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PRESENT VALUE OF OASDI AND MEDICARE BENEFITS FOR NEWLY ENTITLED DISABLED WORKERS

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I. INTRODUCTION

The Social Security Act provides insured workers with several types of benefits in the event of disability. The value of these benefits is of general interest to workers, who want to know the importance of their disability protection. The cost of these benefits is also of general interest to policy planners and administrators, who want to know the financial implications of their decisions. This Actuarial Note presents the costs under the following programs (1) the Old-Age and Survivors Insurance (OASI) program, (2) the Disability Insurance (DI) program, (3) the Hospital Insurance (HI) program, and (4) the Supplementary Medical Insurance (SMI) program. The first two programs are often referred to together as the OASDI program, and the second two programs are often referred to together as the Medicare program. The benefits provided by these programs consist of monthly cash benefits, payments by Medicare for certain incurred medical expenses, and payments by DI for certain vocational rehabilitation services. The costs of these programs also include the associated administrative expenses. This Note summarizes estimates of the present value of these benefits and administrative expenses for workers who became entitled to disabled-worker benefits for December 1985.

These estimates depend heavily on such assumptions as benefit increases, interest rates, disability termination rates, increases in the costs of medical care, and increases in average wages. The figures in this note are based on the intermediate (alternative II-B) set of assumptions used in the 1986 Trustees Reports, as modified to reflect the Consolidated Omnibus Reconciliation Act of 1986. Details on the HI and SMI projections that were not published in the Trustees Reports were furnished by the Office of the Actuary, Health Care Financing Administration.

II. ASSUMPTIONS

A. Termination Rates

Once entitled, a disabled worker will continue to receive benefits until he or she (1) attains the normal retirement age (NRA), which is currently age 65, (2) recovers, or (3) dies. Upon attainment of the NRA a disabled-worker benefit is automatically converted to a retired-worker benefit.

Disability benefits are terminated for recovery in one of two ways. The first way occurs when the disabled beneficiary demonstrates an ability to engage in substantial gainful activity (SGA) even though he or she has not recovered medically. The law contains several provisions designed to encourage (or at least not to

discourage) disabled individuals to return to work. One provision provides for a 9-month trial-work period during which the individual can engage in SGA and still receive benefits. In such cases, benefits will continue for 3 months after completion of the trial-work period. Another provision extends the status as a disabled individual for 15 months after completion of the trial-work period, as long as there is no medical recovery, during which time the individual can automatically be reinstated to active benefit status if he or she stops engaging in SGA. Another provision allows a disabled worker who is participating in a vocational rehabilitation program to continue receiving benefits until the completion of the program even if recovery has already occurred. Other provisions concern the continuation of Medicare coverage which will be discussed later.

The other way that benefits can be terminated for recovery occurs when the Social Security Administration makes a continuing disability review (CDR) that determines that the beneficiary's medical condition has improved to the point where he or she is no longer considered disabled. In such cases, benefits are paid for 2 months after the month in which recovery had been determined to have occurred.

The recovery rate has cycled between a low of 11 recoveries per 1,000 disabled-worker beneficiaries in 1975 and a high of 62 per 1,000 in 1982. The high of 62 per 1,000 in 1982 may be somewhat misleading, however, because a disproportionate number of these terminations were subsequently reversed. In the 1986 Trustees Report, the recovery rates are assumed to remain constant at levels about 15 percent higher than those experienced during 1977-1980, resulting in a crude rate of about 27 per 1,000.

Until 1982, just as in the general population, the death rates for disabled workers had declined steadily. The crude death rate dropped from 72 per 1,000 in 1970 to 48 per 1,000 in 1981, and then increased slightly to 52 per 1,000 by 1984. This recent increase is probably the result of the low allowance rates in the early 1980s, and the large volume of CDRs performed under the requirements of the 1980 disability amendments. This had the effect of allowing only those applicants with the most severe impairments and terminating those with the mildest, thus leaving on the rolls those beneficiaries with a higher probability of dying.

The 1986 Trustees Report assumes that the death rates will resume their steady downward trend throughout the 75-year projection period, reaching levels in 2060 approximately 30 percent lower than those experienced during 1977-80, resulting in a crude rate of about 35 per 1,000.

B. Interest Rates

Interest is an important actuarial concept that takes into account the time value of money. This concept is important when analyzing the financial effects of an annuity that may be paid for many years into the future. It is not only the dollar amount of a payment, but also its timing that determines the impact on the trust funds. For example, at 10 percent interest per year, a \$62.09 deposit into the trust fund now would be sufficient to make a payment of \$100.00 in 5 years. Of course, OASDI and Medicare benefits are financed on a close to pay-as-you-go basis in which interest earnings on the trust funds do not play a significant role. In fact, because the annual interest rate generally approximates the annual growth in total annual benefit payments, interest earnings actually do little more than maintain the trust fund ratio. Even so, the timing of benefit payments is an important consideration in the evaluation of future commitments of the OASDI and Medicare programs. This is because benefits are financed from taxes on taxable payroll which grows as the product of average earnings and the number of covered workers. Thus, \$100 in 5 years will represent a smaller proportion of taxable payroll than it would now. One could argue that the appropriate interest rate to be used in the tables presented in this Note would be one that approximates the growth in taxable payroll.

The interest rates actually used in this Note are those contained in the alternative II-B set of assumptions used in the 1986 Trustees Report. These rates were based on an analysis of the past experience of the Trust Funds. The average annual interest rate has grown unsteadily from under 4 percent in the early 1960s to over 13 percent in the 1980s. The real interest rate has generally fluctuated between +3.0 percent and -3.0 percent, averaging 1.6 percent from 1961 through 1983, although it is over 7 percent currently. For the 1986 Trustees Report, the real interest rate is assumed to decline to 2.0 percent per year by 1996. This, in conjunction with an assumed ultimate annual increase in the CPI of 4.0 percent, yields an interest rate that drops steadily from 12.4 percent in 1984 to 6.08 percent in 1996 and later.

C. Benefit Increases

The monthly cash-benefit payments to disabled-worker beneficiaries are not fixed amounts. These benefits are adjusted each year generally by the amount of inflation. Specifically, each year, effective for benefits for December and later, benefits are increased by the increase in the July-September averages of the Consumer Price Index for Wage Earners and Clerical Workers (CPI-W) from the previous year to the current year, except in unusual situations involving low trust fund balances.

The annual increase in the CPI was 3.5 percent in 1985, averaged 7.0 percent over the 10 years 1976-85, and averaged 4.7 percent over the 30 years 1956-85. In alternative II-B, the annual rate of increase is assumed to rise slightly to 4.9 percent in 1989 and then to decline

to an assumed ultimate value of 4.0 percent by 1992. The resulting benefit increases follow a similar pattern, and have been included in the calculations presented here.

D. Family Benefits

Whenever a disabled worker is awarded benefits, there is a possibility that other individuals in his family may also be entitled to monthly cash benefits. These benefits also represent a cost to the DI program. They are payable to the child of a disabled worker, generally if the child is (1) under age 18, (2) over age 18 and disabled since before age 22, or (3) age 18 and still a full-time student in a secondary school. In addition, benefits are payable to the spouse of a disabled worker if the spouse is either (1) age 62 or above, or (2) has a child either under age 16 or disabled and in his or her care. Spouses and children are paid at a monthly rate that is 50 percent of the rate for the disabled worker; however, a maximum benefit applies to the entire family. This maximum is 150 percent of the worker's primary insurance amount (PIA) or 85 percent of his or her average indexed monthly earnings (AIME), whichever is less, but no less than 100 percent of the PIA. Currently, about 30 percent of male disabled workers have an entitled family member, while only about 11 percent of the female disabled workers have an entitled family member. Average family benefits that vary by the attained age and sex of the worker were used in the determination of costs presented here.

E. Vocational Rehabilitation Expenses

The law states that disabled-worker beneficiaries who are capable of being restored to productive activity should be referred for possible vocational rehabilitation services. In fact, benefit payments may be withheld from any such beneficiary if he or she refuses, without good cause, to accept such services. Prior to fiscal year 1982, the total amount of funds that could be made available for paying the costs of vocational rehabilitation services could not exceed a specified percentage of the benefits certified for payment in the preceding fiscal year to disabled beneficiaries. This statutory limitation was 1 percent in each of the fiscal years 1966 (when such amounts were first made available) through 1972, 1.25 percent in fiscal year 1973, and 1.5 percent in each of the fiscal years 1974 through 1981. Beginning with payments for fiscal year 1977, such funds were curtailed by limitations in the Budget of the United States. The Omnibus Budget Reconciliation Act of 1981 (Public Law 97-35) eliminated the statutory limitation on the amount of trust fund money that could be used to pay for vocational rehabilitation services and instead limited reimbursement to those cases where services contributed to the successful rehabilitation of the beneficiary. Since that time, payments for such services have been only about 0.1 percent of benefit payments. In this Note, these costs are shown together with the cost of disabled-worker benefits.

F. Medicare Benefits

In addition to monthly cash benefits, disabled-worker beneficiaries are potentially eligible for Medicare coverage, after 2 years on the benefit rolls. Part A of Medicare (Hospital Insurance or HI) coverage begins automatically after the 24th month of entitlement to disability cash benefits, and Part B of Medicare (Supplementary Medical Insurance or SMI) coverage can be obtained by paying the SMI premium (which is the same for disabled beneficiaries as for aged beneficiaries). Persons who were previously receiving disability benefits, and who became disabled a second time within 5 years from the time their benefits were terminated, only have to satisfy that portion, if any, of the 24-month waiting period not previously satisfied.

Medicare coverage generally ends with the termination of cash benefits, except for individuals whose benefits have been terminated after completion of a trial-work period even though they have not recovered medically. In such cases, Medicare coverage can remain available for 2 years after the reentitlement period, which is 3 years after cash benefits end, and 4 years after the return to SGA.

In this Note, the annual SMI premium was subtracted from the benefits to obtain net benefits. This premium has been promulgated as \$15.50 per month for calendar year 1986. From July 1966 (when the Medicare program first became operational) through June of 1975, the SMI premium generally increased each year with the per capita costs of SMI benefits for the aged. The increases in the premiums promulgated for July 1976 through December 1983 were generally limited each year by the preceding percentage increase in OASDI cash benefits. The law in effect when the 1986 Trustees Reports were issued specified that the premiums promulgated for January 1984 through December 1987 would again be allowed generally to increase at the rate of increase in per capita costs. The Consolidated Omnibus Reconciliation Act of 1986 (P.L.99-272, usually referred to as COBRA), which became law just after the issuance of the 1986 Trustees Reports, extended this period through December 1988. After 1988, the annual increase in premiums will again be limited by the preceding percentage increase in OASDI benefits.

The costs presented in this Note are based on the law as amended by COBRA, which, in addition to the provision affecting the SMI premium, contained several other provisions affecting the Medicare program. The most significant of these provisions have the effect of reducing reimbursements to hospitals and physicians.

Medicare coverage is a valuable part of the benefits provided to disabled workers. The estimated net per capita incurred benefits for calendar year 1986 for the disabled (excluding all persons with end-stage renal disease) is \$2509.

G. Administrative Expenses

Many expenses are incurred that are associated with the administration of the DI program. These expenses include salaries, rent for property and equipment, building operating expenses, and purchases of supplies. These costs stem from the issuing of Social Security numbers, collecting taxes, maintaining earnings histories, processing claims (including the determination of disability),

making monthly payments, determining continuing eligibility, and processing terminations. In addition, costs are incurred in the overall administration and planning of the program.

For the DI program, these administrative expenses averaged about 6 percent of benefit payments during the 1960s, and declined to less than 3 percent during the 1970s. More recently, administrative expenses have been about 4 percent of benefit payments. In the 1986 Trustees Report, this percent is assumed to stay around 4 percent until 2000 and then decline gradually until the end of the projection period, reaching almost 2 percent by 2060.

For the Medicare program, the HI administrative expenses were 1.8 percent of benefit payments in 1985, and this percent is assumed to decline slowly through time; the SMI administrative expenses were 4.1 percent of benefit payments in 1985, and this percent is assumed to decline rapidly for several years. Some of the administrative expenses paid by the HI and SMI Trust Funds are actually reimbursements to the DI Trust Fund for the processing of claims. These transfers are made so that the DI Trust Fund can share in the subsequent savings in Medicare entitlement verification to the HI and SMI Trust Funds when the disabled beneficiary becomes entitled to Medicare. In this Note, the administrative expenses actually paid by each trust fund have been attributed to the cost of administering the benefits paid by such fund. The OASI Trust Fund also transfers some money to the DI Trust Fund so that it can share in the subsequent savings in determining the disabled worker's eligibility to a retired-worker benefit upon conversion at the normal retirement age. Because these transfers are properly attributable to the costs of administering retired-worker benefits, they are not included in the costs shown in this Note.

H. Disability Freeze

The determination of the monthly benefit amount payable under the OASDI program is based on a worker's earnings averaged over the number of years elapsed after the worker attains age 21 (or 1950, if later) and up to (but not including):

- for old-age insurance benefits, the year in which the worker attains age 62;
- for survivor insurance benefits, the year in which the worker dies or, if earlier, the year in which the worker attains age 62;
- for disability insurance benefits, the year in which the disability onset occurs or, if earlier, the year in which the worker attains age 62.

However, whenever a worker is first entitled to disability insurance benefits and later becomes entitled to old-age insurance benefits, becomes reentitled to disability insurance benefits, or dies, the subsequent Social Security benefit can be computed using a 'disability freeze' calculation. This usually results in a higher subsequent Social Security benefit than would otherwise be payable, because it does not include in the calculation those years during the worker's prior period of disability when his or her earnings were likely to have been zero or insignificant. In addition, the disability freeze allows the years during the prior period of disability to be excluded when determining the number of quarters of coverage needed to be insured for subsequent Social

Security benefits. If the worker remains disabled until he or she becomes eligible for old-age insurance benefits or dies, the disability freeze assures that he or she does not lose insured status because of the lack of earnings during disability.

The additional old-age benefits for disabled workers who live past the normal retirement age, for eligible family members, and for possible aged surviving spouses were included in the estimated value of benefits presented in this Note. Any additional benefits for young survivors (either children or mothers or fathers) are relatively small and therefore have been ignored.

III. Results

Table 1 presents a summary of the present value as of December 31, 1985 of average costs to the OASDI and Medicare programs for each disabled worker newly entitled for December 1985 by type of benefit, age at entitlement, and sex. The estimated average present value of these costs for all types, ages, and sexes combined is \$66,800. The average is slightly higher for men than women and, in general, higher for the young than the old.

TABLE 1.—PRESENT VALUE OF AVERAGE COSTS TO THE SOCIAL SECURITY PROGRAMS FOR EACH DISABLED WORKER NEWLY ENTITLED FOR DECEMBER 1985, BY TYPE OF BENEFIT, BY SEX, AND BY AGE AT ENTITLEMENT, BASED ON THE 1986 TRUSTEES REPORTS ALTERNATIVE II-B ASSUMPTIONS
[In dollars]

Sex and age at entitlement	Cash benefits		Medicare benefits		Administrative expenses	Disability freeze	Taxation of benefits	Total
	Worker ¹	Others	HI	Net SMI				
Male								
20	33,013	5,004	26,630	16,283	2,097	1,586	-1,569	83,043
25	55,716	9,996	27,281	16,642	3,215	3,372	-2,723	113,498
30	60,462	13,535	25,630	15,532	3,550	2,806	-2,988	118,525
35	62,732	15,232	23,027	13,830	3,686	2,197	-3,087	117,617
40	61,002	13,569	20,177	11,974	3,518	2,221	-2,936	109,524
45	55,549	9,575	16,609	9,659	3,085	2,418	-2,564	94,330
50	49,065	5,800	13,119	7,353	2,597	2,492	-2,165	78,259
55	39,912	3,288	8,988	4,640	2,009	2,005	-1,699	59,143
60	26,433	1,842	4,185	1,947	1,249	677	-1,085	35,247
All ages ²	41,506	6,050	12,316	7,034	2,228	1,822	-1,882	69,074
Female								
20	34,974	4,333	34,004	20,928	2,310	2,736	-1,680	97,605
25	55,246	7,010	33,928	20,832	3,222	5,065	-2,678	122,624
30	59,352	8,220	31,372	19,150	3,416	4,619	-2,835	123,293
35	57,817	7,260	27,880	16,890	3,273	2,594	-2,621	113,091
40	49,617	4,281	24,247	14,539	2,777	2,253	-2,158	95,554
45	42,517	1,804	19,646	11,562	2,317	2,241	-1,773	78,312
50	35,207	646	15,588	8,850	1,890	2,089	-1,434	62,836
55	28,249	280	10,735	5,589	1,464	1,620	-1,133	46,802
60	18,230	181	4,721	2,200	872	516	-709	26,011
All ages ²	33,638	2,078	15,112	8,717	1,821	1,930	-1,443	61,853
All workers ²	39,029	4,800	13,196	7,564	2,100	1,856	-1,744	66,800

¹These figures include payments for vocational rehabilitation services.

²The average cost for all ages and all workers is obtained by weighting the cost for both sexes for each age at entitlement from age 20 through age 64 by the number of entitlements for each sex and age from 1984 awards.

The general pattern of average costs by age and sex is mostly determined by the patterns of average monthly benefits and of expected duration of disability. Males have a higher average monthly benefit than females, \$536 versus \$357, but a shorter average duration of disability, 102 months versus 121 months. Men have both higher death rates and higher recovery rates than women. Average monthly benefits awarded generally increase rapidly by age at entitlement from age 20 until the mid-30s, for both men and women, and then decline slowly until the mid-50s. Generally, the duration of disability decreases as the age at entitlement increases toward the normal retirement age, reflecting the shortening of the duration before the disabled-worker benefit is converted to a retired-worker benefit. For men at ages under 25, however, this pattern is reversed because of a greater probability of recovery. All of these factors are reflected directly in the cash benefits of the worker, which represents about 58 percent of the present value of the average total costs of a disability insurance beneficiary (DIB) award.

The present value of benefits to others for male workers is about 3 times more valuable than for female workers (\$6,050 versus \$2,078), reflecting both their higher average benefit and their greater probability of having eligible family members. Benefits to others represent only about 7 percent of the present value of the average total costs of a DIB award.

Medicare provides a very important part of the benefits to disabled workers, representing about 31 percent of the present value of the average total costs of a DIB award. For these estimates, HI and SMI per capita costs on an incurred annual basis by calendar year (but not by age or sex) were used. The SMI costs are net of the SMI premiums. Because the estimated per capita costs do not vary by age or sex, the estimated HI and SMI benefits by age and sex follow a pattern very similar to the average duration of disability by age and sex.

Administrative expenses represent only about 3 percent of the present value of the average total costs of a DIB award. These costs were calculated as a percentage of benefits, where the percent varies through time as described above.

Costs for the disability freeze generally decrease with increasing age at entitlement. This is because the longer one works before becoming disabled, the fewer the number of years of zero earnings that are ignored in the benefit calculation because of the freeze and the lower the chance that the worker will lose his or her insured status. Therefore, as the age at entitlement to disability benefits increases, the smaller the proportion of any subsequent old-age or survivors benefits that can be considered to be attributable to the freeze. This decreasing pattern of present values is tempered somewhat (especially for old-age benefits) because the younger the age at entitlement, the smaller the chance of living until the normal retirement age and the greater the discount for interest. The disability freeze represents about 3 percent of the present value of average total costs for a DIB award.

Part of the benefits paid to disabled workers and their eligible family members, and part of the extra amounts paid because of the disability freeze are subject to federal income taxation. These taxes are placed into the trust funds and therefore represent a savings to the OASDI program. The savings is currently less than 3 percent of the present value of the average total costs of a DIB award, but is expected to increase through time.

Table 2 presents the present value of costs by trust fund instead of by type of benefit. The OASI costs come from the disability freeze, net of the income taxation of these benefits. The DI costs come from the disabled-worker and the auxiliary benefits, less the income taxation of these benefits. In addition, it includes the administrative and vocational rehabilitation expenses incurred by the DI program. The HI costs come from the HI benefits and the corresponding administrative expenses. Finally, the SMI costs come from the SMI benefits (net of the SMI premiums) and the corresponding administrative expenses.

Table 2 shows that the average present value as of December 31, 1985 of DI benefits for workers newly entitled for December 1985 is \$43,921. This value can

be put into perspective in two ways. First, it is based on an average initial monthly benefit of \$610 payable for an average duration of 9 years. Secondly, it can be compared with \$155, the average DI tax incurred by covered workers during 1985. Thus, it took about 283 workers in 1985 to pay the tax necessary to finance the lifetime benefits of one newly entitled disabled worker. In 1985, there were an estimated 121.6 million covered workers versus 377 thousand disabled-worker awards, which is one award for every 323 workers.

TABLE 2.—PRESENT VALUE OF AVERAGE COSTS TO THE SOCIAL SECURITY PROGRAMS FOR EACH DISABLED WORKER NEWLY ENTITLED FOR DECEMBER 1985, BY TRUST FUND, BY SEX, AND BY AGE AT ENTITLEMENT, BASED ON THE 1986 TRUSTEES REPORTS ALTERNATIVE II-B ASSUMPTIONS
[In dollars]

Sex and age at entitlement	Cash benefits		Medicare benefits		Total
	OASI	DI	HI	SMI	
Male					
20	1,509	37,984	26,970	16,581	83,043
25	3,210	65,703	27,634	16,951	113,498
30	2,675	74,054	25,968	15,828	118,525
35	2,096	78,082	23,337	14,101	117,617
40	2,122	74,731	20,454	12,217	109,524
45	2,314	65,308	16,843	9,865	94,330
50	2,387	55,043	13,309	7,520	78,259
55	1,924	43,339	9,123	4,757	59,143
60	650	28,344	4,250	2,003	35,247
All ages ¹	1,744	47,659	12,488	7,184	69,074
Female					
20	2,601	39,265	34,434	21,305	97,605
25	4,820	62,229	34,362	21,212	122,624
30	4,402	67,601	31,781	19,509	123,293
35	2,475	65,150	28,251	17,215	113,091
40	2,153	53,997	24,576	14,828	95,554
45	2,145	44,443	19,921	11,804	78,312
50	2,003	35,972	15,813	9,048	62,836
55	1,556	28,624	10,896	5,727	46,802
60	496	18,457	4,795	2,263	26,011
All ages ¹	1,845	35,786	15,322	8,900	61,853
All workers ¹ ...	1,776	43,921	13,380	7,724	66,800

¹The average cost for all ages and all workers is obtained by weighting the cost for both sexes for each age at entitlement from age 20 through age 64 by the number of entitlements for each sex and age from 1984 awards.