
Evaluation of Disability Insurance Savings Due to Beneficiary Rehabilitation

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This article uses individual vocational rehabilitation case data and disability insurance (DI) benefit histories from the master beneficiary record file to compare the costs and savings to the DI trust fund associated with the beneficiary rehabilitation program. Using cost-benefit procedures and varying assumptions as to the impact of vocational rehabilitation services, the savings to the trust fund were found to range between \$1.39 and \$2.72 per \$1.00 of cost for DI beneficiaries who completed their vocational rehabilitation service period in fiscal year 1975. Calculating savings according to the length of the savings period revealed that expenditures for vocational rehabilitation services to these beneficiaries would be fully repaid within 10 years after closure. It was also discovered that the loss of savings due to return to the DI rolls substantially exceeds the increased payroll tax revenue accruing to the trust fund from post-vocational rehabilitation employment.

The beneficiary rehabilitation program (BRP) is funded by the Social Security Administration (SSA) and administered by State vocational rehabilitation agencies. The purpose of the program is to rehabilitate disability insurance beneficiaries, returning them to productive employment. Since the inception of the program, several studies have been conducted to determine its effectiveness in reducing the number of disability insurance (DI) beneficiaries without causing a drain on the DI trust fund. This article summarizes a recent study, presenting new evidence on the performance of the BRP.¹

The results of the study show that the program produced from \$1.39 to \$2.72 of savings to the DI trust fund for each dollar spent on BRP clients who completed ("closed out") vocational rehabilitation services during fiscal year (FY) 1975. Cases included in the study were identified from State vocational rehabilitation agency reports to the Rehabilitation Services Administration (RSA). The FY 1975 file of the case closure report (form RSA-300) records 10,935 BRP rehabilitations, of which 3,976 were found to have left the DI rolls after vocational rehabilitation services were

begun.² The savings to the DI trust fund were calculated for this latter group of "rehabilitated."

Program Objectives and Design

When Congress established the beneficiary rehabilitation program with the Social Security Amendments of 1965, its intention was that the program return the maximum number of DI beneficiaries to productive activity while producing at least enough revenue for the Old-Age and Survivors and the Disability Insurance trust funds to pay for the cost of vocational rehabilitation services.³ The Secretary of the Department of Health, Education, and Welfare (DHEW) was given authority to specify which DI beneficiaries should enter the program. Accordingly, the Department established

² A client is successfully rehabilitated, according to RSA regulations, if the client completed an approved vocational rehabilitation program and is employed for a continuous period of 60 days thereafter in competitive employment or sheltered work. Terminations from the DI rolls occur if the beneficiary has medically recovered sufficiently to not be considered disabled anymore or if the beneficiary completes the trial work period. The trial work period requires termination from the DI rolls 3 months after the 9th month of substantial gainful activity. A month of substantial gainful activity is granted when a beneficiary earns above the monthly earnings test (\$300 in 1980). Most BRP clients who are rehabilitated are terminated, if at all, as a result of completing the trial work period.

³ U.S. Congress, Senate, Committee on Finance, **Social Security Amendments of 1965**, and Senate Report No. 404, part I, 89th Congress, 1st session, 1965, page 108.

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¹ Leo A. McManus, **A Comparison of Disability Insurance Trust Fund Savings and Costs for the Beneficiary Rehabilitation Program** (forthcoming Research Report), Office of Research and Statistics, Office of Policy, Social Security Administration.

four criteria for selection of BRP clients. The special selection criteria attempt to assure that the DI beneficiary is capable of being rehabilitated, needs rehabilitation, will be able to return to productive employment after completing the program, and that the process will produce trust fund savings sufficient to pay for the vocational rehabilitation services.

Table 1 shows the expenditures and rehabilitation/terminations for the beneficiary rehabilitation program since its inception. In recent years, the number of participants in the program has increased rapidly, while the number of persons rehabilitated has increased slowly. The number of persons finishing the program and leaving the disability rolls has increased both in absolute numbers and as a proportion of beneficiaries served, rising from 5.2 percent in FY 1975 to 8.3 percent in FY 1979. The rapid increase in BRP participants comes at a time when the number of disabled-worker beneficiaries increased from 2.36 million (June 30, 1975) to 2.88 million (June 30, 1979), or by 22 percent. During the same period, total expenditures for the beneficiary rehabilitation program increased 25 percent.

Table 1.—DI trust fund monies made available and spent for vocational rehabilitation services, 1967-80

Fiscal year	Funds		Number of—		
	Available	Expended	Beneficiaries in the BRP	Persons rehabilitated under the BRP	DI beneficiaries terminated
1967.....	\$14,800,000	\$9,846,158	(1)	1,815	170
1968.....	16,000,000	15,440,712	26,455	5,934	1,068
1969.....	18,036,800	17,557,281	32,911	8,036	2,799
1970.....	21,579,620	20,983,873	35,275	9,307	3,978
1971.....	24,731,440	24,375,764	40,711	9,799	2,325
1972.....	30,445,150	30,390,442	45,111	9,983	2,468
1973.....	45,369,875	42,934,953	52,011	11,580	2,597
1974.....	69,705,150	56,461,818	60,651	13,358	2,721
1975.....	83,206,485	81,022,057	69,653	12,585	3,595
1976.....	102,591,510	96,190,226	78,063	12,826	4,822
Transition quarter.....	29,776,440	27,937,391	58,655	2,330	2,263
1977.....	92,332,000	89,243,374	80,037	11,760	4,760
1978.....	97,872,000	96,963,162	94,979	12,268	6,363
1979.....	103,744,000	102,070,666	94,936	13,302	7,841
1980 ²	113,268,000	(1)	(1)	(1)	(1)

¹ Data not available.

² President's budget.

Source: Social Security Administration and Rehabilitation Services Administration administrative data.

Previous Research and Current Methodology

Two early studies of the beneficiary rehabilitation program done by the Office of the Actuary of the Social Security Administration presented benefit/cost ratios of

1.93 and 2.49.⁴ Subsequent studies by the General Accounting Office (GAO) and by Rutgers University found the ratios to be substantially lower—1.15 and 1.14, respectively.⁵ The main difference between the two sets of studies is that the SSA studies accepted all BRP rehabilitation/termination cases as producing trust fund savings, whereas the GAO report cited 62 percent of all BRP clients as being (in its opinion) inappropriate for program charges because they would have recovered without vocational rehabilitation services or because they did not receive significant services from State vocational rehabilitation agencies. The Rutgers University study incorporated the GAO assumption of 38 percent being appropriately selected. The GAO study, however, was not representative of the national population, and a more recent study, which is representative, indicates that 74.6 percent of the program's clients are appropriately selected.⁶ The percentage of clients who are appropriately selected for the beneficiary rehabilitation program is called the "impact rate." Calculations presented below are based on both estimates of the impact rate.

All previous cost-benefit studies compared the discounted sums of all disbursements from the DI trust fund from the beginning of the program through a given year to the discounted sum of savings to the DI trust fund over the lifetime of the beneficiary for persons who had been BRP clients at any time during the history of the program and had been terminated from the DI rolls after rehabilitation. Disbursements for the program in any year include costs of services provided to clients who have not yet completed vocational rehabilitation services. As a result, costs are overstated relative to savings in such studies. The present study attempts to avoid this problem by restricting costs and benefits to a cohort of BRP clients who had completed their vocational rehabilitation service programs or had withdrawn from vocational rehabilitation involvement.

Cost-Benefit Methodology

The standard cost-benefit methodology requires the computation of the lifetime costs and benefits for a

⁴ Department of Health, Education, and Welfare, Social Security Administration, Office of the Actuary, *Study of Experience in Financing the Vocational Rehabilitation of Disability Beneficiaries from the Social Security Trust Funds*, January 25, 1972, page 8; and Congress, House of Representatives, Committee on Ways and Means, *Staff Report on the Disability Insurance Program*, July 1974, pages 293-305, hereafter referred to as *Staff Report*.

⁵ Comptroller General of the United States, *Improvements Needed in Rehabilitating Social Security Disability Insurance Beneficiaries*, Report to Congress, May 13, 1976; and Monroe Berkowitz, Martin Horning, Stephen McConnell, and John D. Worrall, *Rehabilitating Social Security Disability Insurance Beneficiaries: The Promise and the Performance*, Rutgers University, January 1978.

⁶ This percentage is based on a sample of 1,248 BRP rehabilitation/terminations that were reviewed during FY 1977 by the RSA and SSA field staff.

project. These costs and benefits are calculated as the sum of each period's costs and benefits, discounted by a factor reflecting the rate of return on the best alternate use of the funds involved:

$$C = \sum_{i=0}^n [C_i / (1+d)^i]$$

where C = present discounted value of project costs,
 C = each period's costs,
 d = discount rate, and
 n = number of periods in the project.

Likewise, total project benefits are calculated as follows:

$$B = \sum_{i=0}^n [B_i / (1+d)^i]$$

where B = present discounted value of project benefits, and
 B_i = each period's benefits.

Cost and/or benefits may be zero in any period. For the beneficiary rehabilitation program, costs are zero after the client completes vocational rehabilitation services.

The annual benefits for the beneficiary rehabilitation program come from the subpopulation of clients who are successfully rehabilitated and who have been terminated from the DI rolls. The annual benefits, B_i, are calculated as:

$$B_i = \text{pr}(S)_i [b_0(1+p)^i + \text{pr}(\text{emp})_i r_{\text{DI}_i} W_0 (1+w)^i]$$

where pr(S)_i = probability of surviving one or more year in the savings period,
 b₀ = DI benefit at termination,
 p = rate of price increase,
 pr(emp)_i = 1-RU_i, where RU_i is the civilian unemployment rate in year i,
 r_{DI_i} = combined employee-employer DI payroll tax rate in year i,
 W₀ = annual earnings at termination, and
 w = rate of earnings increase.

The probability of surviving another year in the savings period is conditional on three events: The probability of death, the probability of being terminated from the DI rolls, and the probability of returning to the DI rolls (recidivism). The probability of "live termination" is included here on the assumption that the BRP client would have the same probability of being terminated as DI beneficiaries generally if he or she did not receive vocational rehabilitation services.

Therefore, the probability of surviving another year in the savings period is calculated:

$$\text{pr}(S)_i = [1 - \text{pr}(T_d)_{k, a_i}] [1 - \text{pr}(T_r)_{k, a_i}] [1 - \text{pr}(R)_{k, a_i}]$$

where k = 1 for men or 2 for women,
 a_i = beneficiary's age in year i (15 ≤ a_i ≤ 64),
 pr(T_d)_{k, a_i} = probability of termination for death,
 pr(T_r)_{k, a_i} = probability of live termination, and
 pr(R)_{k, a_i} = probability of returning to the DI rolls.⁷

Costs are the sum of all charges to the DI trust fund as reported in the data file used here for services provided to persons who have completed vocational rehabilitation in that year. Costs include charges for services provided to nontrust fund clients (incorrectly charged to the DI trust fund), as well as for legitimate trust fund clients. Legitimate trust fund clients are those beneficiaries who satisfy the four special selection criteria cited above. (Some persons receiving State vocational rehabilitation services are not DI beneficiaries.)

Cases for this study come from annual reports (form RSA-300) filed by State vocational rehabilitation agencies to the Rehabilitation Services Administration regarding services provided to vocational rehabilitation clients. Trust fund clients were identified from indicators in the RSA-300 file, and benefit savings were calculated from SSA's master beneficiary record (MBR) for those trust fund cases terminated from the DI rolls because of rehabilitation. Trust fund charges for all vocational rehabilitation closures during FY 1975 were counted and inflated to allow for unreported costs of administration, counseling, and job placement services provided by the vocational rehabilitation agencies.

Data Sources and Sample Selection

Savings to the DI trust fund consist mainly of benefits not paid to BRP clients who terminate from the DI rolls after vocational rehabilitation involvement. To estimate the lifetime savings for a terminated client, the benefit amount at termination must be known. All studies have used SSA's MBR file to determine the benefit amount at termination. Differences in estimates between studies have depended on sample selection

⁷ This specification implicitly makes the assumption that pr(T_r) and pr(R) are independent events. Obviously, this is not the case. It is hoped that future studies will include a more accurate description of the joint probabilities of recovery and recidivism.

procedures and how the MBR data have been used. Costs have usually been the total of all charges to the DI trust fund for vocational rehabilitation services from the beginning of the beneficiary rehabilitation program to the last year of data available at the time of the study. Costs for individual clients can be taken only from data on vocational rehabilitation closures for a fiscal year, contained in the RSA-300 file.

Savings Data

Data for every DI beneficiary is in the master beneficiary record file. This record contains the history of disability (as well as retirement) benefits received by the beneficiary with dates of entitlement and termination, where applicable. Terminations for recovery are distinguishable from death terminations, as are conversions to retirement benefits at age 65. Benefit amounts at termination are available as well. With this information, exact benefit payments can be calculated for the disabled person based on his or her primary insurance amount (PIA) and for dependents (auxiliary benefits), if applicable. Auxiliary benefits are paid for minor, unmarried, dependent children under age 18, or under age 22 if the child is a full-time student. An auxiliary benefit for a spouse can be paid if the spouse is more than age 61 or has a minor dependent beneficiary in his or her care. In any case, the auxiliary benefit is 50 percent of the PIA for each auxiliary, subject to a legislated maximum family benefit.⁸ The presence and age of auxiliary beneficiaries is also available from the master beneficiary record. From these data items, the benefit amounts and time frames for receipt of benefits can be determined.

The samples of cases to be included in the savings calculations must be drawn from a file of BRP clients. Usually, the file of client closures has been used to define the sample. The Social Security Administration requires State vocational rehabilitation agencies to send a form SSA-853 whenever a client is deemed to have completed vocational rehabilitation services. The purpose of the form is to alert the Social Security Administration that a BRP participant may have sufficiently recovered the capacity to work so that he or she can be terminated from the DI rolls. An SSA-853 form should be on file for each BRP client who has completed vocational rehabilitation services since the beginning of the beneficiary rehabilitation program. Case identifiers can be matched to the master beneficiary record for each of these persons to estimate savings. The studies done by SSA's Office of the Actuary and Rutgers

⁸ The Social Security Amendments of 1980 set maximum family benefits at the lower of 85 percent of average indexed monthly earnings or 150 percent of the primary insurance amount. In 1975, the maximum family benefit was calculated according to a set formula and could be as high as 188 percent of PIA.

University used this approach to calculate benefits for BRP rehabilitants who were terminated from the DI rolls. The GAO study used the SSA-853 file to select the sample for its study.

Another source of identification of trust fund cases is the RSA-300 form. The Rehabilitation Services Administration requires the States to complete this form for each vocational rehabilitation client completing services in a fiscal year. There should be an RSA-300 form for each SSA-853 form filed.⁹ Case identifiers from the RSA-300 form can be used to extract benefit data from the master beneficiary record.

Cost Data

The costs of the beneficiary rehabilitation program can be measured exactly by the actual disbursements from the DI trust fund for vocational rehabilitation services. Aggregate charges to the trust fund are made through a quarterly report (RSA-2) of vocational rehabilitation expenditures on all trust fund cases. All previous studies of the beneficiary rehabilitation program have used these total costs for a specified period of time as the basis for calculating the present discounted value of program costs. By including the costs of services to beneficiaries who are still receiving vocational rehabilitation services, the denominator of the benefit/cost ratio is overstated.

This overstatement of costs affects all previous studies of the beneficiary rehabilitation program. The problem is greater during a period of BRP expansion, such as experienced during the early 1970's. (From 1971 through 1975, expenditures increased by 25 percent, 41 percent, 32 percent, and 43 percent, respectively. Thus, expenditures in 1975 were 3½ times as high as in 1971.) The rapid growth of the BRP at that time may have contributed significantly to the appearance of declining benefit/cost performance, although it is impossible to be certain because disbursements for closed cases cannot be separated from those for active cases in the aggregate data.

The principal advantages of using RSA-300 data on individual case costs are that costs are related to closed cases only—they do not include costs of services to cases still active at the end of the fiscal year. As a result, savings can be related to costs for subgroups of individuals specified by such factors as age, sex, and the number of months in which vocational rehabilitation services were received. The main weaknesses of RSA-

⁹ Case characteristics dictate whether a beneficiary meets the special selection criteria at a point in time. During those periods when a case meets the criteria, trust fund monies may be spent. When a case no longer meets the criteria, no trust fund charges should be made. This can happen when a BRP client, who could have been rehabilitated initially, becomes more severely disabled during vocational rehabilitation services, so that it is unlikely that he or she could return to sustained employment.

300 reports are that there is no way to assure that trust fund cases are accurately identified on those reports; and that costs of counseling, administration, and job-placement services are not reported and so must be estimated.

The Study Sample

The RSA-300 files contain records for all persons completing vocational rehabilitation in each fiscal year. In choosing the appropriate year of data for this study, consideration was given to allowing sufficient time for a beneficiary rehabilitation program participant to be terminated from the DI rolls. If a DI beneficiary completes the vocational rehabilitation program, termination of DI benefits in most cases could not be expected for at least 1 year after closure, to allow time for completion of the trial work period. In fact, some beneficiary rehabilitation program participants are terminated from the DI rolls before completing vocational rehabilitation because of medical improvement, while others require longer than 1 year after closure to be terminated. The Rutgers University study found that 13 percent of BRP rehabilitations were terminated from the DI rolls before completing vocational rehabilitation services. That study also found that the bulk of BRP rehabilitants who were terminated from the DI rolls left within 3 years after closure.¹⁰ Thus, the FY 1975 RSA-300 file was chosen for this study with DI benefit data matched through December 1978, allowing 3½ years for termination after completion of vocational rehabilitation services.

The total number of persons completing rehabilitation for FY 1975, as recorded in the RSA-300 file, is 1,071,751. Of these, 147,493 were verified as being DI beneficiaries sometime between the date of referral to vocational rehabilitation services and the date of completion. Within this group of beneficiaries, the number of cases found to be trust fund cases was 42,331, with 10,935 of these considered to be rehabilitated. This last group was used as the population of potential savings cases. A check of benefit histories for these persons produced 3,976 (36.36 percent) terminations because of recovery through December 1978. Savings were calculated for these recoveries in the basic savings/cost comparison.

The count of rehabilitated BRP cases (10,935) is considerably below the official published count for FY 1975. According to RSA-2 reports, there were 12,585 persons under the DI trust fund who were rehabilitated in 1975.¹¹ The count of rehabilitated BRP closures for

FY 1975, based on SSA-853 reports, was 10,705.

This result is consistent with findings for the SSA-853 file by both Rutgers University and the Social Security Administration wherein individual case-file counts were substantially lower than State agency reports of total BRP clients served and rehabilitated.¹² Both studies offer various reasons for this discrepancy, including reporting and processing deficiencies of the form SSA-853 and mismatches to MBR records. These same factors could well affect the RSA-300 file. No doubt some cases that were excluded from the study, due to nonmatched account numbers, produced savings that could be attributed to the BRP. Some RSA-300 forms may have been lost or may not have been filed or correctly recorded. In addition, the study sample included only MBR-verified primary beneficiaries. Disabled widows and disabled child beneficiaries were excluded even though some of them were rehabilitated under the beneficiary rehabilitation program. At any rate, the sample as selected represents a conservative estimate of the savings generated by the beneficiary rehabilitation program.¹³

The total charges to the DI trust fund for all FY 1975 RSA-300 cases, including an allowance for administrative, counseling, and job placement services, equals \$34.5 million. This figure for all closures in 1975 can be compared with total disbursements for all active cases from the DI trust fund for FY 1975 of \$81.0 million. At the time when the beneficiary rehabilitation program was growing rapidly, it is to be expected that active case costs would greatly exceed total costs for closures in a given year, as stated above.

Although it is quite difficult to assess the net effects of offsetting inconsistencies between BRP disbursements and RSA-300 costs for FY 1975, some evidence was reported in a study commissioned by the Department of Health, Education, and Welfare.¹⁴ That study found aggregate costs from the RSA-300 file to be 10–14 percent higher than aggregate costs taken from case file vouchers.¹⁵ Thus, it may be safe to assume that DI trust fund charges are in substantial agreement with case file vouchers, and that total trust fund costs are somewhat overstated in the RSA-300 file. On balance, it appears that the estimate of total BRP costs based on the RSA-300 for FY 1975 closures constitutes a substantially accurate representation of total disbursements for those cases.

¹² *Op. cit.*, pages 56–63; and Ralph Treitel, "The Effect of Financing Disabled Beneficiary Rehabilitation," *Social Security Bulletin*, November 1975, pages 16–28.

¹³ Adding cases would not affect costs since all trust fund charges reported in the RSA-300 file were included. Identifying additional trust fund cases would add to savings if any of them were rehabilitated and terminated from the DI rolls.

¹⁴ Frederick Collignon et al., *Implementing the Rehabilitation Act of 1973: The VR Program Response*, Berkeley Planning Associates, February 1978.

¹⁵ *Ibid.*, page 185.

¹⁰ *Op. cit.*, pages 60–61.

¹¹ Department of Health, Education, and Welfare, Rehabilitation Services Administration, *State Vocational Rehabilitation Agency Program Data, Fiscal Year 1975, 1976*, page 72.

Savings and Costs

The present discounted value of benefits and costs will now be compared, assuming rates of discount (interest rates on trust fund investments), benefit increases (inflation rates), and wage increases, along with unemployment rates. Also, the benefit savings have been adjusted for the probabilities of death and recovery without vocational rehabilitation services and for the likelihood of return to the DI rolls (recidivism).

Benefit savings and payroll-tax payback were calculated from the payroll tax rate schedule contained in the Social Security Amendments of 1977, as shown in table 2. Only trust fund cases closed as rehabilitated were included in the overall savings calculation. As stated above, of the 10,935 such cases found in the file, 3,976 (36.36 percent) were terminated from the DI rolls for medical recovery or substantial work.¹⁶ These terminations constitute the savings cases.

To test the sensitivity of the savings/cost ratio to economic assumptions, three sets of rates were used, representing a range of economic scenarios. The three scenarios were presented in the 1979 SSA trustees' report as alternatives I, II, and III.¹⁷ Table 3 shows the values for the various assumptions taken from alternate scenarios. In the interest of simplicity, constant rates were chosen at the 1990 values, as a representation of the long-term trends in the economy.

For each set of economic assumptions, two impact rates were applied. The GAO estimate (based on a review of 350 terminations in four States), that 38

¹⁶ Medical recovery cases are included because there is no way to distinguish them from terminations for substantial work in the MBR file. Also, in some cases vocational rehabilitation services aid medical recoveries. The impact rate is used to adjust for medical recoveries that should not be included in benefit savings. The term "recovery" is used throughout this paper to mean both termination for medical recovery and termination for sustained work. Of course, sustained work is the usual goal of vocational rehabilitation services.

¹⁷ The Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, **1979 Annual Report**, transmitted to the U.S. Congress, House of Representatives, Ways and Means Committee, April 24, 1979.

Table 2.—OASDI contribution rates (combined employee-employer)

Year	OASDI	DI
1970.....	8.4	1.1
1971-72.....	9.2	1.1
1973.....	9.7	1.1
1974-77.....	9.9	1.15
1978.....	10.1	1.55
1979-80.....	10.16	1.5
1981.....	10.7	1.65
1982-84.....	10.8	1.65
1985-89.....	11.4	1.9
1990.....	12.4	2.2

Source: Board of Trustees, Federal Old-Age and Survivors Insurance and the Disability Insurance Trust Funds, **1979 Annual Report**, U.S. Congress, House of Representatives, House Document No. 96-101, April 1979, page 5.

Table 3.—Economic assumptions underlying the BRP savings calculation for 1990

[Rates in percentages]

Item	Alternative I	Alternative II	Alternative III
Average annual DI trust fund interest rate.....	6.1	6.6	8.1
Annual increase in—			
Consumer price index.....	3.0	4.0	6.0
Covered wages.....	5.5	6.0	7.5
Average annual unemployment rate.....	4.0	5.0	6.0

Source: Board of Trustees, Federal Old-Age and Survivors Insurance and the Disability Insurance Trust Funds, **1979 Annual Report**, U.S. Congress, House of Representatives, House Document No. 96-101, April 1979, page 22.

percent were correctly credited to the program, was used as a lower bound on the savings calculation. The upper bound was assumed to be the 74.6-percent impact rate from the FY 1977 termination review study (based on a review of a sample of terminations in all States). Savings were calculated by applying the impact rates directly to the sum of the present discounted value of DI benefits saved and payroll taxes paid by terminated BRP rehabilitations.¹⁸ Payroll taxes for the DI trust fund only (combined employee-employer rate) were used for the payroll tax payback portion of the savings calculation.

DI Trust Fund Ratios

The resulting savings ratios are presented in table 4. Choosing the midrange economic scenario (alternative II) and assuming a 38-percent impact rate, \$1.39 is returned to the DI trust fund for each \$1 of reimbursement to the States for the beneficiary rehabilitation program. This estimate can be roughly compared with the GAO finding of \$1.15 and the Rutgers University result of \$1.14. Recognizing the substantial differences in the data and case-selection procedures among these studies, it is unwise to attribute a trend to the successive savings/cost ratios, although these results indicate that the beneficiary rehabilitation program is paying for

¹⁸ The Rutgers University study applied the 38-percent impact rate by selecting a 38-percent sample of savings cases. This procedure produced credited savings that were 39.7 percent of total savings; *op. cit.*, page 67.

Table 4.—Savings/cost ratios for trust fund rehabilitations in FY 1975 terminated from the DI rolls

[Amounts in millions]

Impact rate	Alternative I	Alternative II	Alternative III
38-percent savings/cost ratio.....	1.35	1.39	1.43
Amount of savings.....	\$46.5	\$48.0	\$49.4
74.6-percent savings/cost ratio.....	2.64	2.72	2.81
Amount of savings.....	\$91.3	\$94.8	\$17.0

itself by a comfortable margin. Subsequent studies, applying the same methodology to later data, will help to determine trends in the performance of the beneficiary rehabilitation program.

The 38-percent impact rate was not presented by the GAO as an accurate representation of the proportion of cases appropriately selected for the savings calculation. The wide discrepancy between the GAO finding and the finding from the SSA/RSA termination review places serious doubt on the advisability of basing policy decisions pertaining to the beneficiary rehabilitation program on savings produced with the 38-percent impact rate. On the other hand, the termination review finding of a 74.6-percent impact rate may be erroneous, although no damaging criticism of the termination review procedures has yet surfaced. Accordingly, the savings/cost ratios of table 4 are best viewed as defining the upper and lower bounds of a range of estimates, with the best estimate somewhere between the limits of the range. Thus, the most representative estimate of the savings/cost ratio for this study would be somewhere between 1.39 (at 38-percent impact) and 2.72 (at 74.6-percent impact). In any case, the principal conclusion is that the beneficiary rehabilitation program is cost-beneficial, given the methodology employed here.

Another point about these savings calculations is that the varying economic assumptions make little difference to the savings estimate. The principal reason is that the rate of DI-benefit increase (rate of Consumer Price Index change) and the rate of discount (rate of interest on the trust funds) are related by the effects of inflation on money markets. As long as the relationship is fairly constant across sets of assumptions, there will be little variation in the savings calculations.

Recidivism and Tax Payback

The savings calculation reported above included a reduction in benefit savings and payroll tax payback because some BRP terminations return to the DI rolls. Previous studies by SSA's Office of the Actuary avoided explicit calculations of recidivism on the assumption that payroll tax payback was at least equal to the amount of the savings lost through recidivism. The Rutgers University study assumed that recidivism would cost less than the income from payroll tax payback.¹⁹

An additional consideration is that earnings after termination may change the amount of the disability or retirement benefit that the BRP participant might receive later, but whether the benefit would be raised or lowered would depend on the number of years worked and the level of earnings. These computations are not included here because the DI trust fund is not affected

by retirement benefit costs and because there was no information on changes in DI benefit amounts at reentitlement for BRP participants.

To assess the relative importance of tax payback and recidivism, savings were computed with and without an allowance for recidivism, and payroll tax payback was computed with DI tax rates alone and with combined OASI and DI rates. The results of these calculations are shown in table 5.

Table 5.—Savings amounts and savings/cost ratios with and without payroll-tax payback and recidivism for BRP rehabilitations (alternative II assumptions)

[In millions]

Impact rate	DI trust fund savings	Payroll tax payback		Savings/cost ratio	
		DI only	OASDI	DI only	OASDI
No recidivism at—					
38 percent	\$62.2	(1)	(1)	\$1.80	
74.6 percent	122.1	(1)	(1)	3.54	
With recidivism at—					
38 percent	47.1	\$0.8	\$5.1	\$1.39	\$1.51
74.6 percent	92.5	1.5	10.1	2.72	2.97

¹ Data not available.

The present discounted value of benefit savings at a 38-percent impact rate and no allowance for recidivism or tax payback equals \$62.2 million. Allowing for both recidivism and payroll tax income (at DI rates), the combined revenue to the DI trust fund is \$47.9 million, of which \$0.8 million is payroll tax revenue. Using the combined OASI and DI contribution rates, the payroll tax revenue portion equals \$5.1 million.

The cost of recidivism greatly exceeds the revenue generated by payroll taxes on post-closure earnings, contrary to the assumptions of previous studies. The cost of recidivism to benefit savings is \$15.1 million (at the 38-percent impact rate). Even granting the limitations of the approximations made here, payroll tax revenue would need to be three times greater for the combined trust funds—or more than 18 times greater for the DI trust fund alone—to equal the cost of recidivism. The adjustments made in this study for the probability of post-closure employment may prove to be conservative in the long run but, if all BRP participants were employed after closure and if recidivism rates were actually one-half those used here, the cost of recidivism would still exceed combined OASI and DI payroll tax payback by about \$0.5 million. It is unlikely that the magnitude of error involved here is large enough that tax payback would approach the cost of recidivism, especially if one assumes (as the Rutgers University study did) that BRP rehabilitants replace other workers in the labor market to some extent.

Looking at similar figures in table 5 for the 74.6-percent impact rate, all numbers are about twice as

¹⁹ Op. cit., page 76.

large, but the conclusion is the same. Of course, the savings/cost ratios are quite high in spite of the negative net effect of recidivism. This exercise simply points out that it is not valid to assume that payroll tax payback will equal recidivism costs: explicit calculations of tax payback and benefit savings lost due to recidivism should be made in studies of this type.

Length of Savings Period

All estimates of benefit savings and tax revenue presented so far have been based on a savings period extending from date of termination from the DI rolls through age 64, adjusted for the probabilities of recovery, death, and recidivism. An interesting question is how many years of possible savings are necessary to pay back the trust fund for the cost of BRP services. Table 6 shows estimates of savings and savings/cost ratios in 5-year intervals after closure as a check on the necessary length of a savings period.

Table 6.—Benefit savings, tax payback, and savings/cost ratios by length of savings period (alternative II)

[In millions]

Savings and impact rates	Years after closure						
	5	10	15	20	25	30	All ¹
At 38-percent rate:							
Total.....	\$23.6	\$36.1	\$42.5	\$45.6	\$46.9	\$47.6	\$47.9
Benefit savings.....	23.3	35.6	41.9	44.9	46.2	46.8	47.1
Tax payback ..	.3	.5	.6	.7	.7	.8	.8
Savings/cost ratio.....	.68	1.04	1.23	1.32	1.36	1.38	1.39
At 74.6-percent rate:							
Total.....	\$46.2	\$70.7	\$83.4	\$89.5	\$92.3	\$93.5	\$94.0
Benefit savings.....	45.8	69.8	82.2	88.1	90.8	92.0	92.5
Tax payback ..	.5	.9	1.2	1.4	1.5	1.5	1.5
Savings/cost ratio.....	1.34	2.05	2.42	2.59	2.67	2.71	2.72

¹ There is a progression of years after closure; "all" not the sum of other rows but stands for all years between age at closure and age 64.

Total savings at the 38-percent rate of impact exceed costs by the time 10 years have elapsed since closure. Also, savings/cost ratios increase rather rapidly through 20 years and then slowly thereafter, when age at termination and rates of death, recovery, and recidivism have had their major impacts. At the 74.6-percent impact rate, savings substantially exceed costs even 5 years after closure.

Need for Additional Research

Although the beneficiary rehabilitation program appears to be paying its way, it is difficult to compare the current results with previous studies because the data and methodology used here differ substantially from those of the earlier studies. Many benefits and some costs are difficult or impossible to estimate—for example, the social benefit of increased productivity due to rehabilitation or the opportunity costs of vocational rehabilitation involvement. Also, refinements in the methodology are needed to improve post-vocational rehabilitation benefit and employment measures to more accurately estimate the length of the savings period and payroll tax payback.

For the above reasons and because monitoring the beneficiary rehabilitation program is necessary to assure its continued improvement, additional studies with data for fiscal years 1976 through 1978 are planned. Using a standardized sample selection procedure and common methodology, the benefit/cost ratios for successive years can be compared to check for the direction and slope of trends in BRP performance. In addition, other studies using the same data will relate client characteristics and vocational rehabilitation services to the probability of rehabilitation and termination from DI rolls and, if possible, to the length of time off the rolls. It is hoped that a program of detailed studies of this type will provide a clear and comprehensive analysis of the beneficiary rehabilitation program, which will facilitate policy decisions with regard to the provision of rehabilitation services to DI beneficiaries.