

**The Effect of Work and Training Programs on Entry
and Exit from the Welfare Caseload**

Robert A. Moffitt
Department of Economics
Brown University

November 1993

The author would like to thank David Greenberg and Judith Gueron for comments, and Wilbert van der Klaauw for collaboration and assistance on some of the computations. This work was partially supported by a grant from the U.S. Department of Health and Human Services to the Institute for Research on Poverty at the University of Wisconsin. The opinions expressed herein are those of the author and not to be attributed to the sponsors.

Abstract

To policymakers, the major attraction of work and training programs for welfare recipients is that they hold out the prospect that recipients can be moved off the rolls and into self-sufficiency in the private labor market, thereby decreasing welfare costs and caseloads. This paper considers the possibility that such programs may also affect the attractiveness of welfare in the first place, either by making welfare less desirable because the work-training program is viewed as a burden, or by making it more desirable because the program is viewed favorably by potential applicants. Such responses are termed "entry-rate effects." Some empirical estimates of these effects are presented which suggest that entry-rate responses, whether positive or negative, may affect the caseload more than the direct effect of the programs in moving recipients off the rolls.

The Effect of Work and Training Programs on Entry and Exit from the Welfare Caseload

Work and training programs for welfare recipients are now a firmly established component of the Aid to Families with Dependent Children (AFDC) program and other welfare programs in the United States. After modest beginnings in the 1970s (see Bassi and Ashenfelter [1986] for a review of that period), such programs began to be introduced more seriously in the early 1980s with the passage of the 1981 Omnibus Budget and Reconciliation Act, which encouraged states to experiment with different types of programs. This activity culminated with the 1988 Family Support Act, which required that all states establish a JOBS program to provide work, training, job search, or education programs to certain groups of AFDC recipients.

The major focus of policy research on work and training programs has been on their effects on the earnings and employability of AFDC recipients, and on whether those who go through the programs move off the rolls. There have been many studies of this kind as well as a number of reviews of the findings (Burtless, 1989; Greenberg and Wiseman, 1992; Gueron and Pauly, 1991; Moffitt, 1992b). Although there is a wide range of findings, partly because the programs examined are themselves extremely diverse in character, the consensus of these surveys is that work and training programs do often increase earnings and employability and decrease welfare caseloads and benefit payments. The earnings "payoffs" are often in the range of \$200 to \$500 per year after three years, and the reductions in the welfare caseload are as high as 7 percentage points after three years (Gueron and Pauly, 1991, pp. 15, 142). Although these effects may seem modest, they are nevertheless significant for policy purposes, especially in light of the view held in the 1970s that such programs had little impact at all.

This paper is an examination of whether work and training programs may have an additional impact on the welfare caseload operating through what are here termed "entry" effects. These effects would arise if the introduction of a work-training program were to change the attractiveness of welfare

from the point of view of potential applicants. The program could affect application rates positively or negatively. On the one hand, if the work-training program is viewed as a burden and an imposition, and therefore in an unfavorable light, some potential applicants would presumably choose not to apply even though they would have in the absence of the program. On the other hand, if the program is viewed in a favorable light because of its potential to increase earnings and employability, this would tilt some potential applicants in the direction of applying for welfare when they might not have otherwise.

The possibility that these effects might occur, and whether they might be empirically important enough for policymakers to worry about, has not been considered in the policy research literature in this area.¹ This paper is intended to provide a first discussion of the issue and to furnish illustrative empirical estimates of the potential magnitude of entry effects.

The first, and main, body of the paper provides a discussion of the potential for entry-rate effects. The theoretical effects that should be expected from a strict economic choice analysis are outlined, and how that analysis should be modified in light of the real-world realities of work and training programs is then discussed. The second section provides illustrative estimates of the potential empirical importance of entry-rate effects. The final section discusses the policy implications of the findings.

I. THE POTENTIAL FOR ENTRY-RATE EFFECTS

For present purposes, a "welfare-work" program need only be defined very generally as a program that requires welfare recipients to engage in some activity that is associated with work, training, education, or job search. At the start of the discussion, only mandatory programs will be considered; later, the modifications in the conclusions for the case of voluntary programs will be discussed. A welfare-work program will be presumed to have at least some positive effect on the

future earnings and employability of recipients who go through the program, although the magnitude of the earnings payoff will be a major determinant of its caseload effects.

The key characteristic of all welfare-work programs is that they require the recipient to spend time in the activity. That requirement therefore fundamentally alters the nature of the experience of being on welfare.

Given this, it should be mentioned immediately that one motivation for welfare-work programs is to prevent recipients from engaging in other activities that produce unreported income. At least in the beginning of the discussion below, that possibility will be ignored, for I will consider only the caseload responses that would occur if all recipients reported income accurately.

The best framework for thinking about entry and exit effects of welfare-work programs is the standard economic theory of choice. According to that theory, individuals weigh the relative benefits and costs of applying for or leaving the welfare rolls in making their decisions. The conventional, "static" theory suggests that potential applicants as well as recipients continually compare two variables in making decisions to apply or to exit: potential earnings in the private labor market, and the welfare benefit.² Empirical research has strongly confirmed this theory, for welfare benefits and potential earnings have been shown repeatedly to have strong positive and negative effects, respectively, on the probability of being on AFDC at a point in time and on the probability of entering the rolls; and the probability of exiting the rolls has been shown to be negatively affected by benefits and positively affected by potential earnings (see Moffitt [1992b] for a review of the literature).

It is worth noting that these research findings are based upon data drawn from periods when very few welfare recipients worked at all. Consequently, the benefit and potential earnings effects that have been estimated should be interpreted as reflecting a choice by eligibles between two polar alternatives, one that involved work and being off the welfare rolls, and one that almost always corresponded to not working and being on the rolls.

After the introduction of a welfare-work program, this situation obviously changes. For those recipients who are required to participate in the program, welfare recipiency would now require work, although perhaps not as much as they would choose, or be able to obtain, off welfare. The implications of economic choice theory for the welfare participation and caseload response to this introduction are presented mathematically in the appendix, but can be discussed without using equations.

A key question is whether eligible individuals, both those on and off the rolls, are completely myopic or whether they are at least partly forward-looking. If they are completely myopic and therefore compare only the current gains and losses of being on welfare, exits from welfare would almost certainly increase and entry onto welfare would almost certainly fall. Exits would increase for two reasons. First, many recipients initially on the rolls would change their minds about being on welfare if a significant amount of work were required, and would opt instead to try to "make it" off the rolls. It is also a reasonable prediction that those who would leave would be those recipients with relatively greater job skills and opportunities in the private labor market. Second, those who choose to continue to receive welfare despite the activity requirement would, on average, later find themselves in the lucky (i.e., unanticipated) position of having increased potential earnings off the rolls. Some fraction would therefore leave the rolls at that later point.

Whether both of these caseload reductions are desirable depends upon the objectives of the program. If the goal of the program is not merely to reduce the caseload but to increase skills, then the welfare exits arising from the first source are undesirable because those recipients who leave do not receive any skill upgrades. On the other hand, if the goal of the program is to drive cheaters off the rolls, or merely to impose a participation requirement for its own sake (e.g., to impose a "social obligation," to use Mead's term [1986]), both sources of increased exits would be welcomed, even if most were to arise from the first source.

In addition to an increase in exit rates there would be a decrease in application rates and hence in entry rates. Just as some recipients would choose to exit prior to receiving program services, some nonrecipients who would have applied for welfare in the absence of the welfare-work program would now choose not to do so, given the mandated activity requirement.

But suppose that welfare recipients and potential applicants are not completely myopic, but are at least partly forward-looking. In that case, the responses could be quite different because the presumed positive average effect of the work program on future earnings and employability might be recognized in advance. Consequently, the "initial" exits would not rise as much, if they were to rise at all, and entry would either not fall as much as otherwise, or might even rise. Individuals would make benefit-cost calculations for the relative current costs of participation in the welfare-work program and the relative future gains in terms of higher earnings and employability, at least implicitly. The outcome of those implicit calculations, and therefore the net effect of the welfare-work program on the welfare caseload, would depend on three key factors: (i) the degree of forward-looking behavior--that is, the individual's discount rate; (ii) the magnitude of the earnings payoff to the program³; and (iii) the time and hassle requirements of the program. If individual discount rates are low, earnings payoffs are high, and time requirements are low, the welfare-work program could actually increase the size of the welfare caseload.

Is the possibility that the caseload might rise as a result of the introduction of a work-training program plausible? Is it plausible that members of the eligible population would ever quit their jobs to go on welfare to take advantage of a training program? Job-quitting does not seem plausible, but positive entry effects could occur anyway. In practice, entry onto welfare would no doubt take place the way it does now: after a woman loses a job or becomes unemployed for some other reason, or after she gives birth to an out-of-wedlock child or her marriage breaks up, she must decide whether to apply for welfare or to search for a new job and attempt thereby to establish herself off welfare.

There is no reason, on a priori grounds, to expect that individuals in such a situation would not take the presence of a work-training program on welfare into account in making that decision, and no reason not to expect that women who are on the borderline between applying and not applying for welfare might alter their decisions in the presence of a welfare-work program.⁴

Further consideration of how things might work in practice suggests as well that the distinction between entry-rate effects and exit-rate effects of a welfare-work program might become blurred. For example, women might go on the rolls and then, if they decided the work program were too onerous or if the future value of the program seemed to be too low, exit the rolls either prior to participation in the work program or shortly after entering it. This is particularly likely to occur if there is a waiting list for the work program, for in that circumstance a woman may choose to go on the rolls and wait until program participation is required before exiting. All these responses would appear as welfare "exits," although they would be the result of individual judgments involving the same considerations as those involved in entry decisions. In both cases, a decision is made not to be on welfare prior to completing the work-training program, although in one case the recipient is already on welfare when making that decision.⁵

To this bare-bones economic reasoning must be added numerous qualifications and complicating factors, among which are the following: the importance of uncertainty; the difference in short-run and long-run effects; the mandatoriness of the program and the program participation requirements; and the effect of private-sector training opportunities.

Uncertainty and the Short Run vs. the Long Run

It is quite likely, if not almost certainly, to be the case that welfare trainees and potential applicants will have little or no idea of the earnings payoff to a particular training program when it is initially introduced. Uncertainty is also likely to be present for programs that continually undergo significant changes in their character. It could be argued that existing work-training programs such as

JOBS and the WIN demonstrations of the 1980s were in this category: the JOBS program has not been yet implemented on a large scale and knowledge of its effects is not widespread, and the WIN demonstrations were rarely in place on a sufficiently large scale or for a long enough period to substantially affect entry decisions.⁶

Unfortunately, the presence of significant uncertainty will make the negative entry effects of work-training programs count more heavily. Potential applicants and recipients who are unsure of the payoff to a work-training program will see only its burden--because the burden is not uncertain at all--and hence will be less likely to apply for welfare and more likely to exit before receiving training. In either case, training is not received by such individuals, which is often the goal of the policy, as mentioned above.

However, if a program is in place and stable in design for a significant period of time, its effects are likely to become known to the eligible population. Positive entry effects are therefore more likely to occur in the long run, although how long this would be is difficult to predict.

Participation Requirements and Mandatory Nature

The caseload effects of a welfare-work program are certain to depend upon the scale of the program relative to the size of the potential (i.e., nonexempt) caseload. If only a small portion of the nonexempt caseload receives program services, entry effects will necessarily be small. Of course, exit effects, even those arising from increased job skills, will also be small in that case because few recipients participate in the program. Low participation rates have thus far been the rule rather than the exception in welfare-work programs, and for this reason alone large caseload effects are unlikely to have occurred. However, they may in the future if JOBS or some other welfare-work program is extended in scale.

The effects on the caseload of a voluntary, rather than a mandatory, welfare-work program bears a relationship to the issue of scale and waiting lists. A voluntary program could never have

negative entry effects or positive exit effects prior to program participation, and therefore the caseload effects of a voluntary program are more likely to be positive than are the caseload effects of a mandatory program. The only situation in which the two programs would have the same effects would be one in which all women viewed the program favorably. In that case, all women would prefer to participate in the program even if it were mandatory. In practice, welfare caseloads are sufficiently heterogeneous that a welfare-work program is almost certain to be viewed unfavorably by some portion of the eligible population. For example, as noted previously, women with relatively high potential private-market earnings are likely to be those deterred from entry and encouraged to exit early.

The relative effects of mandatory and voluntary programs are "often cloudy" (Gueron and Pauly, 1991, p. 12), especially if the scale of the program is not extensive. For example, if the supply of available program slots is limited, program operators will naturally tend to give priority to volunteers. Such a program could therefore become indistinguishable from a voluntary program even if it was titularly mandatory.

It is worth stressing that limited scale has been the rule rather than the exception in the history of welfare-work programs to date. Consequently, a welfare system with a mandatory work program with sufficient slots for a 100-percent participation rate of the nonexempt caseload would be quite different than the current system. Welfare would become essentially indistinguishable from a job, the closeness depending upon the number of hours of work required by the work program and how that compares to the expected number of work hours off welfare. Recipients would show up each day for their "job" and they would receive a "wage" (i.e., the welfare benefit) each month. If they did not like the job, they could "quit" (i.e., leave welfare). If the "job" were a "good" one, it would increase skills and have a payoff in terms of higher future earnings. In such a world, welfare entry and exit decisions

would be made on the same basis as job entry and job exit decisions are currently made by those off welfare.

Although this scenario is fanciful in many ways, the Family Support Act envisioned something similar because it aimed to change the culture and character of the AFDC experience. AFDC was to be transformed into a program in which work, training, and education were to be an integral and inseparable part of welfare recipiency. Being on welfare was to be intrinsically linked to preparation for self-sufficiency off the rolls. Current policy developments are taking this philosophy further in the same direction.

Private-Sector Training Opportunities

Another factor that should be important in the entry and exit decisions of many women is the nature and availability of work and training opportunities off welfare. The presence of a fully funded and universally eligible JTPA program, for example, offering work programs with the same or greater payoff than those offered by the AFDC program, would reduce or eliminate any possible positive entry effects of a welfare-work program since AFDC would offer nothing that is not available off AFDC. The possible positive entry effects that were discussed above largely arise from the assumption that the welfare-work program might offer an opportunity to current and potential recipients which they could not obtain in any other way than being on AFDC. The general presumption that private employers are not willing to invest in training of low-skilled women implies that it could be only another government-funded program, like JTPA, that could offer something comparable to what is offered by AFDC.

However, it should be noted that even if JTPA and AFDC work programs were equally available and identical in character (i.e., had the exact same requirements and future payoffs), there would be some incentive to enroll in the AFDC program rather than the JTPA program since the former would pay a substantial benefit while the latter would not.

II. ILLUSTRATIVE EMPIRICAL ESTIMATES

Ideally, empirical estimates of entry-rate effects could be obtained either through direct experimentation or through econometric and statistical evaluation analysis. Unfortunately, neither method is possible at the present time and may not be possible for many years. The major reason is that, despite the popularity of work and training programs, no state has yet implemented them on a sufficiently large scale and for a long enough period of time to observe the types of effects that might occur. The work and training programs of the 1970s and early 1980s were either demonstration programs for only a small portion of the caseload, or were underfunded and hence never enrolled more than a small fraction of the caseload (such was the case for the AFDC WIN program, for example). Consequently, any statistical analysis of caseload trends before and after those programs were introduced would be unlikely to show an impact.⁷

The most promising direct estimation of entry-rate effects could be made possible by the JOBS program required by the 1988 Family Support Act, since the Act requires nationwide implementation of the program and requires that it be mandated for a significant fraction of the caseload. Unfortunately, an analysis of the impact of JOBS on entry is still many years away.⁸ In addition, since (at current writing) the JOBS program is still underfunded five years after enactment, it has not yet affected a majority of the caseload, even the nonexempt portion. Hence it is not yet clear whether the JOBS program will ever provide a test of the entry effects of a large-scale work and training program.

In the absence of direct evidence, estimates of entry effects can be obtained only by extrapolation from current data, employing assumptions regarding how a welfare-work program would be viewed by potential applicants. To make such estimates, the basic assumption made in the analysis reported below is that, as a first approximation, a fully implemented work and training program for

AFDC recipients would convert the AFDC program into the equivalent of a job. The "job" of being on AFDC would pay a "wage" equal to the benefit divided by the number of hours of "work" (meaning activity required by the work-training program). In return for this "job," there would also be a earnings "payoff"--the wage would be higher in the future than it would be if this "job" were not taken. Would a potential recipient take this "job" or would she take a conventional job in the private sector? The recipient would trade off the two current "wages"--namely, the AFDC benefit vs. private-sector potential wages--and would trade off the two future "wages"--how much wages would be in the future if on the AFDC "job" today vs. in the private sector today.

This approach is implemented in two steps.

Step 1. Estimate the determinants of current AFDC participation and how future wages affect it. Using an appropriate longitudinal data set on welfare-eligible female heads, the effects on AFDC participation of the benefit level, the individual wage level, and the growth rate of wages can be estimated. In algebraic form, we may write the AFDC participation regression equation as

$$\text{Prob. of being on AFDC} = f(\text{Current Wage}, \text{Current Benefits}, \text{Future Wage Growth}) \quad (1)$$

Here the wage-growth variable is an estimate of the growth rate of wages in the future, beyond the current period at which AFDC participation is observed. Since very few women on welfare work, at least as AFDC is currently constituted, this wage growth is beneficial only if the woman is not on AFDC and is in the private labor market, gaining work experience. The coefficient on the future-wage-growth variable can therefore be used as an indication of whether welfare-eligible women exhibit forward-looking behavior. If that coefficient is not zero--it should be expected to be negative, more specifically--then this indicates that eligibles take into account future wages in making current

welfare participation decisions, even if the current wage is held constant. On the other hand, if the coefficient is zero or insignificant, this is a *prima facie* indication of myopic behavior.

Step 2. Extrapolate these estimates to an environment that offers a "welfare job." Using the estimates obtained in Step 1, both the caseload-increasing and caseload-decreasing effects of a welfare-work program can be simulated. The caseload-increasing effects arise from the presumed positive earnings payoff of the welfare-work program. Since the estimates in Step 1 give the effect of future wage growth on current welfare participation, the effect of a welfare-work program can be simulated by assuming that being on AFDC generates wage growth as well. Specifically, since potential wages do not grow if a woman is on AFDC and not in a work-training program, the future-wage-growth variable in equation (1) represents the difference between wage growth off welfare and wage growth on welfare (which is zero). A welfare-work program should narrow that difference, or even reverse its sign if it has a sufficiently large payoff. Consequently, an increase in the welfare participation rate will be predicted if any positive earnings payoff from the welfare-work program is assumed, and the corresponding earnings payoff difference is substituted into the welfare participation equation above.

On the other hand, the welfare-work program also implies that welfare becomes like a "job." The estimates in Step 1, like all estimates of the effects of benefits and wages on welfare participation, show that wages must exceed benefits by some amount to induce a woman to work--the costs of transportation, clothing, and child care, as well as the loss of time spent at home, require this. The "wedge" between wages and benefits is, as a first approximation, an indicator of the implicit valuation that women put on work vs. nonwork. Therefore, a caseload-reducing effect of a welfare-work program can be simulated by assuming that the welfare benefit is, effectively, reduced by the amount of this wedge once a work program on the rolls becomes mandatory. If the welfare-work program is assumed not to require as many hours of work as work in the private market (more on this below), only a fraction of this wedge need be reduced.

There is also the caseload-reducing effect that arises later for women who have gone through the program. Given an assumed earnings payoff, potential earnings are higher and therefore the estimates obtained in Step 1 can be used to directly predict the fraction of women who will move off welfare at that time.

This nontechnical summary is demonstrated in technical form in the appendix. To estimate the initial participation equation, a set of female heads from the Michigan Panel Study of Income Dynamics was constructed with information on AFDC participation, wages, benefits, and wage growth over time. The estimates of equation (1) show that greater wage growth in the future has a negative effect on current welfare participation, consistent with expectations. An equation estimated on 2800 women with less than a high school degree is used for the simulations. Predicted probabilities of being on welfare in the absence and in the presence of a welfare-work program are calculated for each woman and are then averaged.

Although equation (1) is a "static" welfare participation equation--that is, it is not an equation for transitions onto and off of the rolls--it can be used to simulate effects that will be termed "entry" and "exit" effects below. The equation can first be used to simulate, for each woman, the probability of being on welfare in the absence of a welfare-work program, and can then be used to simulate that probability in its presence. "Entry" probabilities are then based upon the number of women who are simulated either to be off welfare in the absence of the work program but to be on welfare after its introduction (positive entry effects), or to be on welfare in the absence of the program but to be off welfare in its presence (negative entry effects). "Exit" probabilities are based upon the number of women simulated to be on welfare but whose earnings and wages are increased enough to induce them to go off the rolls afterwards. The appendix gives the exact formulas for calculating the two entry effects and the exit effect.^{9,10}

The simulations require as an input an estimate of the effect of a welfare-work program on future earnings. Gueron and Pauly (1991, p. 15) summarize the results of twelve major evaluations of welfare-work programs and find the estimated effects on earnings to range from 1 percent to 43 percent within one to three years of receipt. This is a wide range of estimates but it can be narrowed considerably. As discussed by Gueron and Pauly, the large estimates are concentrated among "selective-voluntary," intensive programs like Supported Work and the AFDC Homemaker Health Care Aid Demonstration. "Broad coverage" programs such as the WIN demonstrations and most job search assistance programs have much lower earnings effects. The JOBS program enacted by the Family Support Act lies somewhere in between these two types of programs, but will be much closer to the latter than to the former. In addition, most programs show, or can be expected to have, a decay rate of some magnitude. The simulations performed here are designed to capture only the long-run, permanent earnings impact of a welfare-work program, which can be thought of as an average of a changing earnings impact over ten or more years. The earnings impact over this length of time is likely to be considerably smaller than those shown within the first three years of a program.

The baseline earnings gain simulated in the first results presented below is taken to be 5 percent, which is in the middle of the lower set of earnings impacts given by Gueron and Pauly. A permanent increase in earnings of 5 percent is a sizable amount and could only be achieved by a rather successful and high-payoff program. Therefore, simulations are also conducted for a program with a modest 1 percent earnings impact. In addition, however, given the possibility that earnings impacts might be even greater than 5 percent--in light of the Gueron-Pauly summary--programs with earnings impacts of 10 percent and 20 percent are also calculated.

Another issue in estimating the earnings impact of a welfare-work program concerns whether the impact is spread uniformly through the nonexempt caseload and, in particular, whether the impacts are stronger for the more disadvantaged or the less disadvantaged recipients. According to Gueron and

Pauly (1991, pp. 10, 30), previous research shows that programs have the greatest impacts on women in the "middle" range of the caseload, and that the effect of training on earnings is considerably weaker both for those who are the most skilled as well as for those who are the most disadvantaged. Gueron and Pauly speculate that those in the former group are likely to perform better than average in the labor market in any case, and that those in the latter group are sufficiently difficult to train that the rather modest efforts attempted thus far have not been able to have much effect. In any case, whatever the cause, the Gueron-Pauly conclusion is adopted for the simulations here, and the earnings impacts mentioned in the last paragraph are taken to be those for women in the middle portion of the potential earnings distribution. The earnings impact for the best-off and worst-off individuals are assumed to be only one-half of the impact for those in the middle portion (see the appendix for details).

All of the simulations presented here are for a welfare-work program that is fully funded, which means that participation is required of all recipients if mandatory, and slots are available for all who want them if voluntary. These assumptions are at variance with actual programs for two reasons. First, in actuality there are large categories of recipients who are not required to participate. Therefore, the estimates to be given below should be interpreted as effects only on the nonexempt caseload, which may be only a modest percentage of the total caseload. Second, it is perhaps the rule rather than the exception that welfare-work programs are underfunded and that there are insufficient slots for all nonexempt cases (this is certainly the case for JOBS at the current time). This also implies that the estimates simulated here are overestimates and should be reduced, roughly, by the percentage of the nonexempt caseload for whom slots are not available.

Finally, an important issue concerns the requirements in the welfare-work program for the number of hours to be spent in the activity. Under the JOBS CWEP component, for example, the maximum hours requirement is determined by dividing the benefit by the minimum wage, a rule that

results in different hours requirements for different women in different states (for example, it results in relatively low hours requirements in low-benefit states). The JOBS program also has a twenty-hour rule (per week) for participation in the program to count for purposes of the Act. Whatever the rule, however, it is likely to be the case that a welfare-work program would not require as much time spent in program activity as would be necessitated by work in the private labor market off AFDC. Consequently, simulations are presented below for different hours requirements in the welfare-work program relative to hours of work off AFDC.

Results

Table 1 gives the estimates of the baseline welfare-work program with a 5 percent earnings impact in the middle portion of the earnings distribution for different hours requirements in the program. The first column presents estimates based on the assumption that the hours requirements in the welfare-work program would be only one-half those in the private labor market (e.g., 20 instead of 40, or 15 instead of 30). As shown in the first row, 3.1 percent of all initial recipients are estimated to exit AFDC because of increased potential earnings from the program. Although this percentage may seem modest, it is slightly larger than the caseload reductions summarized by Gueron and Pauly (1991, p. 142), who report that most evaluations have estimated caseload reductions through exiting trainees of from 1.5 percent to 2 percent.¹¹

The simulations also show entry to be affected both negatively and positively by the introduction of the program. Almost 25 percent of welfare-eligible nonrecipients who would not have been on AFDC in the absence of the work program would go on AFDC after it is introduced. In part this is a reflection of the fact that so little training takes place in the private labor market for

TABLE 1

**Baseline Estimates of the Long-Run Effect of a Mandatory Welfare-Work Program
on the AFDC Caseload**

| | Relative Hours Requirement | | |
|---|----------------------------|------|------|
| | .50 | .75 | 1.00 |
| Pre-program AFDC participation rate | 54.2 | 54.2 | 54.2 |
| <u>Exit Effects</u> | | | |
| Exiting recipients as a percentage of all initial recipients ^a | 3.1 | 2.4 | 1.8 |
| <u>Entry Effects</u> | | | |
| Nonrecipient eligibles who choose to enter (as a percentage of initial nonrecipients) ^b | 24.7 | 17.5 | 14.8 |
| Nonrecipient eligibles who choose not to enter (as a percentage of initial recipients) ^c | 5.7 | 12.2 | 18.8 |
| Post-program AFDC participation rate | 55.9 | 51.0 | 46.9 |
| <u>Net Effect on AFDC Caseload</u> (percentage change) | +3 | -6 | -13 |

Notes: Estimates are for female heads with fewer than 12 years of schooling and with children younger than 18. The welfare-work program is assumed to increase earnings by 5 percent for the middle 50 percent of the AFDC-recipient earnings distribution and by 2.5 percent for all others. Exact parameter values for the simulation are given in the appendix.

^aFor example, if the relative hours requirement is .50, 1.7 percent of all female heads are predicted to be on AFDC and hence go through the work program, and to have their potential earnings increased enough to later leave the program. As a percentage of the population initially on AFDC, $3.1=1.7/542$.

^bFor example, if the relative hours requirement is .50, 11.3 percent of all female heads are initially off AFDC but are predicted to be on AFDC after the work program is introduced. As a percentage of the population initially off AFDC, $24.7=11.3/458$.

^cFor example, if the relative hours requirement is .50, 3.1 percent of all female heads are initially on AFDC but are predicted to be off AFDC after the work program is introduced. As a percentage of the population initially on AFDC, $5.7=3.1/542$.

welfare-eligible women who work--earnings from private-sector work rise by very little, only 1 percent according to the PSID data (this is the mean wage growth for female heads with fewer than 12 years of education). Thus a welfare-work program with a 5 percent earnings impact represents a superior alternative to what they could have otherwise. However, the estimates are also driven by the relation of the benefit level to potential earnings. For the sample of unskilled women whose responses are being simulated, benefits are often higher than potential earnings. The figure in the table reflects the fact that many women who prefer not to be on AFDC despite this differential would be willing to make a different decision if an attractive training opportunity were present. These women typically have low to moderate wages but higher welfare benefits.

The table also shows that only 5.7 percent of women who are on AFDC in the absence of the program (termed "initial recipients" in the table) would not be on AFDC (i.e., "would choose not to enter" as termed in the table) if a mandatory work program were required as a condition of AFDC receipt. For these women, the earnings gain from the program is outweighed by the burden of participation in it. Once again, it is the relationship between benefit levels and potential earnings that guides this behavior. Women in this category are likely to have relatively high wages and relatively low benefits, compared to nonrecipients who enter the AFDC rolls. They are likely to be women who are initially on the margin of whether to participate in AFDC, and instead of spending time in a job-like activity while on AFDC, they would rather spend that same time in a labor market job which reaps earnings not too far below, if not above, the AFDC benefit.

The net effect of all three changes on the AFDC caseload is a net increase of 3 percent. The positive entry effect of the program outweighs the negative entry effect and the negative exit effect. However, this finding is sensitive to the amount of time required in the activity, as shown by the other columns in the table. A work program requiring three-quarters as much work as the typical private-sector job for which these women would be qualified induces only a 17.5 percent positive entry effect but a much larger 12.2 percent negative entry effect from women choosing not to go on AFDC (or to

go off prior to enrollment in the work program). Exit effects fall to 2.4 percent because fewer women go through the work program. The net effect on the caseload is now negative, implying a 6 percent decline. An even greater decline, of 13 percent, is predicted if the welfare-work program requires the same number of hours of activity as would be worked off AFDC.

Although whether the caseload would increase or decrease is sensitive to the hours requirement, the results show that net caseload effects, whether positive or negative, are always dominated by the entry effects; the effects arising from exit are quite small in absolute magnitude relative to those relating to entry. Thus these simulations provide some suggestive evidence (although no more than that) that entry effects may be quantitatively important. It should also be kept in mind, in line with prior discussion, that these simulated entry effects are long-run effects--that is, those that would occur only after a work program has been in place for several years and its impact had become sufficiently well-known in the AFDC-eligible population to have an impact on entry decisions. The net changes in the caseload shown in the table, whether positive or negative, would, therefore, certainly occur only gradually over time. Consequently, these net changes should be interpreted only as indicating the direction in which the caseload would tend to move.

Table 2 shows the effect of mandatory programs with different earnings payoffs. A 75-percent relative hours requirement is assumed. Simulated entry and exit effects are shown for payoffs of 1 percent, 10 percent, 20 percent, and for a uniform payoff of 5 percent. The predictions show, as should be expected, that higher payoffs increase the exit rate, increase the positive entry rate, and reduce the negative entry rate. However, the main finding from the table is that the net effect on the caseload is essentially unchanged by the magnitude of the earnings payoff. The increase in exits from higher earnings is offset, in approximately equal magnitude, by the increase in the entry rate.

TABLE 2

**Effects of a Mandatory Welfare-Work Program on the AFDC Caseload
for Different Earnings Payoffs**

| | Earnings Payoff ^a | | | |
|--|------------------------------|-------------|----------------|----------------------|
| | One Percent | Ten Percent | Twenty Percent | Uniform Five Percent |
| <u>Exit Effects</u> | | | | |
| Exiting recipients as a percentage of all initial recipients | 0 | 5.9 | 16.2 | 3.3 |
| <u>Entry Effects</u> | | | | |
| Nonrecipient eligibles who choose to enter (as a percentage of initial nonrecipients) | 15.3 | 21.2 | 29.3 | 19.0 |
| Nonrecipient eligibles who choose not to enter (as a percentage of initial recipients) | 12.5 | 11.3 | 9.0 | 11.8 |
| <u>Net Effect on AFDC Caseload</u> | | | | |
| (percentage change) | -6 | -6 | -5 | -6 |

Note: Hours requirement of .75.

^aThe one, ten, and twenty percent payoffs are applied only to the middle 50 percent of the AFDC-recipient earnings distribution; payoffs in the remainder are assumed to be one-half of these amounts. The uniform program assumes a five percent payoff for all individuals.

Table 3 shows the effect of the assumed magnitude of earnings-growth responsiveness (i.e., the discount rate) on caseload effects. The first column shows the effects that would occur if women were completely myopic and did not take earnings-growth considerations into account at all in their decisions. In this case, 2.4 percent of recipients would exit the rolls, as in the base case in Table 1, but there would be no positive entry effects since eligibles would not anticipate the positive consequences of the work program. Negative entry rates would rise, however, since only the immediate burden of the program would be seen. These are much larger (26.6 percent) than those in the base case in Table 1 (12.2 percent), resulting in a net caseload effect of -22 percent, much larger than in the base case (-6 percent). A greater degree of responsiveness to the future, but one still lower than used for the baseline simulations in Table 1, would have the effects shown in the second column of Table 3. Some positive entry effects would occur, and the negative entry effects would be smaller than was the case for zero responsiveness. These effects arise because women would now respond positively to the earnings payoff to the program. The net caseload effect would be -10 percent, still greater than in the base case. On the other hand, if women were to have a greater level of responsiveness to future wage growth than assumed in the base case, the third column of Table 3 indicates that the caseload would not fall at all. A greater positive entry effect and a smaller negative entry effect than in the base case would result in positive and negative caseload effects that offset each other almost exactly, leaving the caseload unchanged instead of dropping by 6 percent.

The final column in Table 3 shows the simulated effects of a voluntary work program on the caseload. In this case, there would be no negative entry effects since no one would be required to enroll in the work program. The exit rate would also be smaller because some fraction of the caseload would choose not to enroll. The net effect on the caseload would change from the -6 percent shown in Table 1 to +7 percent as shown in Table 3. Thus these simulations suggest that a

TABLE 3

Effects of a Mandatory Work Program for Different Levels of Earnings-Growth Responsiveness and of a Voluntary Work Program

| | Level of Responsiveness | | | Voluntary Work Program |
|--|-------------------------|------|------|------------------------------|
| | Zero | Low | High | |
| <u>Exit Effects</u> | | | | |
| Exiting recipients as a percentage of all initial recipients | 2.4 | 2.4 | 2.4 | 1.1 |
| <u>Entry Effects</u> | | | | |
| Nonrecipient eligibles who choose to enter (as a percentage of initial nonrecipients) | 0 | 16.8 | 20.9 | 17.5 |
| Nonrecipient eligibles who choose not to enter (as a percentage of initial recipients) | 26.6 | 14.9 | 7.2 | 0 |
| <u>Net Effect on AFDC Caseload</u> | | | | |
| (percentage change) | -22 | -10 | 0 | +7 |

Note: Hours requirement of .75.

voluntary program might cause the caseload to rise in circumstances when it would fall under a mandatory program. Unfortunately, as noted previously, the operational difference between mandatory and voluntary programs is often small, for most programs have both mandatory and voluntary elements. Sanctioning is applied only in certain circumstances, for example, and termination from AFDC is less often applied than grant reduction. In addition, all welfare-work programs only require intervals of participation in it, which, in most cases, are not imposed on the recipient for an indefinite time period if she does not find a job.

In any case, the major implication of these illustrative simulations is that entry effects could be, in the long run, more important than exit effects in determining the eventual trend of the caseload once a welfare-work program has been set permanently in place. The net effects on the caseload predicted here, whether positive or negative, and regardless of the type of program simulated or the assumptions made regarding recipient responsiveness, take on their signs and magnitudes largely as a result of the relative importance of the caseload-reducing entry effects and the caseload-increasing entry effects. The exit effects that arise directly from the earnings payoff of the work program are of distinctly second-order importance.

III. SUMMARY AND POLICY CONCLUSIONS

The analysis in this study suggests that the introduction of welfare work and training programs could have potential long-run effects on the rate of entry onto the AFDC caseload. Mandatory work-training programs that have relatively heavy time and participation requirements are likely to reduce entry onto AFDC or increase the rate of exit from the rolls prior to completion of the program, leading to a net decrease in the caseload arising from discouragement from AFDC recipiency--not from increased potential earnings. Voluntary welfare-work programs are likely to increase the caseload, as are programs which have earnings payoffs significantly in excess of those available from private-sector work, for both make the AFDC program more attractive than it had been before. Empirical

illustrations of the sizes of these caseload effects indicate that they could be quite large, although their magnitudes would depend heavily on the time and participation requirements of the program and on the degree of "forward-lookingness" of the welfare-eligible population. With regard to the latter, to the extent that welfare-eligible women are completely myopic, the caseload is likely to fall because many such women will see only the burden of the program and will choose to leave the rolls, or not even apply, prior to completion of the work and training program.

Entry-rate effects are likely to occur only in the long run. The length of time it would take for the caseload to change would depend on how quickly the earnings payoffs to a welfare-work program are perceived by former recipients and first-time welfare eligibles, and this will, in turn, depend upon the degree to which a stable training program of a particular type remains in place for a sufficient period of time for its payoff to be known and therefore anticipated. To the degree that the earnings payoff either never becomes known with much certainty to the welfare-eligible population, or to the degree that training programs continue to evolve without stabilizing, it is probable that welfare-eligible women will view the costs of the program as more important, because they are more obvious and certain, than the rewards. This would make a decline in the caseload more likely.

The implication of these findings for the JOBS program is that the program can be expected to exert downward pressure on the caseload from a decline in the entry rate of eligibles if, as intended by the legislation, it is extended in the long run to a sufficiently high fraction of the nonexempt caseload as to make the program essentially mandatory, and if the time requirements for the JOBS program are moderately high. If the JOBS program succeeds in its goal of changing the "culture" of AFDC recipiency from its present one to one in which work or some other obligation is an expected part of being on the rolls, it will change the view of the program from the perspective of nonrecipient eligibles as well as recipients. At the present time, however, the JOBS program still has relatively low participation rates and is operated, as a consequence, largely as a voluntary program. As long as the

program is operated in this fashion and stays at a small scale, and as long as it has not changed the nature of AFDC recipiency, it is likely to have little effect on the caseload from either entry or exit.

Many of the entry effects found here would change in magnitude if training equivalent to that provided to AFDC recipients were available to women who are not on AFDC. If, for example, JTPA slots were available to women not on AFDC to the same extent as to women on AFDC, if JTPA were to provide similar program services, and if JTPA were to provide the same child-care and medical subsidies as are available to AFDC recipients, incentives to apply for AFDC or to stay on AFDC in order to receive a welfare-work program would be greatly lessened. Alternatively, if more training were provided to unskilled women by low-wage employers, possibly from government subsidies, such incentives would also be lessened. However, the relative income available on and off AFDC would remain as a factor affecting the incentives of AFDC participation. Unless JTPA paid a stipend equal to the AFDC benefit, for example, there would still be an incentive to receive training on AFDC instead of under JTPA. On the other hand, if private-sector employers provided on-the-job training equivalent to that on AFDC, but at an earnings level higher than the AFDC benefit, there would be an incentive to leave the AFDC rolls and receive the training from the employers. Any universal, noncategorical approach to the training of the disadvantaged population in the United States would have to address these incentive issues.

**Appendix:
The Mathematical Model, Estimation Method,
and Simulation Procedure**

This appendix provides details of the mathematical model, estimation method, and simulation procedure underlying the text discussion of expected theoretical effects and the text simulation estimates. However, space constraints in this appendix do not permit a full accounting for all details; these are provided in a longer background report (Moffitt, 1992c).

I. Mathematical Model

The theoretical discussion in the text is motivated by a mathematical model, upon which the text simulations are partly based. This model is an idealized two-period life-cycle model in which an individual chooses whether to work or to be on welfare in both periods. There is an earnings "payoff" to both work and welfare, at least if the latter has a work program in place. The individual is assumed to pick the utility-maximizing alternative.

The basic equations underlying the model are the following:

$$V(E_1, E_2) = U(Y_1, E_1) + \rho U(Y_2, E_2) \quad (1)$$

$$U(Y_t, E_t) = Y_t - \alpha E_t \quad (2)$$

$$Y_t = P_t B + (1-P_t) W_t \quad (3)$$

$$\begin{aligned} W_2 &= W_1(1+g) && \text{if } P_1=0 \\ W_2 &= W_1(1+d) && \text{if } P_1=1 \end{aligned} \quad (4)$$

Equation (1) is the lifetime utility function (V), which is a weighted sum of per-period utility (U) in the two periods. The per-period utilities contain the value of disposable income (Y_t) in period t ($t=1$ or 2) and a dummy variable for employment in period t (E_t), equal to 1 if the person works and 0 if not. The parameter ρ is the discount rate. Equation (2) gives the form of utility in each period: utility is positively affected by income and negatively affected by work, with α denoting the marginal disutility of work. Equation (3) gives the budget constraint, which relates a welfare participation dummy, P_t --equal to 1 if on welfare and 0 if not--to disposable income. B is the welfare benefit and W_t is the wage rate (both are assumed to be adjusted to apply to the same time frame, e.g., hourly or weekly or monthly). Equation (4) gives the earnings payoffs of private-sector work and of a welfare-work program, assuming such a program is in place and is mandatory (i.e., required if $P_t=1$): "g" is the percentage increase in earnings in a private-sector job (per week, per month, or whatever the time frame chosen is), and "d" is the earnings payoff from the welfare-work program.

Individual choice is first considered in the absence of a welfare-work program, then in its presence. In its absence, we assume that $d=0$ and we also assume that $P_t=1-E_t$, i.e., that work is not required if on welfare but that work is a necessity if off welfare. In this case, the individual chooses E_t for $t=1$ and $t=2$; those choices determine welfare participation and disposable income in both periods as well. In the background report (Moffitt, 1992c), it is shown that the individual will either choose to work and be off welfare both periods, or to be on welfare both periods and not work.¹² The choice between these two alternatives is determined by the following equations:

$$V(0,0) = B(1+\rho) \quad (5)$$

$$V(1,1) = W_1 - \alpha + \rho[W_1(1+g) - \alpha] \quad (6)$$

$$\begin{aligned}
 P_t^* &= V(0,0) - V(1,1) \\
 &= B - W_1 + \alpha + \rho[B - W_1(1+g) - \alpha]
 \end{aligned} \tag{7}$$

$$\begin{aligned}
 P_t &= 1 \text{ if } P_t^* \geq 0 \\
 &= 0 \text{ if } P_t^* < 0
 \end{aligned} \tag{8}$$

Equations (5) and (6) give the utilities of the two choices, and equations (7) and (8) give their difference and how they generate a choice for welfare participation, P_t . Multiplying (7) by $1/(1+\rho)$, we obtain the welfare participation equation:

$$\tilde{P}_t^* = B - W_1 + \alpha - [\rho/(1+\rho)] W_1 g \tag{9}$$

Thus, in the absence of a welfare-work program, welfare participation is more likely (i) the higher the welfare benefit, (ii) the lower the wage, (iii) the higher the taste for leisure, (iv) the lower the rate of time preference, and (v) the lower the rate of return to private-sector work.

As noted in the text, equation (9) shows the value of "leisure" to be α . That is the "wedge" between the benefit and the wage that represents the dollar amount necessary to induce a woman to work. Put differently, even if W_1 were greater than B , a positive α might still induce a positive participation propensity in (9) and hence discourage work.

In the presence of a mandatory welfare-work program, the individual has three choices: to stay off welfare both periods ($P_1=P_2=0$ and $E_1=E_2=1$); to go on welfare the first period and leave the second period after having received an increase in potential earnings ($P_1=1$, $P_2=0$, $E_1=1$ since work is required on welfare, and $E_2=1$); or to go on welfare the first period and to stay on welfare the second period despite the potential earnings increase ($P_1=P_2=1$, $E_1=1$, $E_2=0$). It is assumed that a welfare recipient who has gone through a work program and still cannot find a job is not forced to stay in the work program indefinitely, although she may be required to return in the future.¹³

As noted in the text, we also assume that the welfare-work program may not require as many hours of work as would be necessitated by work in the private labor market. The letter "m" denotes the ratio of welfare-work program hours to private labor market hours. If $m < 1$, the reduction in utility from working is hence $m\alpha$ rather than α .

The utilities of the three alternatives mentioned above are the following, where $V_P(E_1, E_2)$ is the utility of choosing E_1 and E_2 if the first-period welfare participation choice is P :

$$V_0(1,1) = W_1 - \alpha + \rho[W_1(1+g) - \alpha] \quad (10)$$

$$V_1(1,1) = B - m\alpha + \rho[W_1(1+d) - \alpha] \quad (11)$$

$$V_1(1,0) = B - m\alpha + \rho B \quad (12)$$

Comparing (11) to (12), we see that individuals who are on welfare in the first period will either go off or stay on the second period depending on the sign of $[W_1(1+d)-B-\alpha]$. Comparing (10) to (11), we see that individuals who plan to work both periods will decide on first-period welfare participation by comparing the values of B and W_1 in the first period (and comparing the difference to the "wedge" $m\alpha$) to the earnings payoffs "d" and "g" in the second period.

The choices of first-period welfare participation in the presence of a welfare-work program and in its absence can bear almost any relationship to one another. That is, the sign of equation (9), which determines participation choice in the absence of a welfare-work program, bears almost no unambiguous relationship to which of the three utilities in (10)–(12) is maximal. Consequently, the caseload can go either up or down after the introduction of the welfare-work program.

The case of a voluntary training program requires a relatively straightforward modification of this analysis. In this case, the option $V_1(0,0)$ is once again an option, and it replaces the option $V_1(1,0)$ in equation (12), which will usually not be chosen--the individual will not volunteer for a

work program unless she plans to work the second period.¹⁴ Relative to the situation with a mandatory program, a small percentage of female heads will undertake training. In addition, none of those who are recipients prior to the introduction of the training program will choose to leave the rolls; consequently, the net effect of the training program on the caseload (i.e., the participation rate) is more likely to be positive.

II. Estimation Method

Simulations of this model could be constructed by inserting values for all parameters taken from the econometric literature. However, some estimation is performed here because there are no estimates in the literature for ρ . In addition, because of this, the estimates in the literature for effects of welfare benefits and wages on welfare participation and work may not be appropriate to use, since they were obtained from regression specifications which excluded prospective variables (i.e., the specifications were based upon static models). Therefore, the approach taken here is to perform a new estimation.

The estimation is performed on a welfare-eligible sample of female heads of households from the Michigan Panel Study of Income Dynamics (PSID) from 1968 to 1983. Assuming that the welfare participation choices made in these data were made in an environment in which welfare-work programs were insignificant, equation (9) above (the participation equation in the absence of a welfare-work program) can be applied to the data. That equation can be estimated and an estimate of ρ and the other parameters can thereby be obtained. The two equations used for the estimation are as follows:

$$\overset{*}{P_i} = \alpha_i + \gamma B_i - W_i - \theta(W_i g_i) \quad (13)$$

$$\overset{*}{P_i} = \beta_1 B_i + \beta_2 W_i + \beta_3 (W_i g_i) + X_i \delta + \tilde{\epsilon}_i \quad (14)$$

Equation (13) is a modified version of (9), where a separate coefficient γ is added to the welfare benefit to allow its effects to differ from those of the wage rate, and where the parameter $\theta=1/(1+\rho)$ has been substituted for the coefficient on $W_i g_i$. Equation (14) is the same equation in estimating form, with a vector of socioeconomic characteristics (X_i) added to proxy α and with the coefficients relabeled. If this equation is estimated with probit, ρ can be identified. The coefficient on $W_i g_i$ is $-\theta/\sigma$, where σ is the standard deviation of the error term, which can be identified from the coefficient on W_i , which is $-1/\sigma$. The parameter γ can also be identified because the coefficient on B_i is $-\gamma/\sigma$.

The estimates of the discount rate are, therefore, obtained by regressing the welfare participation rate on current benefits, current wages, and the growth rate of wages. If $\rho=0$ (i.e., if individuals are completely myopic), then the growth rate of wages will have no effect on individual welfare participation decisions, holding constant the current wage. On the other hand, if current welfare participation decisions do respond to the growth rate of wages (again, holding the current wage fixed), this is taken as evidence of forward-looking behavior.

The PSID extract used for the estimation contains all women who were ever over age 16 and were ever female heads (i.e., with no spouse or partner present and with children under 18 in the household) during the period 1968–1983. There are 1020 such women. All years in which she is a female head are pooled together for the estimation of the probit equation (14), where the dependent variable is set equal to 1 if the woman participated in AFDC in the previous year and 0 if not. The real welfare benefit used is the guarantee amount for a family of four in the state of residence. The wage level and wage-growth variables are obtained from the wage data of working women in the sample. Because wages are missing for nonworking women and because the wage may be endogenous, both wage levels and wage-growth variables are instrumented. The equation also includes variables for age, age squared, race, region of residence, the state manufacturing wage, birth cohort,

and college graduation. The means of the variables used, a detailed discussion of the instruments, and the coefficient estimates from the probits may be found in the background report.

The coefficient estimates (not shown here for brevity) show significant positive effects of the welfare benefit and significant negative effects of both wage levels and wage growth on welfare participation probabilities. Thus the results confirm not only the existing research on static participation determinants but are also consistent with forward-looking behavior on the part of welfare recipients.

A variety of estimates were obtained on samples of individuals with different levels of education and using different instruments. The preferred estimates, and those used for the simulation model, are taken from the sample of women with less than a high school education. The estimates imply that a one-percentage-point increase in the growth rate of real wages would lower the welfare participation probability by one percentage point, at the mean of the data.

III. Simulation Procedure

Based on the estimates obtained in the econometric work, the base-case simulations use the parameter values $\rho=.90$, $\gamma=.50$, and $\sigma=.53$. Sensitivity tests to the value of ρ are conducted assuming it to equal 0, .50, and 2.00 instead. The parameter g , the assumed growth rate of private-sector wages, is set equal to .01, its approximate mean in the PSID data.

As discussed in the text, the chosen values of "d" are guided by those in past program evaluations as summarized by Gueron and Pauly (1991, p. 15). The base case assigns $d=.05$ to those whose wages fall into the middle 50 percent of the distribution for those on AFDC (as computed from the PSID data) and one-half this value to those with wages outside that range.

Using these parameter values, simulations are conducted in the absence and in the presence of welfare-work programs. In the absence of a program, the participation probability, which is denoted here as p , is the same in both periods and is based upon equation (13):

$$\begin{aligned}
p &= \text{Prob}[V(0,0) - V(1,1) > 0] \\
&= F\left[\frac{\gamma B}{\sigma} - \frac{1}{\sigma}W - \frac{1}{\sigma}\theta Wg + X\tilde{\delta}\right]
\end{aligned} \tag{15}$$

where F is the normal cumulative distribution function and $\tilde{\delta} = \delta/\sigma$. In the presence of a mandatory welfare-work program, participation choices are based upon equations (10)–(12), modified to allow a coefficient of γ on B . First differencing (11) and (12), we obtain

$$\begin{aligned}
\Delta &= V_1(1,1) - V_0(1,1) \\
&= \gamma B - W + \alpha(1-m) + \rho W(d-g)
\end{aligned} \tag{16}$$

as the index describing whether the individual would prefer to be on welfare or not, if she is to work both periods. Equation (16) shows that women with relatively low wages and relatively high benefits would prefer to go on welfare and enroll in the welfare-work program rather than go off welfare to work.

Substituting $X\delta$ for α , we may determine whether Δ is positive or negative. If $\Delta > 0$, the participation probability is 1.0 in period 1 and in period 2 it is:

$$\begin{aligned}
q &= \text{Prob}[V_1(1,0) - V_1(1,1) > 0] \\
&= F\left[\frac{(1+\rho)\gamma B - W - \rho W(1+g)}{\sigma(1-m+\rho)} + X\tilde{\delta}\right]
\end{aligned} \tag{17}$$

Here the issue is whether the earnings payoff, "d," is large enough to induce the woman to go off welfare after having completed the welfare-work program. Women who have moderately high benefits and moderately low wages may choose to stay on welfare, go through the work program, and then stay on welfare afterwards as well.

If $\Delta < 0$, the participation probability is the same in both periods and is equal to:

$$\begin{aligned} r &= \text{Prob}[V_1(1,0) - V_0(1,1) > 0] \\ &= F\left[\frac{\gamma(1+\rho)}{\sigma}B - \frac{1}{\sigma}W - \frac{\rho}{\sigma}W(1+g) + \rho X\delta\right] \end{aligned} \quad (18)$$

Here the issue is whether the loss in home-time that would be incurred if the woman went to work ($X\delta$) is so large that it outweighs the wage and wage growth from a private-sector job off welfare. Women with relatively high benefits and relatively low wages may, again, choose to stay on welfare and hence go through the work-training program, but not leave welfare afterwards.

The equilibrium participation rate is the average of the participation probabilities in the two periods.

The entries in Tables 1–3 in the text are based on a division of the simulated values in the population into different groups. Letting f be the fraction of the population simulated to have $\Delta > 0$, p_1 be the simulated mean of (15) for those with $\Delta > 0$ (i.e., the participation rate of those with $\Delta > 0$ in the absence of the program), and p_0 be the simulated mean of (15) for those with $\Delta < 0$, the population facing a mandatory program can be subdivided into six mutually exclusive groups, the fractions in each given by:

| | | |
|------|----------------|---|
| I: | $f(1-p_1)$ | Fraction off welfare prior to program introduction, on welfare at $t=1$ and off welfare at $t=2$ after introduction |
| II: | $f(p_1-q)$ | Fraction on welfare prior to program introduction, on welfare at $t=1$ and off welfare at $t=2$ after introduction |
| III: | $fq + (1-f)r$ | Fraction on welfare prior to program introduction, on welfare at $t=1$ and $t=2$ after introduction |
| IV: | $(1-f)(1-p_0)$ | Fraction off welfare prior to program introduction, off welfare at $t=1$ and $t=2$ after introduction |
| V: | $(1-f)(p_0-r)$ | Fraction on welfare prior to program introduction, off welfare at $t=1$ and $t=2$ after introduction |

The fraction of the population on welfare at $t=1$ after program introduction is the sum of groups I, II, and III, and is equal to $[f+(1-f)r]$. The fraction of the population on welfare at $t=2$ is given by group III. The equilibrium participation rate is the average of these two. The net effect of the training program reported in the last row of Table 1 is the difference between this equilibrium participation rate and $p=fp_1+(1-f)p_0$, the participation rate prior to program introduction, divided by the latter. The three rows of Table 1 after the pre-program participation rate are, respectively, the probability in II divided by p , the probability in I divided by $1-p$, and the probability in V divided by p .

In the presence of a voluntary training program, the option $V_1(0,0)$ is added to the choice set. The option $V_1(1,0)$ remains but is chosen only for those with $\alpha<0$. The derivation of the probabilities of participation in periods 1 and 2 follows the same logic as for a mandatory program and will not be presented here for brevity.

Endnotes

¹An exception is my 1992 study (Moffitt, 1992a), but in that study I only considered the implications of entry effects for evaluation methodology--in particular, for the question of whether entry effects could be estimated more easily by nonexperimental methods or by randomized field experiments.

²There are, of course, many other factors affecting entry and exits. However, they are ignored for the purposes of the discussion.

³Some studies (e.g., Gueron and Pauly, 1991, pp. 37, 148) have found that many programs increase employment rates but not wage rates. The difference is not important for present purposes, for entry effects of the type discussed here would occur even if program payoffs were only in employment. Note that, in this paper, "earnings" and "wages" are used interchangeably.

⁴The point of this example is that entry onto welfare generally takes place from unemployment, not employment, and entry effects are more plausible in the former case. It might be noted that a similar route is generally taken into nonwelfare training programs such as JTPA and, in the past, CETA. It has been repeatedly documented that earnings take a "dip" just prior to entry into training, reflecting some adverse employment event (see, e.g., Ashenfelter [1978]).

⁵Put differently, the true "entry rate" that would be affected is the entry into the welfare-work program, not the entry onto welfare.

⁶An interesting question is whether welfare trainees and the individuals in low-income communities learn the "true" effects of work-training programs before researchers do. If not, then there is no question that the former could not know program effects since researchers still do not!

⁷One potential piece of direct evidence might come from those welfare-work experiments of the 1980s which randomized applicants rather than recipients, thereby giving applicants the opportunity to decline to enter welfare if they did not like the work program that they were to be required to enter (Gueron and Pauly, 1991, pp. 183–184). However, it is questionable whether individual responses in

such a situation would be representative of those in the long run. In the experiments, applicants presumably had little idea what the burdens or rewards of the program would actually be like. In the long run, this would change.

⁸An evaluation is underway to conduct an impact analysis of JOBS, but it is not intended to estimate the long-run entry effects of the program.

⁹As noted previously, the negative entry effect could be termed, alternatively, an exit effect if women leave the rolls while on welfare but prior to being enrolled in the work program, as opposed to never going on welfare in the first place. The simulations do not make a distinction between these two ways in which the caseload-reducing effect could occur.

¹⁰Different women are predicted to make different choices because they have different benefits and different wages, and because the estimation of equation (1) also includes sociodemographic variables such as age, education, race, regional location, etc.

¹¹Two of the studies showed reductions of 7 percent, however. The percentages reported by Gueron and Pauly are "percentage point differences" in Table 4.2 of their book (1991).

¹²The background report also provides labor-leisure diagrams with graphical illustrations of the budget constraint choices. Those diagrams are omitted here for brevity.

¹³There is another choice--be off welfare the first period and go on welfare the second period--but this alternative will never be chosen. See the background report.

¹⁴An exception can occur if $\alpha < 0$, a case in which there is a "stigma" to not working while on welfare. For this to occur, recipients would have to have a positive preference for being able to work while on the rolls. In this case, it is possible that the sequence (1,0) would be preferred.

References

- Ashenfelter, O. 1978. "Estimating the Effect of Training Programs on Earnings." Review of Economics and Statistics 60 (February): 47–57.
- Bassi, L. and O. Ashenfelter. 1986. "The Effect of Direct Job Creation and Training Programs on Low-Skilled Workers." In Fighting Poverty, eds. S. Danziger and D. Weinberg. Cambridge: Harvard University Press.
- Burtless, G. 1989. "The Effect of Welfare Reform on Employment, Earnings, and Income." In Welfare Policy for the 1990s, eds. P. Cottingham and D. Ellwood. Cambridge: Harvard University Press.
- Greenberg, D. and M. Wiseman. 1992. "What Did the OBRA Demonstrations Do?" In Evaluating Welfare and Training Programs, eds. C. Manski and I. Garfinkel. Cambridge: Harvard University Press.
- Gueron, J. and E. Pauly. 1991. From Welfare to Work. New York: Russell Sage Foundation.
- Mead, L. 1986. Beyond Entitlement: The Social Obligations of Citizenship. New York: Free Press.
- Moffitt, R. 1992a. "Evaluation Methods for Program Entry Effects." In Evaluating Welfare and Training Programs, eds. C. Manski and I. Garfinkel. Cambridge: Harvard University Press.
- Moffitt, R. 1992b. "Incentive Effects of the U.S. Welfare System: A Review." Journal of Economic Literature 30 (March): 1–61.
- Moffitt, R. 1992c. "The Effect of Welfare Training Programs on the Welfare Caseload." Final report to the Department of Health and Human Services from the Institute for Research on Poverty, University of Wisconsin, August, 1992.