployment $rate_{1984}$	-.07	(.048)	-.09+	(.016)
Ave. mfg. $wage_{1984}$	-.03	(.048)	.06***	(.020)
Employment $growth_{1984}$	-2.71	(2.738)	1.29	(1.216)
Sample size	4,297[c]		27,851[c]	
Emp = 1	2,910	(P=.6722)	23,209	(P=.8333)
R^2	.361		.273	

[a]Omitted group is nonmarried males, with no children
[b]Omitted group is SMSA, not central city residents
[c]Random sample of .70
[d]SAS set coefficient to infinity due to multicollinearity

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

structural differences between the two populations. The youth eligibility effect is positive for nonwhites and negative for whites for current employment but neither are statistically significant. Otherwise, the TJTC-related variables have quite similar impacts. In particular, the PEN2 displacement impacts are virtually identical for both groups for both employment concepts.

Among the personal characteristic variables in the model, only residence outside an SMSA exhibits a markedly different effect across the two groups. Nonwhites in nonSMSA geographic areas have a 5 percentage point greater likelihood of being employed during the survey week than nonwhites in SMSAs. Whites show no statistically significant differences across SMSA categories, however.

Per capita JTPA allocations seem to favorably affect nonwhites and have a deleterious effect on whites. For the latter group, a doubling of the allocation would reduce employment likelihood by about 3 percentage points.

(c) Youth Target Group Analyses

In order to compare our results directly to those reported in Christensen (1984), we estimated the employment likelihood models separately for disadvantaged and nondisadvantaged youth. Exhibits IV-6 and IV-7 present the results of these estimates. In general, the estimates for the personal and state-specific characteristics were quite comparable to those reported in Christensen (1984). The TJTC-related variables used in the estimates reported here were somewhat different, but the basic results are comparable. The CBO coefficient on a variable that is similar to PENY were as follows:

EXHIBIT IV-6

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON CURRENT EMPLOYMENT OF INDIVIDUAL 16-28, BY DISADVANTAGED STATUS
(Standard errors in parentheses)

Variable	Disadvantaged Status			
	Disadvantaged		Nondisadvantaged	
TJTC related variables				
Economically disadvantaged youth	.11	(.365)	N/A	(—)
Youth target group x Y_PEN1_{1984}	-1.22	(1.869)	N/A	(—)
Y_PEN1_{1984}	N/A	(—)	.12	(.256)
$PEN2_{1984}$	14.31	(11.445)	-.50	(2.258)
Personal characteristics				
Age	-.30	(.342)	.55+	(.062)
Black	.04	(.194)	-.54+	(.046)
Other nonwhite	-1.55+	(.374)	-.51+	(.071)
Female, Unmarried, No children	-.31	(.224)	.21+	(.044)
Female, Unmarried, Children	-1.27+	(.208)	-.15***	(.049)
Female, Married, No children	-.98*	(.507)	-.15***	(.058)
Female, Married, Children	-1.68+	(.353)	-1.48+	(.044)
Male, Unmarried, Children	-.56	(.351)	-.25+	(.051)
Male, Married, No children	.30	(.456)	1.00+	(.086)
Male, Married, Children	.54*	(.315)	.78+	(.064)
Log (Income)	.31***	(.107)	.24+	(.017)
Grade	.08+	(.033)	.08+	(.006)
Currently enrolled	-.58+	(.182)	-.93+	(.031)
Central city	-.64+	(.186)	.00	(.035)
NonSMSA	-.49**	(.201)	-.02	(.034)
State-specific variables				
Per capita $JTPA_{1983}$	-1.22+	(.026)	-.004	(.004)
Per capita ES_{1984}	.07**	(.033)	-.006	(.006)
Unemployment $rate_{1984}$	.06	(.064)	-.05+	(.013)
Average mfg. $wage_{1984}$	-.15*	(.082)	-.02*	(.014)
Employment $growth_{1984}$	.41	(4.711)	3.29+	(.834)
Sample size	1699		31,184	
Emp = 1	285	(p=.1677)	21,616	(p=.6930)
R^2	.145		.138	

Notes: [a]Omitted group is whites
[b]Omitted group is nonmarried males with no children
[c]Omitted group is SMSA, not central city residents

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-7

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PRIOR YEAR EMPLOYMENT OF INDIVIDUALS 18-29, BY DISADVANTAGED STATUS
(Standard errors in parentheses)

Variable	Disadvantaged Status			
	Disadvantaged		Nondisadvantaged	
TJTC related variables				
Economically disadvantaged youth	.38	(.488)	N/A	(—)
Youth target group x Y_PEM1_{1984}	-1.08	(2.477)	N/A	(—)
Y_PEM1_{1984}	N/A	(—)	.03	(.323)
$PEM2_{1984}$	81.18+	(17.74)	3.44	(3.675)
Personal characteristics				
Age	-.85*	(.450)	.53+	(.077)
Black	-.08	(.292)	-.85+	(.054)
Other nonwhite	-2.21+	(.621)	-.88+	(.083)
Female, Unmarried, No children	-.05	(.318)	-.07	(.060)
Female, Unmarried, Children	-.99***	(.307)	-.20***	(.063)
Female, Married, No children	.67	(.531)	.02	(.079)
Female, Married, Children	-.53	(.411)	-1.46+	(.055)
Male, Unmarried, Children	.07	(.430)	.07	(.064)
Male, Married, No children	1.13**	(.571)	1.36+	(.151)
Male, Married, Children	1.68+	(.379)	1.60+	(.134)
Log (Income)	.75+	(.138)	-.16+	(.020)
Grade	.06	(.044)	.15+	(.008)
Currently enrolled	-.39+	(.219)	-.58+	(.040)
Central city	-1.07+	(.200)	-.27+	(.043)
NonSMSA	-1.79+	(.315)	-.01	(.044)
State-specific variables				
Per capita $JTPA_{1983}$	-.192+	(.037)	.008	(.006)
Per capita ES_{1983}	.07*	(.041)	.01	(.008)
$Unemployment\ rate_{1983}$	.12	(.095)	-.11+	(.016)
$Average\ mfg.\ wage_{1983}$	-.20*	(.116)	.04**	(.018)
$Employment\ growth_{1983}$	-8.73	(8.251)	.18	(1.098)
Sample size	1899		31,194	
Emp = 1	170	(P=.1001)	21,331	(P=.8441)
R^2	.284		.188	

Notes: aOmitted group is whites
bOmitted group is nonmarried males with no children
cOmitted group is SMSA, not central city residents

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

	Disadvantaged Youth	Nondisadvantaged Youth
Current employment (1983)	1.92**	.39
Prior year employment (1982)	-1.04	-.50

The only significant coefficient was for the current employment likelihood of disadvantaged youth. The sign of the coefficient suggests that vouchering increases the employment likelihood of disadvantaged youth, while the magnitude of the effects suggests that virtually 100% of certifications create employment among disadvantaged youth. The fact that the coefficients for nondisadvantaged youth are not significant implies that no displacement is occurring.

In the present study, we use the coefficient on PEN2 to gauge displacement. The coefficient estimates in the two exhibits are as follows:

	Disadvantaged Youth	Nondisadvantaged Youth
Current Employment (1984)	14.31	-.50
Prior Year Employment (1983)	81.18+	3.44

The scale of these estimates is larger than those in the CBO study because a certification penetration rate is used. Here, the significant coefficient pertains to prior year employment for the disadvantaged youth, although the coefficient for current employment for disadvantaged youth is nearly significant (p=.21). The magnitude of the prior year employment impact for disadvantaged youth translates to job creation on the order of 120-150 thousand jobs which is approximately equivalent to 50 percent of youth certifications. The small coefficients on nondisadvantaged

youth suggest virtually no displacement of nondisadvantaged youth.

2. DISPLACEMENT ESTIMATES FROM THE 1980 CURRENT POPULATION SURVEY

As stated above, the basic assumption beneath use of the model given in equation (3) rather than equation (2) was that the coefficients would vary by year. A test of that assumption was performed by estimating the same equations as those reported in the preceding section only using the March 1980 CPS. Exhibit IV-8 provides estimates over the entire adult population ages 18 to 35 for survey week employment likelihood.

A comparison of the coefficients for the TJTC-related variables between Exhibits IV-1 and IV-8 shows great similarity in program effects between 1984 and 1980. The only substantial differences arise in the coefficients on youth eligibility and PEN2. The youth eligibility coefficient is positive and significant in Exhibit IV-8 while it is negative but not significant in the estimates from the 1984 CPS. The coefficient on the PEN2 variable is positive for current employment in Exhibit IV-8 and negative in Exhibit IV-1, although not significant in either case. The change in signs for the youth eligibility variable may be explainable by the fact that all cooperative education participants were eligible in 1980, but by 1984, only economically disadvantaged youth were eligible.

In order to observe whether the employment generation implied by the coefficients on PEN2 and Eligible*PEN2 for current employment was equitably distributed among race/sex groups, we disaggregated the results shown in Exhibit IV-8 by race and by sex. These results are provided in Exhibits IV-9 and IV-10. In Exhibit IV-9, it can be observed that the employment generation estimates for the current year employment concept are larger for

EXHIBIT IV-8

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PROBABILITY OF CURRENT EMPLOYMENT (1980)
(Standard errors in parentheses)

Variable	Coefficient	
TJTC related variables		
Economically disadvantaged	-2.12+	(.126)
Economically disadvantaged youth	.60**	(.239)
Received AFDC in 1979	-1.39+	(.183)
Youth target group member * Y_PEM2_t	-.13	(.200)
AFDC * A_PEM1_t	2u.88	(1.488)
AFDC * A_PEM2_t	-827.44**	(318.78)
$PEM1_t$	.05**	(.019)
$PEM2_t$	4.32	(3.636)
Eligible * $PEM2_t$	28.62*	(17.085)
Personal characteristics		
Age	.36+	(.031)
Black[a]	-.31+	(.043)
Other nonwhites	-.35	(.066)
Female, nonmarried, no children[b]	.05	(.045)
Female, nonmarried, children[b]	-.15***	(.048)
Female, married, no children[b]	-.37+	(.053)
Female, married, children[b]	-1.76+	(.041)
Male, nonmarried, children[b]	-.28+	(.051)
Male, married, no children[b]	.88+	(.074)
Male, married, children[b]	.92+	(.058)
Log (Income)	.28+	(.017)
Grade	.07+	(.005)
Enrolled currently	-.85+	(.02?)
Central city[c]	-.02	(.032)
NonSMSA[c]	-.06*	(.031)
State employment characteristics		
Per capita $CETA_{1979}$	-.004	(.003)
Per capita ES_{1979}	.01	(.013)
Unemployment $rate_{1979}$	-.07+	(.011)
Avg. mfg. $wage_t$	.00	(.002)
Employment $growth_t$	.79	(.887)
Sample size	41,307[d]	
Emp=1	28,738	(P=.6957)
R^2	.188	

Notes: [a]Omitted group is whites
[b]Omitted group is nonmarried males with no children
[c]Omitted group is SMSA, not central city residents
[d]Random sample of .80

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-9

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON CURRENT EMPLOYMENT LIKELIHOOD (1980), BY SEX
(Standard errors in parentheses)

Variable	Sex			
	Male		Female	
TJTC-related variables				
Economically disadvantaged	-2.35+	(.213)	-1.89+	(.154)
Economically disadvantaged youth	.87**	(.474)	.36	(.292)
Rec'd AFDC in 1979	-1.43**	(.587)	-1.35+	(.207)
Youth target group member $*Y\_PEN1_t$	.98	(1.877)	.36	(.573)
Youth target group member $*Y\_PEN1_t^2$	-1.19	(1.414)	-.13	(.193)
AFDC $*A\_PEN1_t$	-48.32	(55.890)	28.53*	(17.292)
AFDC $*A\_PEN_t^2$	812.25	(1045.771)	-811.96**	(338.722)
$PEN1_t$	.04	(.032)	.05**	(.024)
$PEN2_t$	1.12	(6.026)	5.47	(4.572)
Eligible * $PEN2_t$	12.65	(48.502)	25.11	(18.326)
Personal characteristics				
Age	.21+	(.053)	.18+	(.040)
Blacka	-.52+	(.067)	-.17***	(.055)
Other nonwhitea	-.59+	(.105)	-.20**	(.085)
Nonmarried, with childrenb	-.29+	(.055)	-.20+	(.051)
Married, no childrenb	.87+	(.075)	-.40+	(.057)
Married, childrenb	.93+	(.061)	-1.78+	(.049)
Log (Income) in 1979	.23+	(.027)	.30+	(.022)
Grade completed$_{t-1}$	.05+	(.008)	.08+	(.007)
Currently enrolled	-1.01+	(.042)	-.73+	(.037)
Central cityc	-.07	(.052)	.01	(.041)
NonSMSAc	-.08	(.052)	-.05	(.038)
State employment characteristics				
Per capita $CETA_{1979}$	-.003	(.005)	-.003	(.004)
Per capita ES_{1979}	-.03	(.021)	.04**	(.016)
Unemployment $rate_{1980}$	-.10**	(.018)	-.05+	(.014)
Ave. mfg. $wage_{1980}$	.00	(.002)	.00*	(.002)
Employment $growth_{1980}$	2.51	(1.140)	-.30	(.864)
Sample size	19,781d		21,526d	
Emp = 1	15,947 (P=.8062)		12,791 (P=.5942)	
R^2	.178		.137	

Notes: aOmitted group is whites
bOmitted group is nonmarried males with no children
cOmitted group is SMSA, not central city residents
dRandom sample of .80

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-10

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON CURRENT EMPLOYMENT LIKELIHOOD (1980), BY RACE
(Standard errors in parentheses)

Variable	Race			
	Nonwhites		Whites	
TJTC-related variables				
Economically disadvantaged	-2.40+	(.025)	-2.02+	(.148)
Economically disadvantaged youth	.88**	(.439)	.55*	(.294)
Rec'd AFDC in 1979	-1.38+	(.352)	-1.30+	(.234)
Youth target group member * Y_PEM1_{1980}	.35	(.757)	.05	(.733)
Youth target group member * Y_PEM2_{1980}	-.12	(.240)	-.15	(.299)
AFDC * A_PEM1_{1980}	29.17	(29.499)	8.46	(20.813)
AFDC * A_PEM2_{1980}	-644.58	(574.225)	-517.01	(397.135)
$PEM1_{1980}$	.09**	(.047)	.03	(.022)
$PEM2_{1980}$	17.99*	(9.427)	3.85	(4.017)
Eligible * $PEM2_{1980}$	33.89	(28.080)	29.05	(23.237)
Personal characteristics				
Age	.46+	(.085)	.35+	(.034)
Female, nonmarried, no children[a]	.00	(.114)	.05	(.049)
Female, nonmarried, children[a]	-.15	(.108)	-.13**	(.054)
Female, married, no children[a]	-.70+	(.164)	-.38+	(.056)
Female, married, children[a]	.93+	(.111)	-1.87+	(.044)
Male, nonmarried, children[a]	-.21	(.128)	-.28+	(.057)
Male, married, no children[a]	.82+	(.226)	.84+	(.079)
Male, married, children[a]	.89+	(.147)	.91+	(.061)
Log (Income)	.37+	(.044)	.25+	(.019)
Grade	.11+	(.015)	.06+	(.006)
Enrolled Currently	-.76+	(.072)	-.87+	(.030)
Central City[b]	.07	(.082)	-.02	(.035)
Non SMSA[b]	-.07	(.100)	-.05	(.032)
State employment characteristics				
Per capita $CETA_{1979}$	.011	(.007)	-.008**	(.004)
Per capita ES_{1979}	-.04	(.042)	.01	(.015)
$Unemployment\ rate_{1980}$	-.01	(.033)	-.07+	(.012)
$Ave.\ mfg.\ wage_{1980}$	.00	(.005)	.00	(.002)
$Employment\ growth_{1980}$	7.38+	(1.992)	-.41	(.742)
Sample size	5,279[c]		36,028[c]	
Emp=1	3,093 (P=.5859)		25,645 (P=.7118)	
R^2	.203		.185	

[a]Omitted group is nonmarried males with no children.
[b]Omitted group is SMSA, not central city residents.
[c]Random sample of .70

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

females than for males. As was the case in earlier exhibits, the signs of the coefficients on PEN2 are positive, but the coefficients are not significant. Two major differences between the sexes in the results shown in Exhibit IV-9 are in the coefficients on the welfare eligibility-welfare penetration rate interactions and on youth eligibility. The results for females for the welfare eligibility-penetration rate interactions fit well the expected quadratic relationship indicating decreasing returns to additional vouchers. However for males, the signs are precisely reverse of what was expected. The positive youth eligibility effect was much stronger for males than females. Other differences in the coefficient estimates can be observed for the per capita Employment Service variable (positive for females; negative for males) and the employment growth rate (large positive for males, essentially zero for females.)

In Exhibit IV-10, we observe that the coefficient on PEN2 for nonwhites is positive and significant, while it is positive but not significant for whites. This suggests that nonwhites exhibit greater employment impacts than whites. Among the state employment characteristic variables, it can be seen that per capita CETA tended to reduce the employment likelihood of whites among the target groups, as did the state unemployment rate. On the other hand, the annual average employment growth seemed to have a bigger effect on nonwhites.

The similarity of coefficients on the TJTC-related variables between the estimates from the 1980 data and the 1984 data despite major changes in program administration suggest that the model initially discussed in Chapter 2 which calls for pooling the 3 years of data may be appropriate. We turn to the econo-

3. DISPLACEMENT ESTIMATES USING POOLED CROSS-SECTIONAL DATA

The final set of estimates calculated to examine whether displacement occurs as a result of TJTC relies on the model specified in equation (2) in chapter II. That is, data from the 1979, 1980, and 1984 CPS files were merged and the coefficients on the TJTC-related variables were assumed to be constant over time.

Two estimation strategies were followed. The first corresponded closely to the models reported in all of the exhibits previously discussed--that is logit estimation was used. Use of the combined 3-year sample of about 150,000 adults, aged 18-35, and use of 50 state dummies could not be accomplished with our Logit software/hardware configuration, so the first strategy was to estimate the logit without the state dummies (but with time dummies) over a random 25 percent subsample. Exhibit IV-11 provides those results. The dependent variable is current year employment likelihood. As the exhibit indicates, the coefficient on PEN2 and Eligible*PEN2 are very small relative to their standard errors. The main effect for PEN1 was positive and significant, however. This suggests that vouchering has an employment creation benefit. The eligibility effects, however, corresponded to the pattern discussed previously in which being a disadvantaged youth had a positive impact on employment likelihood, while being eligible because of receiving AFDC was stigmatizing.

The second strategy was to use OLS to estimate the model of employment likelihood using a random .80 sample. In Exhibit IV-12, we provide those estimates. The left hand column in the Exhibit provides the coefficient estimates for the model without any of the state dummy variables, while the right hand column has estimated for the full model. In the former case, the coefficients on PEN2 and Eligible*PEN2 are positive, while somewhat

EXHIBIT IV-11

Employment and Training Administration

COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PROBABILITY OF CURRENT EMPLOYMENT USING POOLED DATA FROM 1979, 1980, AND 1984
(Standard errors in parentheses)

Variable	Coefficient	
TJTC related variables		
Economically disadvantaged	-2.05+	(.117)
Economically disadvantaged youth	.64+	(.190)
Received $AFDC_{t-1}$	-1.21+	(.106)
Youth target group member * Y_PEM1_t	-.45	(.779)
Youth target group member * Y_PEM2_t	-.09	(.398)
AFDC * A_PEM1_t	.49	(2.535)
AFDC * A_PEM2_t	.14	(5.438)
$PEM1_t$	.10+	(.030)
$PEM2_t$	1.69	(1.842)
Eligible $PEM2_t$	2.33	(8.530)
Personal characteristics		
Age	.38+	(.034)
Blacks	-.27+	(.045)
Other, nonwhites	-.38+	(.073)
Female, nonmarried, no children[b]	.10**	(.047)
Female, nonmarried, children[b]	-.18+	(.051)
Female, married, no children[b]	-.29+	(.057)
Female, married, children[b]	-1.65+	(.044)
Male, unmarried, children[b]	-.32+	(.056)
Male, married, no children[b]	.86+	(.081)
Male, married, children[b]	.93+	(.060)
Log (income)	.28+	(.018)
Grade	.07+	(.006)
Enrolled currently	-.82+	(.030)
Central city[c]	.03	(.033)
NonSMSA[c]	.02	(.032)
State employment characteristics		
Per capita $JTPA_{t-1}$	-.003	(.004)
Per capita ES_{t-1}	-.01*	(.007)
Unemployment $rate_t$	-.07+	(.010)
Average manufacturing $wage_t$	-.00	(.001)
Employment $growth_t$	2.63+	(.804)
Sample size	35,186[d]	
Employment = 1	24,441	(P = .6948)
R^2	.188	

Notes: [a]Omitted group is whites
[b]Omitted group is nonmarried males with no children
[c]Omitted group is SMSA, not central city residents
[d]Random sample of .25

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

EXHIBIT IV-12

Employment and Training Administration

OLS COEFFICIENT ESTIMATES FOR A MODEL OF THE IMPACT OF TJTC ON PROBABILITY OF CURRENT EMPLOYMENT USING POOLED DATA
(Standard errors in parentheses)

Variable	Model 1 (No state variables)		Model 2 (State dummies)	
TJTC related variables				
Economically disadvantaged	-.38+	(.010)	-.35	(.010)
Economically disadvantaged youth	.09	(.015)	.10	(.015)
Received $AFDC_{t-1}$	-.20+	(.010)	-.21	(.101)
Youth target group member* Y_PEM1	-.04	(.052)	-.05	(.052)
Youth target group member $* Y\_PEM12$	-.00	(.019)	.01	(.018)
AFDC $* A\_PEM1_t$	-.28	(.227)	-.13	(.227)
AFDC $* A\_PEM12_t$	.57	(.528)	.30	(.528)
$PEM1_t$	.01+	(.003)	.01**	(.003)
$PEM2_t$	.15	(.179)	-.41*	(.220)
Eligible $* PEM2_t$	.18	(.749)	-.03	(.748)
Personal characteristics				
Age	.08+	(.003)	.08+	(.003)
Blacka	-.05+	(.004)	-.06+	(.005)
Other nonwhitea	-.07+	(.007)	-.07+	(.007)
Female, nonmarried, no childrenb	.02+	(.004)	.02+	(.004)
Female, nonmarried, childrenb	-.04+	(.005)	-.04+	(.005)
Female, married, no childrenb	-.05+	(.005)	-.05+	(.005)
Female, married, childrenb	-.33+	(.004)	-.33+	(.004)
Male, nonmarried, childrenb	-.06+	(.006)	-.06+	(.006)
Male, married, no childrenb	.09+	(.005)	.09+	(.006)
Male, married, childrenb	.09+	(.004)	.09+	(.004)
Log (Income)	.05+	(.002)	.05+	(.002)
Grade	.01+	(.001)	.01+	(.001)
Enrolled currently	-.15+	(.003)	-.15+	(.003)
Central cityc	-.00	(.003)	.00	(.003)
NonSMSAc	-.00	(.003)	-.00	(.003)
State employment variables				
$CETA/JTPA_t$	-.0003	(.0003)	-.0004	(.0005)
ES_t	-.002+	(.001)	-.003+	(.001)
$Urate_t$	-.01+	(.001)	-.007+	(.001)
$Wage_t$	-.00	(.000)	.00	(.000)
Employment $growth_t$	.35+	(.058)	.22***	(.066)
Sample size	112,522d		112,522d	
R^2	.217		.218	

Notes: aOmitted group is whites
bOmitted group is nonmarried males with no children
cOmitted group is SMSA, not central city residents
dRandom sample of .80

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

inexplicably, the impact becomes negative and significant for the full model. The eligibility effects are again positive for youth and negative for the AFDC target group, while the vouchering effect indicated by the coefficients on the eligibility-PEN1 interaction terms are essentially zero.

In the next chapter of the report, we attempt to synthesize all the results to arrive at a conclusion about employment displacement by TJTC.

V. CONCLUSIONS AND IMPLICATIONS

V. CONCLUSIONS AND IMPLICATIONS

The estimates presented in the exhibits in the previous chapter can be used to draw conclusions about the effects of TJTC on the likelihood of employment of target group and noneligible individuals. It should be emphasized that models were estimated with alternative data sources that contain completely different cases and pertain to different years. Because the TJTC program evolved over the years after its inception in 1978, the data sources used here should capture alternative impacts in employment likelihood.

Two alternative models were estimated--one that assumed that the impacts of TJTC were basically stable over time and which controlled for time and state variation through a fixed effects methodology and one that assumed that the impacts of TJTC changed over time. The empirical results seem to support the assumption of stable impacts over time, at least for the target groups analyzed here--disadvantaged youth and welfare recipients.

As presented in chapter II, there were three main focuses of the analyses. First, we tested hypotheses about the signs of the coefficients in the two models. Second, by assuming that the point estimates were valid, we calculated the impact of TJTC vouchering and certification on an individual's probability of employment. We entitled this calculation the program effect. Finally, we argued that the model estimates can be used to calculate net job creation (or loss) in the entire population.

In Exhibit V-1, we present the results of the hypotheses tests. The first set of tests examine the effect of eligibility for TJTC and our hypothesis was of indeterminate sign because employer stigma may cause decreased likelihoods of employment, or the tax credit may cause employers to attempt to hire individuals for target groups. A consistent result is that the

EXHIBIT V-1

Employment and Training Administration

SUMMARY OF HYPOTHESES TESTS

Current or previous year employment	Year	Population	Target Group	Hypotheses: Eligibility effect: $a_5 \gtrless 0$	Vouchering effect: $a_3 > 0$, $a_4 < 0$	Voucher employment expansion or displacement $a_6 \gtrless 0$	Certification effect $a_7 > 0$	Certification employment expansion or displacement $a_8 \gtrless 0$	Reference Table
Current	1984	Aged 18-35	Youth Welfare	<0 <0+	>0 <0 >0 <0	>0**	>0***	<0	IV-1
Previous Year	1983	Aged 18-35	Youth Welfare	<0 <0+	>0 <0 >0 <0	<0	>0***	>0	IV-1
Current	1984	Aged 18-35; Males	Youth Welfare	>0 <0**	>0 <0 <0 >0	>0	>0+	<0	IV-2
Current	1984	Aged 18-35; Females	Youth Welfare	>0 <0+	>0 <0 >0 <0	>0**	>0*	<0	IV-2
Previous Year	1983	Aged 18-35; Females	Youth Welfare	<0 <0***	>0 <0 <0 >0	>0	>0	<0	IV-3
Current	1980	Aged 18-35	Youth Welfare	>0** <0+	>0 <0 >0 <0**	>0**	>0*	>0	IV-8
Current	1980	Aged 18-35; Males	Youth Welfare	>0** <0**	>0 <0 <0 >0	>0	>0	>0	IV-8
Current	1980	Aged 18-35; Females	Youth Welfare	>0 <0+	>0 <0 >0 <0	>0**	>0	>0	IV-8
Current (Logit)	1979, 1980 1984	Aged 18-35	Youth Welfare	>0+ <0+	<0 <0 >0 >0	>0+	>0	>0	IV-11
Current (OLS with state dummies)	1979, 1980 1984	Aged 18-35	Youth Welfare	>0+ <0+	<0 >0 <0 >0	>0**	<0	<0+	IV-12

*significant at less than .10 level
**significant at less than .05 level
***significant at less than .01 level
+significant at less than .001 level

welfare eligibility effect is negative--it is negative and statistically significant in every row of Exhibit V-1. The disadvantaged youth eligibility effect is less clear. It is positive and significant for 1980 and for the pooled data, but from the 1984 CPS, the sign is unstable and not significant. These results suggest that eligible youth were helped by eligibility during the program's initial years, but this advantage has vanished. These effects are consistent with the eligibility study is the Short-run Impacts Report.

The next two hypotheses shown in the exhibit pertain to vouchering. Our hypotheses were that the vouchering effects on eligibles would net out to be positive but would have a negative quadratic term indicating decreasing returns to vouchering. This was indeed the typical case, but the coefficients generally did not attain statistical significance. The displacement effect of vouchering, represented by a_6 in our models, was generally positive, implying employment stimulation.

The a_7 coefficient represented the impact of certification on target group members and our expectation was that this would be positive since, in fact, certification implies employment. The results strongly substantiated the expected positive impact for the TJTC eligible population. The displacement effect of certification on the general population did not have a consistent sign nor significance.

The program effects and estimates of overall employment generation are shown in Exhibit V-2. It can be seen in that exhibit that among eligibles, TJTC had a fairly sizable positive impact on employment likelihoods. The increases were on the order of 10 percentage points. The program effect for noneligibles was positive (but small) in most cases, implying no

Exhibit V-2

Employment and Training Administration

SUMMARY OF PREDICTED PROGRAM EFFECTS AND JOB CREATION

Current or previous year employment	Year	Population	Target Group	Predicted program effect on: Eligibles	Predicted program effect on: Non-eligibles	Job creation or (loss)	Reference Table
Current	1984	Aged 18-35	Youth Welfare	.12 .11	.008	340,000	IV-1
Previous year	1983	Aged 18-35	Youth Welfare	.13 .06	.002	147,000	IV-1
Current	1984	Aged 18-35	Youth Welfare	.12 .07	.002	44,000	IV-2
Current	1984	Aged 18-35; Males	Youth Welfare	.11 .11	.011	230,000	IV-2
Previous year	1983	Aged 18-35; Females	Youth Welfare	.18 .04	-.001	55,000	IV-3
Current	1980	Aged 18-35	Youth Welfare	.06 .09	.011	310,000	IV-8
Current	1980	Aged 18-35; Male	Youth Welfare	.04 -.07	.004	50,000	IV-9
Current	1980	Aged 18-35; Female	Youth Welfare	.09 .11	.016	300,000	
Current (Logit)	1979, 1980, 1984	Aged 18-35	Youth Welfare	-.01 .02	.007	180,000	IV-11
Current (OLS with state dummies)	1979, 1980, 1984	Aged 18-35	Youth Welfare	-.01 -.01	-.002	(62,000)	IV-12

net displacement of noneligibles by eligibles. The overall job creation estimates were typically on the order of 200,000 - 300,000 additional persons employed. Most of the additional employment accrued to noneligibles, however.

In summary, the analyses here, which could be said to reflect a full, general equilibrium impact evaluation of TJTC presents considerable evidence suggesting (1) no displacement of noneligibles by certified workers and (2) small positive levels of net job creation, although this result is tenuous and, in magnitude, represents a minority of total overall certifications.

REFERENCES

Baily, Martin and Tobin, James. "Macro-economic Effects of Selective Public Employment and Wage Subsidies," Brookings Papers on Economic Activity (1977), No. 2: 511-544.

Bishop, John and Hollenbeck, Kevin. The Impact of TJTC on Employers. Columbus: The National Center for Research in Vocational Education, The Ohio State University, June 1986.

Christensen, Sandra. The Targeted Jobs Tax Credit. Washington DC: Congressional Budget Office, May 1984.

Maddala, G. S. "The Use of Variance Components Models in Pooling Cross Section and Time Series Data." Econometrica 39, no. 2 (1971): 341-358.

Mundlak, Y. "Empirical Production Function Free of Management Bias." Journal of Farm Economics 43 (1961): 44-56.

_____. "On the Pooling of Time Series and Cross Section Data." Econometrica 46, no. 1 (1978): 69-85.