NBER WORKING PAPER SERIES

WAGE SUBSIDIES FOR THE DISADVANTAGED

Lawrence F. Katz

NBER Working Paper 5679

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 1996

The original version of this paper was prepared for the Russell Sage Foundation Conference on "Demand Side Policies for Low-Wage Labor Markets," New York, NY, June 26-27, 1995. I am grateful to Richard Freeman and the conference participants for helpful comments, to David Lah for valuable information and data on the Targeted Jobs Tax Credit, and to Marianne Bertrand for excellent research assistance. This paper is part of NBER's research program in Labor Studies. Any opinions expressed are those of the author and not those of the National Bureau of Economic Research.

NBER Working Paper 5679
July 1996

WAGE SUBSIDIES FOR THE DISADVANTAGED

ABSTRACT

Wage subsidies to private employers have often been proposed by economists as a potentially flexible and efficient method to improve the earnings and employment of low-wage workers. This paper lays out the basic economics of wage subsidies; examines issues arising in the design of alternative forms of wage subsidies; and reviews evidence on the effectiveness of recent U.S. wage subsidy programs and demonstration projects. Wage subsidies to employers to hire disadvantaged workers appear to modestly raise the demand for labor for those workers. Stand-alone wage subsidies (or employment tax credits) that are highly targeted on very specific groups (such as welfare recipients) appear to have low utilization rates and may (in some cases) stigmatize the targeted group. But new evidence based on an examination of changes in eligibility rules for the Targeted Jobs Tax Credit, the major U.S. wage subsidy program for the economically disadvantaged from 1979 to 1994, suggests modest positive employment effects of the TJTC on economically disadvantaged young adults. Policies combining wage subsidies with job development, training, and job search assistance efforts appear to have been somewhat successful in improving the employment and earnings of specific targeted disadvantaged groups.

Lawrence F. Katz
Department of Economics
Harvard University
Cambridge, MA 02138
and NBER

I. INTRODUCTION

Growing disparities in the economic fortunes of American families over the past twenty years have been associated with large increases in wage inequality and rising gaps in labor market outcomes between more- and less-skilled workers. The real earnings of many groups of workers, particularly less-educated young men, have fallen since the early 1970s. Much research suggests that a major contributor to these changes has been a substantial decline in the relative demand for the less-educated and those doing more routinized tasks compared to the relative supply of such workers (e.g., Bound and Johnson, 1992; Katz and Murphy, 1992). The shift in relative demand against the less-skilled appears to be driven by both skill-biased technological change--the computer revolution--and the increased internationalization of economic activity. While much debate exists concerning the relative importance of different underlying causes of the decline in demand for the less-skilled, the underlying trends do not appear likely to quickly reverse themselves. In summary, the U.S. labor market has experienced a sustained twist against disadvantaged workers--those with limited education or skills and/or from impoverished families and neighborhoods--that has greatly diminished their earnings prospects.

Market incentives for increased educational investments and skill upgrading can play some role in alleviating growing wage inequality. Evidence from U.S. time series and cross-country studies strongly suggest that rapid expansions of the supply of more educated workers narrow earnings differentials and improve the labor market position of the less-skilled (Freeman and Katz, 1994). But the process of supply adjustment can take many years, and many disadvantaged individuals face financial and informational barriers to pursuing further education and training and are likely to be left behind.

This prospect motivates an examination of policies that deal directly with the market shifts adversely impacting less-skilled workers by improving their skills and/or stimulating employment opportunities through direct job creation in the public sector or the subsidization of their employment in the private sector. Much recent work has evaluated the effectiveness of alternative education and training policies for improving the labor market prospects of the disadvantaged. Increased access to schooling at mainstream educational institutions (high schools, community colleges, and universities) for those from low-income families appear to have a reasonably high payoff (Card, 1994). Public sector-sponsored training programs have a mixed record with strong positive returns for disadvantaged adults (particularly adult women) and a more disappointing results in evaluations of programs for disadvantaged out-of-school youths (Heckman, Roselius, and Smith, 1993; Katz, 1994; and LaLonde, 1995).

Much less recent research attention has focused on micro demand-side policies to offset the decline in demand for the less-skilled. Wage subsidies to private employers have often been proposed by economists as a relatively flexible and efficient method to improve the earnings and employment of the less-skilled. In a wage subsidy program, job creation and hiring decisions remain in the hands of private firms, but the cost is partially borne by government. Firms are likely to respond to wage subsidies by increasing their utilization of workers in the targeted population. The extent to which this response raises the wages and employment of the targeted group and has impacts on non-subsidized workers is an empirical question that depends on the relevant labor demand and supply parameters as well as administrative aspects of the design of the subsidy program. The U.S. has experimented with a variety of tax credit programs to encourage firms to change their hiring patterns in the

past and several demonstration projects using variants of wage subsidies have been evaluated. Most other OECD nations also have experience with private sector employment subsidies.

In this paper, I first lay out briefly the basic economics of wage subsidies and issues arising in the design of alternative forms of wage subsidies. I then review the available evidence on the effectiveness of private sector wage subsidies as a tool to improve the labor market prospects of less-skilled workers and provide some new evidence on the employment effects of the Targeted Jobs Tax Credit, a targeted wage subsidy program that operated in the United States from 1979 to 1994. Finally I derive lessons for policy-design from past experience with wage subsidies.[1]

I conclude that there exists much uncertainty concerning the likely effects of a general graduated wage subsidy for low-wage or low-skill workers, but the existing evidence suggests it is a policy worthy of some further experimentation. Stand-alone wage subsidies (or employment tax credits) that are highly targeted on very specific socioeconomic groups (such as welfare recipients or ex-convicts) appear to be somewhat less-effective than more broadly targeted subsidies and may (in some cases) stigmatize the targeted group. Policies using an intermediary (a public employment agency, nonprofit training organization, etc.) that combine job development, job search assistance, training, and wage (or employment) subsidies appear more successful for targeting on specific disadvantaged groups.

II. THE ECONOMICS AND DESIGN OF WAGE SUBSIDIES

The basic idea behind (employer-side) wage subsidies is to reduce the costs to employers of employing the targeted group of workers thereby stimulating demand for these

workers and raising their employment rates and earnings. A substantial literature has examined the analytics of the impacts of wage subsidies on employment and wages in both standard competitive labor market models and in models with various types of wage rigidities or other market imperfections that generate structural unemployment (e.g., Kaldor, 1936; Hamermesh, 1978; Phelps, 1994b; and Snower, 1994). Phelps (1994a) makes a particularly strong case for wage subsidies for low-wage workers based on equity considerations; the social costs of inefficiently high unemployment; and the possible negative spillover effects of poor labor market performance by the disadvantaged on their neighbors, children, and younger siblings.

The Design of Wage Subsidies

Employer-side wage subsidies (programs that subsidize efforts to create jobs in the private sector) can take a variety of forms (Hamermesh, 1978; OECD, 1982). A wage subsidy can be applied to all employment, to net changes in employment (a marginal or incremental employment subsidy), or to gross flows into employment arising from new hires or layoffs. Subsidies based on total employment (or, often in practice, on the total wage bill) apply during the entire time a workers is employed with a firm and create "windfalls" to employers on that part of employment that would exist in the absence of the subsidy. True marginal employment subsidies could eliminate these windfalls (and reduce the net costs of job creation/wage increases) but such a policy would require information on what employment levels would be in the absence of the subsidy. Actual incremental employment subsidies can somewhat reduce windfalls by providing subsidies only for employment growth

beyond some base employment level, but such policies can create perverse incentives for employment variation and changes in organizational form and can become administratively quite complex. Many OECD wage subsidy programs are hiring subsidies that provide temporary wage subsidies for selected groups of new hires. Such programs can generate incentives for higher turnover and disproportionately benefit sectors with high turnover and more variable employment. Some U.S. programs have attempted to mitigate these incentives by barring employers who systematically fail to retain subsidized workers. Some OECD nations have attempted to provide subsidies to "struggling" firms to avert layoffs, but such policies can create moral hazard problems with firms' threatening layoffs to gain a subsidy.

Wage subsidies can also be either general or categorical. Categorical subsidy (targeted wage subsidies) are paid on the employment or hiring of only certain specific categories of workers (e.g., economically disadvantaged youth, public assistance recipients, the disabled, dislocated workers, or the long-term unemployed). Targeted wage subsidies are often motivated by desires to affect the composition of employment and aim program benefits at specific groups of workers whose employment opportunities are viewed as particularly in need of improvement. But targeting on the basis of sociodemographic categories of which employers may have negative views may serve to stigmatize participating job-seekers and limit employer interest in the program. If categorical subsidies are successful in expanding employment opportunities for target group members, one must worry about the horizontal equity of potentially displacing workers with similar labor market prospects who are not eligible for the program. General wage subsidies with caps on the amount of subsidy per worker or with a graduated structure may be able to increase the incentives for employing

low-wage workers without the stigmatizing potential of categorical programs.

Two other considerations in the design of wage subsidies are the geographic extent of the subsidies and the administrative operation of the program. Wage subsidies can either operate nationally or be place-based programs with eligibility restricted to certain regions or local labor markets. Place-based targeting based on location of residence may be less stigmatizing than targeting on the basis of demographic groups. Place-based subsidies may largely serve to redistribute employment levels across areas with small impacts on aggregate employment opportunities for the targeted groups if firm and/or worker migration is significant in response to labor market incentives. Subsidies can also be run through the tax system (employment tax credits as in the New Jobs Tax Credit and the Targeted Jobs Tax Credit) which can reduce administrative burdens but only provide incentives to firms with positive tax liabilities (although they can be designed with generous loss carryovers), or they can be directly paid to employers (which may require new information requirements and an administering agency).

In a simple Coasian world without transaction costs or imperfect information, it should not matter whether wage subsidies are provided to employers or equivalent earnings supplements provided to workers. There are many reasons why the side of the market in which the subsidy is provided could matter in practice. For example, employee earnings supplements (such as the Earned Income Tax Credit) may allow better targeting on the basis of family income without the stigma of sociodemographic targeting in categorical employer subsidies. When wages are rigid because of a binding minimum wage law or other impediments to wage adjustment, employee-side wage supplements will be more effective in

raising take-home earnings and employer-side subsidies more effective at increasing employment. The choice of the side of the market to place a subsidy may depend on the immediate decision-maker one is trying to affect. Employer-side subsidies hiring subsidies for targeted groups are more likely to be salient and affect their recruiting patterns towards those groups, while employee-side wage supplements or re-employment bonuses may have a greater affect on worker search behavior.

The Simple (Partial-Equilibrium) Analytics of Wage Subsidies

An employer-side wage subsidy for low-wage workers shifts out the labor demand curve for low-wage workers. In a situation of structural unemployment in which the effective supply of labor is infinitely elastic (Figure 1A), a (proportional) wage subsidy (s) will not affect the wages of but will expand the employment of low-wage workers in proportion to the (absolute value of the) elasticity of labor demand for low-wage workers. More generally the impact on wages and employment of the targeted group depends on the effective wage elasticities of labor demand and labor supply for the group (Figure 1B). The impact of a proportional wage subsidy (s) for low-wage workers on the employment (L) and wages (W) of low-wage workers starting from a point of zero subsidy is given by the standard formulas:

$$(1) \qquad \frac{d\ln L}{ds} = \frac{\eta\epsilon}{\eta+\epsilon}$$

$$(2) \qquad \frac{d\ln W}{ds} = \frac{\eta}{\eta+\epsilon}$$

where η is the absolute value of the labor demand elasticity for low-wage labor and ϵ is the effective labor supply elasticity. Thus the greater is the effective labor supply elasticity, the greater will be the effect of a wage subsidy on employment and the smaller the effect on wages. More elastic labor demand implies larger wage and employment effects of a subsidy. The impact of an actual wage subsidy will depend not only on the relevant labor supply and demand parameters but also on design issues such as its administrative costs to utilize, whether the subsidy stigmatizes eligible groups, and the extent to which employers are aware of the program.

Much uncertainty exists concerning the magnitude of the relevant labor supply and labor demand elasticities for quantitatively assessing the likely impact of a wage subsidy for low-wage or low-skilled workers in the U.S. labor market. Most research suggests at least fairly substantial positive labor supply elasticities for low-wage workers. Juhn, Murphy, and Topel (1991) interpret the decline in employment rates for low-wage adult U.S. males in the 1980s as reflecting a downward shift in labor demand for less-skilled workers combined with a stable labor supply curve. Their estimates (based on both cross-section and time-series variation) of the gross wage elasticity of the labor supply of low-wage men (those in the bottom quintile of the wage distribution) range from 0.3 to 0.4. Many studies conclude that labor supply elasticities for teenagers and low-wage women are likely to be at least as large as these estimates for low-wage men, although Moffitt (1992) argues for lower wage elasticities of around 0.2 for single female household heads.

Even less consensus exists concerning the relevant labor demand elasticity for low-wage workers. The empirical labor demand literature that attempts to estimate labor demand

elasticities using "exogenous" supply shifts concludes that own-wage elasticities are particularly high for less-skilled workers in the range of -0.5 or even greater in magnitude (Hamermesh, 1993). But much of the literature estimating the impact of minimum wages on low-wage (particularly teenage) employment suggests small to negligible adverse employment impacts that could be interpreted as implying the demand for low-wage labor is quite inelastic (Card and Krueger, 1995). One possible reconciliation of these findings is the "dissipation effect" of estimated minimum wage effects. Since many teenage workers do not have their wages changed by a minimum wage increase, the percentage increase in the total labor costs of employing teenagers rises by less than the percentage increase in the minimum wage. Thus standard elasticities of a minimum wage increase on teenage employment-population ratios of -0.05 to -0.20 could be consistent with labor demand elasticities for teenagers in the -0.10 to -0.60 range (since Card and Krueger (1995) estimates suggest that average teenage wages appear to rise proportionately by a third to a half as much as increases in the minimum wage). Furthermore, if employers have some wage setting power in low-wage labor markets, as in certain efficiency wage models and search models, then even exogenous minimum wage increases cannot easily be used to estimate labor demand elasticities for low-wage labor (Manning, 1995). Increases in total labor costs may be less than proportional to observed wage increases since, for example, turnover costs might be reduced by a higher minimum wage. Administrative burdens and lack of employer awareness of some targeted wage subsidies suggests the "effective labor demand elasticity" in response to such a wage subsidy might be lower than for an "equivalent" wage decline.

My best guess at "reasonable" parameters for simulating the likely medium-term

impact of a general wage subsidy for U.S. low-wage workers is a labor supply elasticity of approximately 0.4 and a labor demand elasticity of approximately -0.5. Substituting these guesses into equations (1) and (2) yields the prediction that a general 10 percent wage subsidy for low-wage workers would expand their employment by approximately 2 percent and increase their hourly wages by approximately 5 to 6 percent. Thus evaluations of wage subsidies focusing only on employment effects may miss the possibly larger effect of such policies on the wages of the targeted group. But, as I noted above, substantial uncertainty surrounds these predictions and "reasonable" choices of elasticities based on existing evidence could lead to very different estimates. If the labor demand elasticity were -0.1 (as suggested by the minimum wage literature) along with a labor supply elasticity of 0.4, then a 10 percent subsidy produces a 0.8 percent increase in employment and 2 percent increase in wages. If the labor supply elasticity is really much larger as might be the case for groups facing substantial structural unemployment (such as disadvantaged inner-city teenagers), then more of the focus on employment effects is reasonable. This wide range of scenarios suggests a possibly more fruitful approach to assessing the likely effectiveness of a wage subsidy policy is to examine the outcomes observed in past attempts at using wage subsidies and in demonstration projects designed to test alternative employment-subsidy strategies.[2]

III. U.S. EXPERIENCE WITH WAGE SUBSIDIES

The United States has experimented over the past three decades with various forms of categorical wage subsidies to increase private employment opportunities for the disadvantaged and with an incremental employment tax credit as part of a fiscal stimulus package. The

three major efforts have been the New Jobs Tax Credit, the Targeted Jobs Tax Credit, and some aspects of Title II of the Job Training Partnership Act. Two early attempts were the contract component of Job Opportunities in the Business Sector (JOBS), a late 1960s-early 1970s effort to train and hire disadvantaged workers; and the WIN tax credit (WINTC), a 1970s subsidy paid on the wages of AFDC recipients enrolled in the work-incentive program.

The JOBS program started as a voluntary effort by the National Alliance of Business (NAB) to place young and less-educated workers from impoverished backgrounds in private employment. To assist NAB in placing participants, the federal government offered contracts that would reimburse businesses for part of the costs of employment ($3200 per placement on average). Despite this fairly large hiring subsidy and much publicity, surprisingly few of the employers who cooperated with NAB and accepted placements (those employing about one third of the JOBS enrollees) actually took advantage of it (Hamermesh, 1978). The JOBS program provided subsidies to approximately 93,000 positions at its peak in 1971, and it was eliminated with the introduction of the Comprehensive Employment and Training Act (CETA) in 1973. Data from the WINTC program indicate low utilization with never more than 20 percent of the WIN individuals who were known to have entered employment during the year being claimed by firms as tax credits (O'Neill, 1982). The JOBS and WINTC experiences suggest some reluctance on the part of employers to hire under a highly targeted subsidy the requires paperwork not normally part of the hiring process.

New Jobs Tax Credit

The United States has tried one noncategorical employment subsidy, the New Jobs

Tax Credit (NJTC) which was in effect from mid-1977 to the end of 1978. Its main objective was counter-cyclical--to spur private employment expansion and speed up the recovery that was already under way.

The relatively simple idea was to provide a tax credit of fifty percent of the first $4200 of wages per employee for increases in employment of more than two percent over the previous year. But attempts to close loopholes and limit the share of tax benefits accruing to large employers meant the NJTC ended up being fairly complicated (Ashenfelter, 1978). Subject to various limitations, the NJTC entitled employers to a tax credit equal to 50 percent of the excess of wages covered by federal unemployment insurance (FUTA) over 102 percent of FUTA wages (the first $4200 of annual wages paid to each individual employee summed over all employees on the payroll at any time during the year) for the previous year. The total credit could not exceed $100,000 for any one firm (a maximum of approximately 47 employees) so that no marginal incentives were provided for large growing firms.

The NJTC was not explicitly targeted on any sociodemographic group. But because the NJTC only applied to the first $4200 of wages per employee (a maximum credit of $2100), it provided a greater relative incentive for the hiring of low-wage, more disadvantaged and part-time labor than for the hiring of high-wage and full-time labor. While the NJTC was a marginal credit affecting "incremental" hirings rather than a wage subsidy covering all employment, the maximum allowable credit implies that the NJTC provided only a lump sum credit and no marginal wage subsidy to firms with planned employment growth in the absence of the NJTC that is greater than the employment growth subsidized by the credit. Contracting firms also faced no marginal change in incentives.

The credit's employment incentives may also have been limited by its complexity.

The NJTC appears to have been fairly widely claimed on corporate tax returns especially in 1978, although it is unclear the extent to which firms were aware of the credit at the time they were making employment decisions. The Treasury estimates that the direct reduction in tax revenues arising from the NJTC was $5.7 billion for 1977 and 1978 combined (U.S. Departments of Labor and Treasury, 1986). Bishop (1981) estimates that at least 1.1 million employees were subsidized in 1977, and at least 2.15 million in 1978.

Two studies have attempted to evaluate the effects of the NJTC on employment growth. Perloff and Wachter (1979) use data from a large employer survey to compare the 1976 to 1977 employment growth of firms which knew about the NJTC to that of firms unaware of the NJTC. Only 34 percent of the firms in their sample knew of the program although almost all large firms did. They find (from employment growth regressions with controls for firm-size, one-digit industry, region, and tax filing status) that firms which knew about the credit increased employment by over 3 percent more than similar firms that were ignorant of the program. The proportional increase in employment from knowledge of the program decreased with firm size, a finding consistent with the lower likelihood that the NJTC would produce marginal employment incentives for large firms. Nevertheless, one should be somewhat critical of these results since firms with growing employment had a much greater incentive to learn about the program and knowledge of the tax code may be correlated with other characteristics associated with more successful, growing firms.

Bishop (1981) estimates labor demand equations in which employment is related to a measure of employer awareness of the NJTC, current and lagged output, and current and

lagged measure of wages and other inputs using time series data for the construction, wholesale, and retail trade industries. Bishop's estimates imply that the NJTC increased employment in construction and retail from 150,00 to 670,000 (equivalent to an economy-wide employment increase of 0.2 to 0.8 percent) over the mid-1977 to mid-1978 period. While one worries that it may be difficult to sort out the effects of the NJTC from other cyclical factors affecting the economy, the existing evidence suggests that a temporary, noncategorical, incremental employment subsidy has some potential for stimulating employment growth.

Targeted Jobs Tax Credit

The Targeted Jobs Tax Credit (TJTC) was enacted in 1978 to replace the NJTC and remained in effect during almost all of the 1979 to 1994 period.[3] The TJTC offered a tax credit to employers hiring certified target group individuals. The target groups in the TJTC have varied over time but have included various groups of economically disadvantaged youths, public assistance and SSI recipients, Vietnam-era veterans, certain ex-convicts, and disabled individuals undergoing vocational rehabilitation. The TJTC originally provided a tax credit amounting to 50 percent of first year and 25 percent of second year wages up to $6000 for employers who hired individuals certified as members of a target group. Target group individuals could attain vouchers at the Employment Service which they could provide to employers to allow them to receive the credit. The TJTC appears to have been mainly utilized by large firms in the retail and service sectors who contract with management assistance companies to review the eligibility of all new hires and arrange for the

Employment Service to voucher retroactively and certify those found eligible (Lorenz, 1995).

The federal government increasingly restricted eligibility and reduced the value of the credit starting in the mid-1980s. The tax credit for the second year of employment was eliminated in late 1986 and the subsidy rate for the first year of employment was simultaneously reduced to 40 percent for the first $6000 of qualified wages. The age range for eligible economically disadvantaged youth reduced from 18 to 24 years to 18 to 22 years starting on January 1, 1989. The real value of the maximum credit declined by 75 percent over the course of the program. Table 1 illustrates that the number of TJTC certified workers (number of jobs receiving a tax-credit from the TJTC) reached a peak of 622,000 in 1985 and then declined to 364,000 in 1992 in the face of program changes. A recent survey of TJTC-certified workers indicates that the median duration of a TJTC job was 6 months in the early 1990s (U.S. Department of Labor, 1994). This suggests that the stock of individuals in TJTC jobs at a point in time was approximately half the total number of TJTC certifications in a year. Thus the TJTC may have subsidized approximately 0.4 percent of private employment at its peak in 1985. Tax expenditures on the TJTC were approximately $500 million (in 1991 dollars) in the mid-1980s and declined to $245 million in 1991 (U.S. Office of Management and Budget, 1992). Thus the TJTC paid approximately $570 per starting participant in 1991 ($245 million divided by 428 thousand participants). The mean TJTC worker earned approximately $5.00 per hour and worked close to 30 hours per week in 1992 (U.S. Department of Labor, 1994). Thus the TJTC appears to have reduced employer wage costs by approximately 15 percent for the typical TJTC participant in a job of six month duration in the early 1990s.

The TJTC has played a modest labor market role for disadvantaged youths and welfare recipients, who together accounted for more than 80 percent of the total tax credits. Economically disadvantaged youth represented the majority of TJTC certifications throughout the life of the program. Table 1 provides a comparison of the level of TJTC certifications and an estimate of the number of employed economically disadvantaged youths for whom firms could theoretically collect the TJTC.[4] The estimates in the table imply that from the mid- to late-1980s approximately 9 percent of economically disadvantaged youth who were eligible and employed had been hired under the credit. This take-up rate is a bit higher than the under 5 percent rate estimated by O'Neill (1982) for the first year of program operation.

One possibility for low utilization of the TJTC is regulatory burden and the lack of support for the program by its administering agencies the Department of Labor and the state Employment Services. An alternative explanation is the stigma that targeting may attach to workers whose employment the government seeks to advance. The stigma hypothesis gains support from the results of a controlled experiment conducted in Dayton, Ohio in 1980-81 to try to test the effectiveness of two targeted wage subsidy plans (Burtless, 1985). Welfare (AFDC and general assistance) recipients, all eligible for the TJTC, were randomly assigned to three groups. The first group received vouchers that could be presented to prospective employers for direct cash rebate subsidies. The second experimental treatment group were given tax credit vouchers that allowed prospective employers to receive either the WIN tax credit or the TJTC. Participants in these first two groups were encouraged to distribute explanatory material about the wage subsidies (tax credits) to employers they contacted during their job search. Members of the third group while technically eligible for the WIN

or TJTC tax credits received no vouchers and were not informed of their eligibility for these programs. The striking result of this experiment is that job seekers given experimental vouchers in both treatment groups were significantly less likely to find employment than were job seekers without vouchers. One interpretation is that vouchers indicating eligibility for a targeted wage subsidy but also indicating that the individual is a welfare recipients are more of a stigma that a help in job search. Hollenbeck and Willke (1991) report that in a second similar random assignment experiment (conducted by the Wisconsin Department of Health and Social Services) the target group members (welfare, ex-offenders, and handicapped), who were trained to announce their eligibility for the TJTC to employers, also fared worse than the controls. It is unclear whether the results from these two studies from the early 1980s for welfare recipients are transferable to the largest TJTC group, economically disadvantaged youth.

Several nonexperimental studies have attempted to estimate the impacts of the TJTC on the earnings and employment of eligible workers and on net job creation, but the sources of identifying information have not been very persuasive. Hollenbeck and Willke (1991) find greater regional availability and usage of the TJTC is associated with positive labor market impacts for nonwhite male youths and small negative impacts on other eligible race/sex groups, but the results are fairly sensitive to specification choice. Lorenz (1988) finds positive impacts of the TJTC on earnings in the year the credit is received, but the control group of those vouchered and not obtaining TJTC jobs is likely to bias him towards finding positive results. Bishop and Montgomery (1993) use a survey of 3500 private employers from the early 1980s to determine whether use of the TJTC alters a firms employment level

and/or whom the firm hires. They compare hiring patterns and employment growth in firms that do and don't use the TJTC. They conclude that each subsidized hire generates between 0.13 and 0.3 new jobs to a participating firm and that program use induces shifts in employment towards workers under age 25. But they do not present a convincing solution to the endogeneity of TJTC usage arising from the likelihood that fast growing firms and those using the youth labor market are simply more likely to use the TJTC.

Evaluating the Effect of TJTC Eligibility on the Employment of Disadvantaged Youth

Legislative changes in the eligibility rules and generosity of the TJTC provide a possibly more plausible and exogenous source of variation to try to identify the impacts of the TJTC on the labor market outcomes of the target groups. A major change occurred on January 1, 1989 when economically disadvantaged youths aged 23-24 were made ineligible for the TJTC while those aged 18-22 maintained their eligibility. Table 1 shows that the number of TJTC certifications for economically disadvantaged youths fell by over 50,000 in from 1988 to 1989 and averaged 93,000 less per year in 1989-90 than in 1987-88. This 30 percent decline in certifications for disadvantaged youth from 1987-88 to 1989-90 is similar to the share of total employment of disadvantaged youth of individuals aged 23-24.

An analysis of the employment rates of disadvantaged individuals aged 23-24 before and after this legislative change can potentially help us assess the employment impacts of the TJTC. If the TJTC buoyed the employment of these youths, then its removal should have lowered the employment of disadvantaged youths aged 23-24 in 1989-90 relative to their employment in earlier years. But since other factors (e.g., business cycle conditions) are

also likely to have caused changes in employment of young adults over this period, it is critical to account for these. One useful approach is to compare the employment experience of disadvantaged 23-24 year olds with the employment experiences of other 23-24 year olds over the same time period. The gap in the before/after change in employment rate of disadvantaged 23-24 year olds to others aged 23-24 provides a differences-in-differences estimate of the impact of TJTC eligibility on the employment of the target group. This differences-in-differences estimate does not take into account non-TJTC factors that differentially affect the labor market prospects of disadvantaged and non-disadvantaged workers. Since disadvantaged 18-22 year olds (who remained covered by the TJTC after 1988) and disadvantaged 25-29 year olds (who were never eligible) were not affected by the legislative change, the changes in their employment rates relative to non-disadvantaged individuals of the same age provides an estimate of the magnitude of non-TJTC factors differentially affecting the employment of disadvantaged young workers over this period. If one subtracts the differences-in-differences estimate of disadvantaged-specific employment factors for the "placebo" groups (18-22 and 25-29 year olds) from the differences-in-differences estimate for the "experimental" group (23-24 year olds) then one has a differences-in-differences-in-differences (DDD) estimate of the employment effect of the TJTC on disadvantaged youth aged 23-24. This DDD estimate adjusts the simple before/after change in employment of the group losing TJTC eligibility for general labor market trends affecting young workers and for those specifically affecting economically disadvantaged individuals.

Such an analysis also requires a designation of the appropriate "before" and "after"

periods. The macroeconomic environment was reasonably stable in the period surrounding the legislative change from early 1987 to early 1990. TJTC rules were unchanged during 1987 and 1988. The TJTC was much more generous in the period prior to 1986, and the program expired at the beginning of 1986 with uncertainty concerning its reauthorization prior to late 1986 when it was retroactively reauthorized. The labor market for disadvantaged youth was affected in the period after March 1990 by increases in the Federal minimum wage in April 1990 and April 1991, and by a recession that could substantially change the composition of individuals imputed to be economically disadvantaged. Thus I focus on 1987-88 as the before period and 1989-90 as the after period.

Table 2 presents estimates calculated from the March Current Population Surveys of the employment rates of disadvantaged and non-disadvantaged youths and young adults from 1984 to 1992 for the experimental group (those aged 23-24) and the two placebo groups (those aged 18 to 22 who aged 25 to 29). The employment rate of disadvantaged 23-24 year olds is lower in 1989-90 than in 1987-88, while, in contrast, the employment rate for non-disadvantaged 23-24 year olds increased over this period. Table 3 shows that these employment rate patterns imply a simple differences-in-differences estimate of a marginally statistically significant -.030 indicating a 3 percentage point decline in the employment of disadvantaged to non-disadvantaged 23-24 year olds after elimination of eligibility for the TJTC of this age group. Tables 2 and 3 show similar declines in the relative employment of the economically disadvantaged did not occur for those aged 18-22 and 25-29. Figure 2 further illustrates that the gap in employment rates between non-disadvantaged and disadvantaged 23-24 year olds expanded relative to the analogous two control groups in

1989-90 period versus the 1987-88 period. The DDD estimate (presented in Table 3) comparing the change in the gap in employment rate for disadvantaged and non-disadvantaged individuals in the experimental group with the average of the change in the two placebo groups from 1987-88 to 1989-90 implies the TJTC boosted the employment rate of disadvantaged 23-24 year olds by 0.043 (with a standard error of 0.020).

This basic DDD estimate fails to account for changes in the composition of the treatment groups (the disadvantaged) and control groups (the non-disadvantaged) that could affect their employment rates. A simple regression framework allows one to adjust the DDD estimates for changes in the observed individual characteristics. The regression equation -- a linear probability model for employment (E) -- is estimated on pooled March Current Population Survey data from 1987 to 1990 for individuals aged 18 to 29:

$$(3) \quad E_{it} = \alpha + \beta_0 X_{it} + \beta_1 DIS_{it} + \beta_2 \tau_t + \beta_3 AGED_{it} + \beta_4 (DIS_{it} * \tau_t) + \beta_5 (DIS_{it} * AGE_{it}) + \beta_6 (AGED_{it} * \tau_{it}) + \beta_7 (DIS_{it} * \tau_t * AGED_{it}) + \epsilon_{it}$$

where i indexes individual, t indexes time, α and the β's are the parameters to be estimated, X is a vector of observable covariates (e.g., years of schooling, race dummies, marital status, region), DIS is a dummy variable taking on a value of 1 for disadvantaged individuals, τ equals 1 in 1989-90 and 0 in 1987-88, AGED equals 1 for those aged 23-24 and 0 otherwise, and ϵ is an error term. The coefficient on the third-level interaction term (β_7) captures variation in employment specific to the disadvantaged (relative to the non-disadvantaged) in the experimental age group (relative to the placebo age groups) in the after

period (relative to the before period). This provides an adjusted DDD estimate of the effect of the TJTC on the employment of disadvantaged 23-24 year olds. The bottom row of Table 3 presents the adjusted DDD estimate from a specification of the form of equation (3) including a substantial number of demographic controls, state dummy variables and region-specific trends. The adjusted DDD estimate indicates a 3.4 percentage point (or 7.7 percent) decline in employment associated with removal of eligibility from the TJTC. Since wage costs were reduced approximately 15 percent on average by the TJTC in this period, a 7.7 percent employment effect suggests an own-wage labor demand elasticity of -0.5 (under the restrictive assumption that the labor supply of the affected group was effectively infinite).

A 3.4 percentage point decline in the employment rate for economically disadvantaged 23-24 year olds in 1989 represents a decline of 39,000 jobs relative to a base of possibly 100,000 annual certifications for this group in 1987-88. Employment durations for certified 23-24 year olds were likely to have been a bit longer than for the typical younger TJTC recipient. My crude guess at the typical TJTC job duration for 23-24 year olds is 9 to 12 months. This implies a (point-in-time) stock of approximately 75,000 to 100,000 jobs that received the TJTC. The adjusted DDD estimate suggests that 40 to 52 percent of the jobs getting TJTC subsidies reflected net employment additions for economically disadvantaged 23-24 year olds at a cost of $1500 (1991 dollars) or so per net job created.

There are reasons to be cautious in interpreting these DDD estimates of the employment effects of the TJTC. Figure 2 and Table 2 suggest the relative decline in the employment of disadvantaged 23-24 years actually started in 1988, a year before elimination of TJTC eligibility for this group. Thus other unmeasured factors differentially affecting

disadvantaged 23-24 year olds could be present.[5] But the elimination of TJTC subsidy for a second year of employment which was put into place in 1987 and could have been more important for 23-24 years olds who are likely to have more stable labor force attachment than 18-22 year olds. Thus the TJTC does appear to have had modest positive employment effects on economically disadvantaged young adults.

Temporary Wage Subsidies for On-the-Job Training under JTPA Title II

The Job Training Partnership Act (JTPA) replaced CETA as the major federally sponsored employment and training program for the disadvantaged in 1983. The JTPA, unlike CETA, has no provision for adult public service employment, but it does emphasize on-the-job training (OJT) and provide temporary wage subsidies of 50 percent of wages for up to six months of employment to encourage firms to hire and train JTPA participants. Employers receiving wage subsidies under JTPA are expected to provide long-term employment opportunities for OJT participants, and employers exhibiting a pattern of failing to retain OJT participants lose eligibility for future subsidies. Wage subsidies under JTPA have been most important for economically disadvantaged adults (who are not public assistance recipients) since this group has not been eligible for the TJTC. In 1993, JTPA Title II (excluding the summer youth employment program) enrolled about 550,000 new participants of whom 310,000 were adults, and approximately 18 percent of the adult JTPA Title II participants received on-the-job training (U.S. Department of Labor, 1995).

Thirty month follow-up results from a large-scale, random assignment evaluation of JTPA Title II, the National JTPA Study, provide estimates of the impacts of JTPA services

on the earnings of JTPA enrollees (Bloom et al., 1994). Twenty thousand JTPA applicants at sixteen sites were randomly assigned to either a treatment group which could use JTPA services or a control group which could not use JTPA services but could make use of non-JTPA training and education services. The applicants (both those becoming treatments and controls) were classified by local JTPA staffs into service strategy groups prior to randomization. Thus one can estimate the impact on future earnings of a strategy focused on OJT by examining differences in outcomes between treatments and controls for whom OJT was the recommended strategy (denoted the OJT/JSA subgroup since many of the treatment group members were enrolled in job search assistance while searching for a subsidized OJT position or an unsubsidized job). The OJT/JSA service strategy group included the most "job-ready" JTPA eligibles, approximately 39 percent of JTPA applicants.

The National JTPA Study findings indicate that JTPA has substantial and sustained positive effects on earnings for adults enrolled in a service strategy emphasizing placement in subsidized OJT positions with private employers (Bloom et al., 1994). The OJT/JSA strategy is estimated to increase the earnings of adult women by a highly statistically significant 15 percent ($2292) and adult men by a marginally significant 10 percent ($2109) over thirty months. Positive program impacts on earnings are present both during the six months of program participation and in the first two post-program years. In fact, both men and women in the OJT/JSA strategy showed statistically significant earnings gains of over $1000 (17 percent for women and 13 percent for men) in the second post-program year. The OJT/JSA service strategy for adults appears to have substantial net benefits for both enrollees and society even when ignoring any possible sustained impacts on earnings beyond the thirty

months so far analyzed in the National JTPA Study (Bloom et al, 1994). Unfortunately the JTPA evaluation indicates this same strategy has no impacts on the earnings or employment prospects of out-of-school disadvantaged youth.

A mixed strategy providing job search assistance, job development, and a temporary wage subsidy seems to be a successful approach to substantially improving the earnings of disadvantaged adults (particularly adult women). But, like other non-intensive strategies that have been evaluated, it dose not appear very effective for out-of-school youth from poor families. The JTPA evaluation estimates provide estimates of the marginal impacts of JTPA services above the impacts of non-JTPA training services available to control group members. The OJT wage subsidy was a more important marginal service for adults than for youths since economically disadvantaged youth eligible for JTPA in the control group were eligible for a wage subsidy from the TJTC. Thus the importance of a temporary wage subsidy could play some role in explaining the more positive program impacts for adults than youth. The extent to which the positive JTPA impacts on participants come at the expense of displacement effects on other workers can't be determined from the JTPA evaluation.

IV. EVALUATIONS OF U.S. WAGE SUBSIDY DEMONSTRATION PROJECTS

Further information on the likely effectiveness of private-sector employment subsidies can be gleaned from evaluation studies of several U.S. demonstration projects testing policies with wage subsidy components to improve the employment and earnings of disadvantaged youth, AFDC recipients, and unemployment insurance recipients.

Youth Incentive Entitlement Pilot Project

The Youth Incentive Entitlement Pilot Project (YIEPP) was a demonstration active from late 1978 to early 1981 that guaranteed full-time summer jobs and part-time school year jobs to disadvantaged youth aged 16 to 19 in selected communities provided that they stay in school (Farkas et al., 1982; U.S. Department of Labor, 1995). All the jobs offered paid the minimum wage. The project directly created jobs in the public and non-profit sectors and also offered 100 percent wage subsidies to private sector for-profit firms to encourage them to hire disadvantaged in-school youth. Thus the YIEPP represented a saturation job creation program for in-school youth in poor neighborhoods that attempted to use both private and public sector employers. Twenty-nine percent of the program jobs were with private, for-profit employers with retail trade being the largest category of private sector employers.

The program does appear to have substantially increased the earnings and employment rates of youths in the treatment communities relative to those in four "comparable" cities that were used as control sites (Farkas et al., 1982, 1984). School year employment rates doubled from about 20% to 40%, while summer employment rates increased from about 35% to 45%. Minority employment rates under YIEPP were raised up to those of whites in the same areas. School-year earnings were estimated to have increased by 46 to 161 percent in the different years of operation of the program, and summer earnings were raised by approximately 50 percent. Most of the in-program earnings gains arose from increases in employment rates and hours worked per week rather than higher wages; this is not surprising since the program only funded minimum wage jobs. Private sector employment for the youth increased by 18 percent (representing an increase of 3.1 percentage points in the

employment- population ratio) on average during the operation of the program. While the employer take-up rate was low, substantial wage subsidies combined with job development efforts by an intermediary did substantially expand private employment for difficult to employ poor youth. Comparisons of the treatment effect on private sector employment with the total number of private sector jobs subsidized implies a fifty percent displacement rate for YIEPP private sector job slots so that it took 2 private sector slots to expand employment of YIEPP participants by one.

Despite the linkage of employment opportunities to school enrollment, YIEPP did not appear to increase the school enrollment rate of eligible youth. Nevertheless, the YIEPP does suggest the importance of demand-side barriers to employment of poor minority youth and the potential for mixed public-private employment creation efforts to improve the situation. Furthermore, Farkas et al. (1984) find a positive and statistically significant post-program overall weekly earnings effect of 39 percent (and a modest but statistically insignificant 5 percent increase in hourly wages) in the year following program termination.

Subsidized Employment for AFDC Recipients

Several evaluations suggest that subsidized employment combined with training and other support services appears to be a promising and particularly effective strategy to improve the earnings of adult female AFDC recipients. The strongest positive earnings impacts of the OJT/JSA service strategy in the JTPA Title II evaluation were found for adult female AFDC recipients (U.S. Department of Labor, 1995). Similarly, state work-welfare demonstrations in New Jersey and Maine, which emphasized on-the-job training with

subsidized wages, showed earnings impacts of over $1000 per year (Gueron and Pauly, 1991). The National Supported Work Demonstration (NSW) of the late 1970s provided single parents who were long-term welfare recipients with extensive support services and 12 to 18 months of subsidized employment on projects (sheltered workshops) directly developed and managed by the demonstration's operators. A random assignment evaluation of the NSW found large in-program annual earnings increases during the period of subsidized employment of over $6000 (300%) on average. Earnings increases of over 20% were apparent in the first two post-program years, and substantial earnings impacts of over $400 per year remained in the sixth through eighth post-program years (Gueron and Pauly, 1991; Couch, 1992).

The Homemaker-Home Health Aide Demonstrations (HHHA) of the mid-1980s provided "job ready" AFDC recipients with four to eight weeks of training and up to twelve months of subsidized employment under close supervision as home health aides with private and quasi-public nursing homes and home health care agencies. The HHHA demonstrations were implemented with a random assignment design in seven states and, unlike the NSW, made substantial use of subsidies for employment with private-sector employers operating in a "real" market (Bell and Orr, 1994). The HHHA demonstrations produced significant earnings gains for participants in five out of the seven states in which they were carried out. The earnings gains averaged around $2000 annually in the first two years of the program and sustained gains of approximately $500 annually were sustained during the fourth to fifth years after exit from the program (U.S. Department of Labor, 1995). Bell and Orr (1994) estimate positive net social benefits in six of the seven states experimenting with HHHA.

Thus welfare-to-work programs that combine training, job development, employment subsidies to private-sector employers, and support services appear to be a cost-effective route to producing substantial and sustained earnings increases for AFDC recipients. But the low earnings base for this population implies that such program by themselves do not produce large enough earnings gains to move such families out of poverty. Furthermore the extent to which modest-sized demonstration projects emphasizing subsidized employment can be successfully implemented as operations of the scale necessary for a work program associated with currently popular time-limited welfare proposals is very much an open question.

Wage Subsidies for Job Losers

Many recent random assignment experiments have evaluated alternative approaches to improve the re-employment prospects of U.S. unemployment insurance (UI) recipients. Some evidence on the effectiveness of hiring subsidies for UI recipients can be extracted from the Illinois Re-employment Bonus experiments (Woodbury and Spiegelman, 1987). In one of the experiments (the Employer Bonus Experiment), a random sample of UI claimants were told that their next employer would qualify for a cash bonus of $500 if they, the claimants, found a job within eleven weeks of filing the UI claim, and if they retained that job for four months. Participation in the experiment was voluntary for the treatments and about one-third of the subjects refused to take the subsidy voucher offered to them. The participation rates were lower for higher-skilled workers suggesting possible perceived stigmatic effects of the vouchers. Under the assumption that the treatment had no effect on those not participating (not accepting the vouchers), the availability of the wage subsidy

reduced the weeks of insured employment by approximately one week on average and reduced UI benefits paid over the benefit year by a modest, marginally statistically significant amount (Dubin and Rivers, 1993). The number of employer bonuses claimed were quite small (only 3 percent of the sample) and the impacts of the employer hiring bonus were smaller than the estimated effects of a claimant bonus treatment in which the UI recipient could earn the $500 bonus and did not have to provide any information about the bonus to an employer. The employer subsidy appears less powerful than the claimant re-employment bonus in speeding up re-employment. Nevertheless, Meyer (1995) reports mixed results concerning the impacts of re-employment bonuses in a series of other experiments and expresses skepticism about the efficacy of a permanent re-employment bonus program.

V. EXPERIENCES OF OTHER OECD COUNTRIES WITH EMPLOYER SUBSIDIES

OECD countries have experimented with a variety of subsidies for private-sector employment, although few formal evaluations of the impacts of non-U.S. programs have been performed.[6] Many countries implemented marginal (incremental) employment subsidies of some type during the 1970s. Canada operated an Employment Tax Program from 1978 to 1981 that was similar to the U.S. NJTC. Gera (1987) estimates the job creation and net costs per job created of this Canadian program were quite similar to estimates for the NJTC. Evaluations of 1970s marginal employment subsidies in other countries are not terribly convincing and typically based on surveys asking employers whether they altered their behavior in response to the subsidy. OECD (1982, p. 11) concludes on the basis of this type of evidence that marginal employment subsidies can be a

reasonably efficient employment-promoting device on a temporary basis during a recovery.

More recently many OECD nations have attempted to use wage subsidies to spur the employment of targeted groups, particularly the long-term unemployed and unemployed youth. OECD (1993) concludes from the existing evaluations that targeted recruitment subsides are likely to have substantial displacement effects and large deadweight losses, but none of the studies summarized are particularly compelling. A careful nonexperimental evaluation of two Dutch wage subsidy schemes for the long-term unemployed suggests they may have increased re-employment rates for the long-term unemployed by up to 10 percent but at the cost of substantial displacement of the employment of other workers (de Koning, 1993). Further evaluations of the variety of private-employment subsidy programs being implemented outside the U.S. could greatly increase our understanding of the efficacy of wage subsidies.

VI. CONCLUSIONS

Despite the substantial experience of advanced nations with private-sector employment subsidies, the lack of formal evaluation evidence leaves much uncertainty concerning the likely impacts of such policies. Table 4 summarizes the characteristics and estimated impacts of the major U.S. wage subsidy programs and demonstrations trageted on the economically disadvantaged. The current evidence suggests that wage subsidies combined with training and job development are effective in improving the earnings and employment of disadvantaged adults, particularly AFDC recipients. Stand-alone targeted wage subsidies appear to hampered by stigma and low employer utilization when the eligible groups are

those with negative connotations for employers. But some new evidence presented in this paper indicates that the Targeted Jobs Tax Credit may have modestly improved the employment rates of economically disadvantaged youth. The evidence from the YIEPP also suggests that a saturation job creation strategy that combines direct public job creation and private-sector subsidies can play an important role in improving the employment and earnings of disadvantaged youth. A non-categorical wage subsidy for low-wage workers appears at least worthy of a demonstration project that compared outcomes for low-wage workers in comparable communities with and without the availability of such a policy.

Two new U.S. experiments with employment tax credits were initiated with the passage of the 1993 Budget Reconciliation Bill. The bill has led to the designation of six urban and three rural Empowerment Zones in which a 20 percent tax credit will be applicable on the first $15,000 of wages and training expenses for employees who live and work in a zone. The second is the transformation of corporate tax incentives to locate in Puerto Rico under Section 936 partially into an employment tax credit (with the maximum credit available affected by labor compensation paid in Puerto Rico). The impacts of the incentives introduced by these two new initiatives deserve careful evaluation.

References

Ashenfelter, Orley. "Evaluating the Effects of the Employment Tax Credit." In U.S. Department of Labor, Office of the Assistant Secretary for Policy, Evaluation, and Research, Conference Report on Evaluating the 1977 Economic Stimulus Package. Washington, D.C.: U.S. GPO, 1978, 1-14.

Bell, Stephen H. and Larry L. Orr. "Is Subsidized Employment Cost Effective for Welfare Recipients?" Journal of Human Resources 29 (Winter 1994): 42-61.

Bishop, John. "Employment in Construction and Distribution Industries: The Impact of the New Jobs Tax Credit," in S. Rosen, ed., Studies in Labor Markets. (Chicago: University of Chicago), 1981, 209-46.

Bishop, John and Mark Montgomery. "Does the Targeted Jobs Tax Credit Create Jobs at Participating Firms?" Industrial Relations 32 (Fall 1993): 289-306.

Bloom, Howard S. et al. The National JTPA Study: Overview: Impacts, Benefits, and Costs of Title II-A. Abt Associates, January 1994.

Bound, John and George Johnson. "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations." American Economic Review 82 (June 1992): 371-92.

Burtless, Gary. "Are Targeted Wage Subsidies Harmful? Evidence from a Wage Voucher Experiment." Industrial and Labor Relations Review 39 (October 1985): 105-14.

Card, David. "Earnings, Schooling, and Ability Revisited." Princeton University, Industrial Relations Section Working Paper No. 311, May 1994.

Card, David and Alan Krueger. Myth and Measurement: The New Economics of the Minimum Wage. Princeton, NJ: Princeton University Press, 1995.

Card, David and Phillip K. Robbins. "Do Financial Incentives Encourage Welfare Recipients to Work? Early Findings from the Canadian Self-Sufficiency Project." Princeton University, Industrial Relations Section Working Paper #359, March 1996.

Couch, Kenneth A. "New Evidence on the Long-Term Effects of Employment Training Programs." Journal of Labor Economics 10 (October 1992): 380-88.

Davidson, Carl and Stephen A. Woodbury. "Wage Subsidies for Dislocated Workers." Upjohn Institute Working Paper No. 95-31, January 1995.

Dubin, Jeffrey A. and Douglas Rivers. "Experimental Estimates of the Impact of Wage Subsidies." Journal of Econometrics 56 (1993): 219-42.

Eissa, Nada and Jeffrey B. Liebman. "Labor Supply Response to the Earned Income Tax Credit." Quarterly Journal of Economics 111 (May 1996): 605-37

Farkas, George, et al. Impacts from the Youth Incentive Entitlement Pilot Projects: Participation, Work, and Schooling over the Full Program Period. Manpower Demonstration Research Corporation, December 1982.

Farkas, George, et al. Post-Program Impacts of the Youth Incentive Entitlement Pilot Projects. Manpower Demonstration Research Corporation, June 1984.

Freeman, Richard B. and Lawrence F. Katz. "Rising Wage Inequality: The United States vs. Other Advanced Countries." In R. Freeman, ed., Working Under Different Rules. New York: Russell Sage Foundation and NBER, 1994, 29-62.

Gera, Surendra. "An Evaluation of the Canadian Employment Tax Credit Program." Canadian Public Policy 13 (1987): 196-207.

Grubb, David. "Direct and Indirect Effects of Active Labor Market Policies in OECD Countries." In R. Barrell, ed., The UK Labor Market. London: Cambridge University Press, 1994, 183-213.

Gueron, Judith M. and Edward Pauly. From Welfare to Work. New York: Russell Sage Foundation, 1991.

Hamermesh, Daniel S. "Subsidies for Jobs in the Private Sector." In J. Palmer, ed., Creating Jobs. Washington, DC: The Brookings Institution, 1978, 87-122.

Hamermesh, Daniel S. Labor Demand. Princeton, NJ: Princeton University Press, 1993.

Heckman, James J., Rebecca L. Roselius, and Jeffrey A. Smith. "U.S. Education and Training Policy: A Re-Evaluation of the Underlying Assumptions Behind the New Consensus." University of Chicago, December 1993.

Hoffman, Saul D. and Laurence Siedman. The Earned Income Tax Credit: Antipoverty Effectiveness and Labor Market Effects. Kalamazoo, MI: Upjohn Institute, 1990.

Hollenbeck, Kevin M. and Richard J. Willke. "The Employment and Earnings Impacts of the Targeted Jobs Tax Credit." Upjohn Institute for Employment Research, February 1991.

Juhn, Chinhui, Kevin M. Murphy, and Robert Topel. "Why Has the Natural Rate Increased over Time?" Brookings Papers on Economic Activity 1991:2, 75-142.

Kaldor, Nicholas. "Wage Subsidies as a Remedy for Unemployment." Journal of Political Economy 44 (1936): 721-42.

Katz, Lawrence F. "Active Labor Market Policies to Expand Employment and Opportunity." In Federal Reserve Bank of Kansas City, Reducing Unemployment: Current Issues and Policy Options. Kansas City: Federal Reserve Bank of Kansas City, 1994, pp. 239-90.

Katz, Lawrence F. and Kevin M. Murphy. "Changes in Relative Wages, 1963-1987: Supply and Demand Factors." Quarterly Journal of Economics 107 (February 1992): 35-78.

de Koning, Jaap. "Measuring the Placement Effects of Two Wage-Subsidy Schemes for the Long-Term Unemployed." Empirical Economics 18 (1993): 447-68.

LaLonde, Robert J. "The Promise of Public-Sector Sponsored Training Programs." Journal of Economic Perspectives 9 (Spring 1995): 149-68.

Lorenz, Edward C. The Targeted Jobs Tax Credit in Maryland and Missouri: 1982-87. National Commission of Employment Policy, November 1988.

Lorenz, Edward C. "TJTC and the Promise and Reality of Redistributive Vouchering and Tax Credit Policy." Journal of Policy Analysis and Management 14 (Spring 1995): 270-90.

Manning, Alan. "How Do We Know that Real Wages Are too High?" Quarterly Journal of Economics 110 (November 1995): 1111-25.

Meyer, Bruce D. "Lessons from the U.S. Unemployment Insurance Experiments." Journal of Economic Literature 33 (March 1995): 91-131.

Moffitt, Robert. "Incentive Effects of the U.S. Welfare System: A Review," Journal of Economic Literature 30 (March 1995): 1-61.

Mortensen, Dale T. "Reducing Supply-Side Disincentives to Job Creation." In Federal Bank of Kansas City, Reducing Unemployment: Current Issues and Policy Options. Kansas City: Federal Reserve Bank of Kansas City, 1994, pp. 189-219.

OECD. Marginal Employment Subsidies. Paris: OECD, 1982.

OECD. Labor Market Policies for the 1990s. Paris: OECD, 1990.

OECD. Employment Outlook. Paris: OECD, 1993.

O'Neill, Dave M. "Employment Tax Credit Programs: The Effects of Socioeconomic Targeting Provisions." Journal of Human Resources 17 (Summer 1982): 449-59.

Perloff, Jeffrey M. and Michael Wachter. "The New Jobs Tax Credit: An Evaluation of the 1977-78 Wage Subsidy Program." American Economic Review (May 1979), 173-79.

Phelps, Edmund S. "Low-Wage Employment Subsidies versus the Welfare State." American Economic Review 84 (May 1994): 54-58. (a)

Phelps, Edmund S. "Wage Subsidy Programs: Alternative Designs." Unpublished paper, Columbia University and Russell Sage Foundation, August 1994. (b)

Schwanse, Peter. "European Experience." In R. Haveman and J. Palmer, eds., Jobs for Disadvantaged Workers. Washington, DC: The Brookings Institution, 1982, 297-327.

Snower, Dennis J. "Converting Unemployment Benefits into Wage Subsidies." American Economic Review 84 (May 1994): 65-70.

U.S. Department of Labor. Office of Inspector General. Targeted Jobs Tax Credit: Employment Inducement or Employer Windfall?, August 1994.

U.S. Department of Labor. Office of the Chief Economist. What's Working and What's Not: What We Know About Getting People New Skills and New Jobs, January 1995.

U.S. Departments of Labor and Treasury. The Use of Tax Subsidies for Employment. A Report to Congress. May 1986.

U.S. House of Representatives. Committee on Ways and Means. 1993 Green Book. Washington DC: U.S. GPO, 1993.

U.S. Office of Management and Budget. Budget of the United States Government: Fiscal Year 1993. Washington, DC: U.S. GPO, 1992.

Woodbury, Stephen A. and Robert G. Spiegelman. "Bonuses to Workers and Employers to Reduce Unemployment: Randomized Trials in Illinois." American Economic Review 77 (September 1987): 513-30.

Endnotes

1. Since there exists a burgeoning literature examining the effects of employee-side earnings supplements such as the Earned Income Tax Credit (e.g. Hoffman and Siedman, 1990; and Eissa and Liebman, 1996) in the United States and the Self-Sufficiency Project in Canada (Card and Robbins, 1996), I limit my focus to employer-side wage subsidies.

2. An alternative approach is to simulate the effects of wage subsidies in more fully developed (but still highly stylized) general equilibrium labor market models. See Mortensen (1994) for an interesting attempt to simulate the effects of a general new hire subsidy; and Davidson and Woodbury (1995) for an ambitious simulation model to analyze wage-rate subsidies for dislocated workers.

3. The most recent authorization of the TJTC expired at the end of 1994. The TJTC has expired several times in the past and then been reauthorized. It is unclear at this date whether the TJTC will once again be resurrected by Congress in some form.

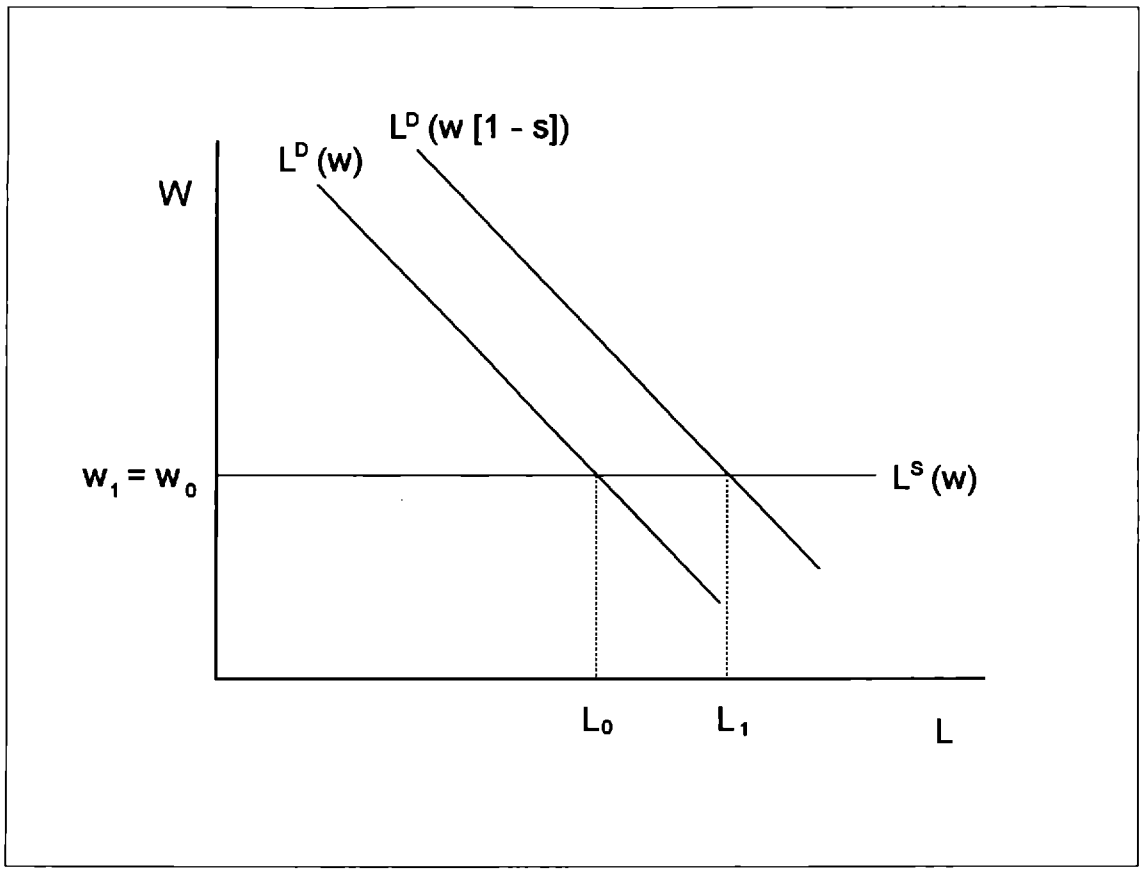
4. An individual qualified as "economically disadvantaged" under the TJTC if he or she had a family income in the six months prior to starting a job that on an annual basis would be less than seventy percent of the Bureau of Labor Statistics "lower level standard income level" (LLSIL) for his or her geographic region. The LLSIL varies by family size, metropolitan area status, and across the four Census regions. Seventy percent of the LLSIL is approximately 125 percent of the poverty line for a family of four in the average geographic area. I use the March Current Population Surveys (CPSs) to estimate the total number of economically disadvantaged youths aged 18-22 and 23-24 and their employment rates in each year from 1984 to 1992. Information on annual family income for the previous calendar year, residential location (state and metropolitan area), age, and family size available in the March CPS is used to impute whether an individual would been classified as economically disadvantaged at the time of the survey. The employment rates are based on employment status information from the March survey reference week. Since family income varies over a calendar year, the number of individuals imputed to be eligible for the program using annual income from the March CPS is likely to be somewhat of an underestimate of those actually eligible on the basis of their family income over the previous six months. Information on the LLSIL by region and metropolitan areas was kindly provided by David Lah of the Employment and Training Administration of the U.S. Department of Labor. Individuals residing in Alaska and Hawaii are excluded from the analysis because of incomplete information on the official LLSIL levels for these states.

5. Contamination effects leading to an overestimate could be present if the employment rates of non-disadvantaged 23-24 year olds were increased when they became cheaper relative to disadvantaged 23-24 years; an opposite contamination bias leading to an underestimate could arise if the employment rates of disadvantaged 18-22 year and 25-29 year olds were bolstered by the policy change.

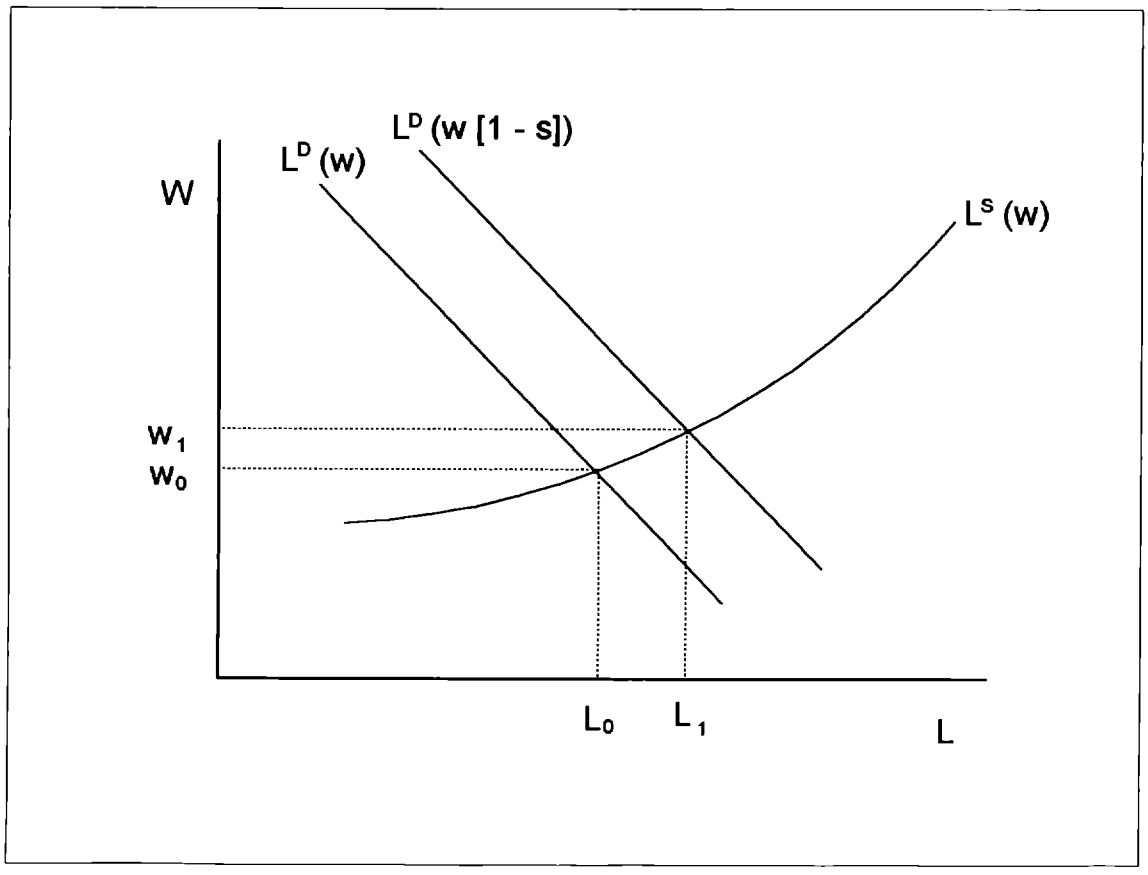
6. OECD (1982) and Schwanse (1982) describe OECD employment subsidies operating in the 1970s and summarize evidence on the impacts of these policies. OECD (1990) and Grubb (1994) describe more recent efforts.

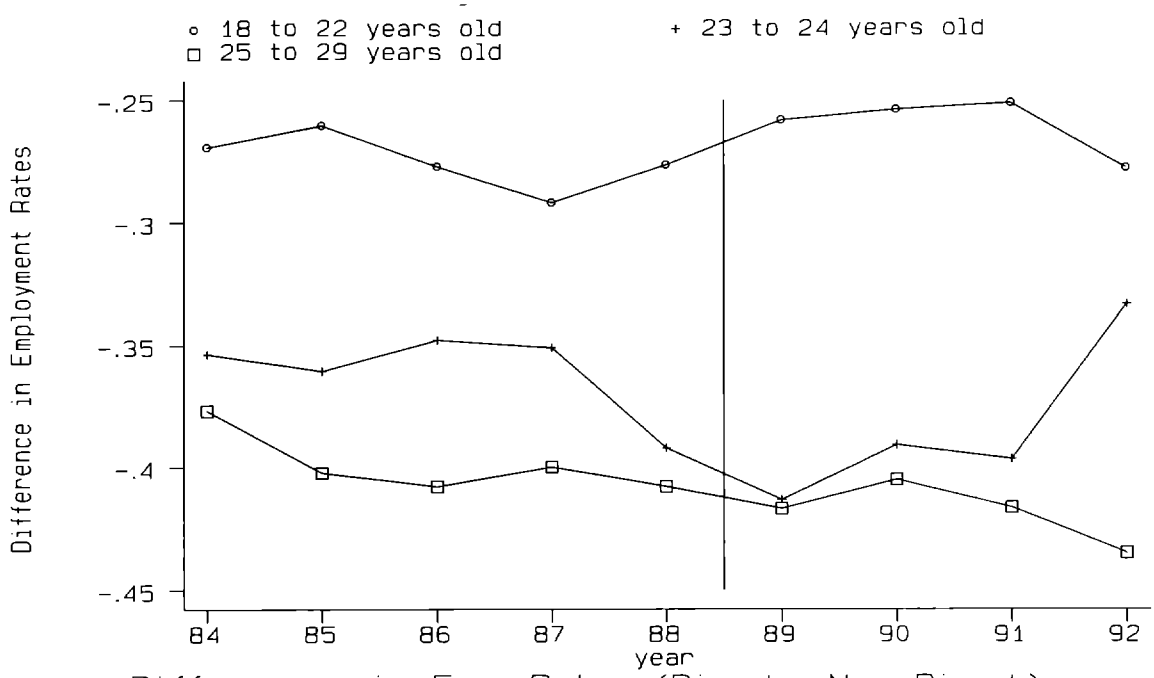
Figure 1
Partial Equilibrium Impact of a Wage Subsidy (s) on the Low-Wage Labor Market

(a)



(b)





Differences in Emp. Rates (Disad.- Non-Disad.)

Figure 2

Table 1
Targeted Jobs Tax Credit (TJTC) Certifications and
the Employment of Economically Disadvantaged Youth, 1984-92
(in millions)

Year	TJTC Certifications		Employment of Disadvantaged Youth		
	Total	Disad. Youth	18-22	23-24	Total Eligible
1984	.563	.328	1.454	.649	2.103
1985	.622	.367	1.452	.624	2.076
1986	.242	.144	1.264	.617	1.881
1987	.598	.349	1.213	.562	1.776
1988	.497	.282	1.200	.550	1.750
1989	.452	.231	1.281	.477	1.281
1990	.445	.219	1.204	.502	1.204
1991	.428	.225	1.181	.513	1.181
1992	.364	.191	1.174	.541	1.174

Sources: Numbers of TJTC Certifications (in millions) are from U.S. House of Representatives (1993, p. 1073) and from unpublished tabulations provided by the U.S. Department of Labor, Employment and Training Administration. Data on certifications for 1984 and 1985 cover fiscal years (October of the previous year to September of the listed year); data for 1986 covers October 1985 to December 1986; data for 1987 to 1992 cover calendar years. The low number of certifications in 1986 partially reflects the suspension of the program from January to late October 1986.

Employment levels of economically disadvantaged youth are the author's tabulations for March of each year from the March Current Population Surveys (CPS) using CPS basic sampling weights. Economically disadvantaged status for each individual aged 18 to 24 in the March CPS's from March 1984 to March 1992 was imputed using the available information on family income in the previous calendar year and family structure combined with information on the relevant Lower Income Living Standard Level by geographic region and metropolitan area of residence. Residents of Alaska and Hawaii are excluded from the employment totals. Economically disadvantaged individuals aged 18 to 24 were eligible for the TJTC during the 1984 to 1988 period; eligibility was restricted to those aged 18 to 22 from 1989 to 1992.

Table 2
Employment Rates for Economically Disadvantaged and
Non-Disadvantaged Young Adults, Aged 18 to 29 Years, 1984 to 1992

	18 to 22 Years Old		23 to 24 Years Old		25 to 29 Years Old	
Year	Disad.	Non-Disad.	Disad.	Non-Disad.	Disad.	Non-Disad.
1984	.361	.631	.425	.779	.421	.798
	(.010)	(.005)	(.017)	(.006)	(.011)	(.004)
1985	.381	.642	.422	.783	.408	.811
	(.010)	(.005)	(.017)	(.006)	(.012)	(.004)
1986	.365	.643	.456	.804	.412	.820
	(.010)	(.005)	(.018)	(.006)	(.012)	(.004)
1987	.365	.647	.455	.806	.424	.824
	(.011)	(.005)	(.019)	(.006)	(.012)	(.004)
1988	.367	.644	.429	.821	.423	.836
	(.011)	(.005)	(.019)	(.006)	(.012)	(.004)
1989	.397	.657	.412	.825	.419	.836
	(.012)	(.005)	(.020)	(.007)	(.013)	(.004)
1990	.391	.644	.435	.825	.434	.839
	(.012)	(.005)	(.019)	(.007)	(.013)	(.004)
1991	.378	.629	.400	.797	.413	.829
	(.012)	(.005)	(.019)	(.007)	(.012)	(.004)
1992	.349	.644	.448	.781	.391	.826
	(.011)	(.005)	(.020)	(.007)	(.012)	(.004)

Employment rates by economically disadvantaged status and age group are estimates from the March Current Population Surveys (CPSs) for 1984 to 1992 based on current employment status for March of year. Each observation is weighted by its CPS basic sampling weight. Cell sample sizes vary from 599 to 11442. Standard errors are in parentheses.

Economically disadvantaged status for each individual aged 18 to 29 in the March CPS's from March 1984 to March 1992 was imputed using the available information on family income in the previous calendar year and family structure combined with information on the relevant Lower Income Living Standard Level by geographic region and metropolitan area of residence. Residents of Alaska and Hawaii are excluded from the samples.

Table 3
Differences-in-Differences-in-Differences (DDD) Estimates of the Impact of Targeted Jobs Tax Credit (TJTC) Eligibility on Employment Rates

	Employment Rates		
	Before 1987-88	After 1989-90	Time Difference
A. Experimentals, 23-24 Year Olds			
Disadvantaged	.442	.423	-.019
	(.013)	(.014)	(.019)
Non-Disadvantaged	.814	.825	.012
	(.004)	(.005)	(.006)
Disad./Non-Disad. Difference at Point in Time	-.372	-.402	
	(.012)	(.012)	
Difference-in-Difference			-.030
			(.017)
B. Placebos, 18-22 and 25-29 Year Olds			
Disadvantaged	.390	.410	.019
	(.006)	(.006)	(.009)
Non-Disadvantaged	.748	.755	.006
	(.002)	(.002)	(.003)
Disad./Non-Disad. Difference at Point in Time	-.358	-.345	
	(.006)	(.006)	
Difference-in-Difference			.013
			(.008)
DDD Estimate			-.043
			(.020)
Adjusted DDD Estimate			-.034
			(.019)

Notes to Table 3:

Cells contain mean employment rates for the identified group and time period from the March Current Population Surveys (CPSs) for 1987 to 1990. Standard errors are in parentheses. Each observation is weighted by its CPS basic sampling weight. The DDD estimate is the difference-in-difference from panel A minus that in panel B. Economically disadvantaged status for each individual aged 18 to 29 in the March CPS's was imputed using the available information on family income in the previous calendar year and family structure combined with information on the relevant Lower Income Living Standard Level by geographic region and metropolitan area of residence. Residents of Alaska and Hawaii are excluded from the samples.

The adjusted DDD estimate is the coefficient on the third-order interaction term of a time period (before/after) dummy with an age group dummy (age 23-24 equals 1) and a disadvantaged status dummy in an individual level employment regression of the form given by equation (3) in the text covering all 18 to 29 year olds for pooled March CPS data covering 1987 to 1990. The other covariates included are 3 individual year dummies; a disadvantaged status dummy; 11 age dummies; 2 dummies for the interaction of age group (18-22 and 25-29) with disadvantaged status; a before/after dummy interacted with disadvantaged status; 2 interactions of age group and the before/after dummy; dummy variables for sex, marital status, and race; 4 education group dummies; interactions of the sex dummy with the race, marital status, and educations dummies; interactions of the before/after dummy with the education, race, and sex dummies; 50 state dummies; and 8 dummies for interactions of the before/after dummy with census division dummies. The sample size for the regression is 103,600. The regression was estimated using CPS basic sampling weights.

Table 4
Major U.S. Wage Subsidy Programs and Demonstration Projects for the Disadvantaged

Program	Description	Estimated Impacts
New Jobs Tax Credit (NJTC), 1977-78	A noncategorical, incremental employment subsidy that provided a 50% tax credit for wages of up to $4200 per employee for increases in employment of more than 2% over the previous year.	Existing evidence suggests the NJTC modestly expanded aggregate employment (by 0.2% to 0.8%) from mid-1977 to mid-1978 with the impact concentrated in construction and retail trade.
Targeted Jobs Tax Credit (TJTC), 1979-94	A categorical, wage subsidy that provided a tax credit to employers hiring certified target group individuals. Target groups included economically disadvantaged youth and AFDC recipients.	Estimates from legislative changes in TJTC eligibility rules suggest up to a 7% positive impact on employment of disadvantaged young adults. Random-assignment evaluations for welfare recipients suggest job searchers are less likely to find jobs when they are encouraged to inform employers of eligibility.
Job Training Partnership Act (JTPA) Title II, 1983-present	The on-the-job-training (OJT) component of JTPA Title II provides a temporary wage subsidy of up to 6 months to encourage firms to hire and train JTPA participants (economically disadvantaged adults and youths). Some effort is made to develop job slots and link participants with jobs.	30 month follow-up results from random assignment evaluation imply substantial and sustained positive earnings impacts (of 10% for men and 15% for women) for adults enrolled in the service strategy emphasizing private sector placement in subsidized OJT slots. No impacts apparent for out-of-school youths.
Youth Incentive Entitlement Pilot Project (YIEPP), 1978-81	Demonstration project that guaranteed full-time, minimum wage summer jobs and part-time school year jobs to disadvantaged youth aged 16 to 19 in selected communities provided they stayed in school. 100% wage subsidies for private sector employers and direct job creation in public sector.	Doubled school year employment rates and earnings and greatly increased summer employment and earnings of youths in treatment communities. Increased private sector employment of eligible youths by 18 percent. Substantial positive earnings effects persist at least 1 year after the program.
Homemaker-Home Health Aide Demonstrations (HHHA), 1983-86	Provided "job ready" AFDC recipients with 4 to 8 weeks of training and up to 12 months of subsidized employment under close supervision with private and quasi-public nursing homes and home health agencies.	HHHA demonstrations produced significant earnings gains for participants in 5 of 7 states. Earnings gains averaged $2000 annually in first two years of program and gains of $500 were sustained 4 to 5 years after exit from program.