

**UNFUNDED OBLIGATION AND TRANSITION COST  
FOR THE OASDI PROGRAM**

*by Steve Goss, Alice Wade, and Jason Schultz*

**1. Introduction**

Measures of the unfunded obligation of the Old-Age and Survivors Insurance and Disability Insurance (OASDI) program for any period represent the shortfall of financial resources available under current law to cover the cost associated with scheduled benefits for the period. The unfunded obligation for any program must be defined on the basis of the intended financing of the program. Because the OASDI program is financed on essentially a current-cost or pay-as-you-go basis, the measure of open group unfunded obligation is appropriate. Programs that are intended to be essentially fully-advance funded require the use of other measures, reflecting a closed group participation perspective, to assess their unfunded obligation (or liability). However, these closed group measures are more accurately described as theoretical measures of “transition cost” for the OASDI program. Estimates of the unfunded obligation vary depending on the valuation period and the assumptions used. Transition cost measures additionally vary depending on which plan participants are included.

The purpose of this actuarial note is to present, explain, and clarify the various measures of unfunded obligation and transition cost used in the context of the OASDI program.<sup>1</sup> Section 5 contains definitions of the various concepts, as used by the Office of the Chief Actuary (OCACT), which appear throughout this note. Table 1 contains estimates of the open group unfunded obligation measured over different time periods. Table 2 includes estimates for other measures, referred to as transition cost for different groups of participants. All measures in these tables are estimated based on intermediate assumptions of Trustees Reports through 2004.

**2. Open Group Unfunded Obligation**

The open group unfunded obligation is consistent with a pay-as-you-go financing approach and is thus directly applicable for assessing the actuarial status of the OASDI program. The term obligation is used in lieu of

the term liability, because liability generally indicates a contractual obligation (as in the case of private pensions and insurance) that cannot be altered by the plan sponsor without the agreement of the plan participants.

Estimates of the open group unfunded obligation for the 75-year projection period are given in Table 1 for annual valuation dates starting with January 1, 1979. The specific year of the Trustees Report, which identifies the intermediate assumptions used in determining the estimates, is the same as the year of the valuation date. Significant uncertainty surrounds the estimates for a period as long as 75 years. A discussion of this uncertainty for the most recent valuation date (January 1, 2004) is located in appendix E of the 2004 Trustees Report.<sup>2</sup>

Estimates of the open group unfunded obligation for the infinite future are also shown in Table 1 for valuation dates of January 1, 2003 and January 1, 2004. The unfunded obligation for the infinite future does provide a more complete and extended measure of the expected future financial shortfall for the OASDI program. However, the shortfall for the infinite future must be considered in the context of the period over which program modifications are needed, in this case, the infinite future. It is also important to note that the uncertainty surrounding estimates made for periods longer than 75 years would be much greater than that for the 75-year period (which, as noted above, reflects significant uncertainty). It would have been extremely difficult to make projections of today’s economy and the numbers of various workers and beneficiaries from a perspective, for example, of 200 years ago. In addition, the infinite horizon estimates assume that the normal retirement age for those turning 62 after 2021 will remain at age 67, even though mortality is expected to continue improving. This means that eventually people may collect benefits for longer than they pay payroll taxes, on average.

Solvency for the OASDI program at any point in time means that the program is able to pay scheduled benefits in full, on a timely basis at that time. Solvency for any point in time is indicated by a zero or positive trust fund balance at that time. However, it is important to realize

<sup>1</sup> Additional details and explanation are included in the document titled “Measuring Solvency in the Social Security System” by Stephen C. Goss. This document is located on the internet at [rider.wharton.upenn.edu/~prc/SocialSecurityReformChp2.pdf](http://rider.wharton.upenn.edu/~prc/SocialSecurityReformChp2.pdf).

<sup>2</sup> This report can be found at the following internet location: [www.socialsecurity.gov/OACT/TR/TR04/index.html](http://www.socialsecurity.gov/OACT/TR/TR04/index.html).

that the open group unfunded obligation for a period, as a single summarized measure, indicates the financial status of the program for that period taken as a whole and whether the program will be financially solvent at the end of that period. If the unfunded open group obligation over the period is zero or negative, this would *not* necessarily indicate solvency throughout the period.

In order to determine sustainable solvency it is important to consider whether solvency is achieved for the program at all times within the valuation period and beyond. Thus, in order to determine whether the program achieves “sustainable solvency for the foreseeable future”, OCACT focuses on a 75-year projection period and uses the following criteria:

- The level of the combined trust funds at each point in time during the 75-year projection period must be zero or positive, and
- The level of the combined trust funds, expressed as a percent of annual program cost, must be stable or rising at the end of the 75-year period. (This indicates that the solvency of the OASDI program can be expected to be sustained well beyond the end of the period.)

### **3. Decomposition of the Unfunded Open Group Obligation over the Infinite Future**

Table 2 separates the unfunded open group obligation over the infinite future into two components from a generational perspective. These components are important for evaluating the financial status of a program that is designed to be “fully-advance-funded”. The first of these two components, the “closed group transition cost”, is the net present value of the transition cost that would be incurred if participation in the program were closed off to individuals under age 15 as of the valuation date.<sup>3</sup> The second component is the net present value of the cost of providing scheduled benefits for future participants in the program (those under age 15 or not yet born on the valuation date) for the infinite future less the scheduled taxes they would be expected to pay. If this net shortfall for future participants is zero or negative, then scheduled taxes for future generations are expected to be sufficient to finance their benefits on a fully-advance-funded basis.

Under a pay-as-you-go program like the OASDI program, the taxes of each generation are used to pay the benefits of prior generations and are not used to advance

<sup>3</sup> As noted in Table 2, the age 15 varies slightly for valuation dates before 1984.

fund their own benefits. Thus, the fact that taxes for future generations equal or exceed the present value of the cost of their own scheduled benefits is not relevant to the actuarial status of the program. Similarly, the closed group transition cost of the program is not relevant to the actuarial status of the program, because benefits of current program participants will be paid largely by the taxes of future generations, which are not reflected in this value.

The closed group transition cost may have specific applications in cases like that of the Federal Government closing the Civil Service Retirement System plan to persons newly hired after 1983. In general, however, this concept is only appropriate for the valuation of the actuarial status of an ongoing plan that has been intended to be essentially fully advance funded, such as plans covered under the Employee Retirement Income Security Act (ERISA).

For a social insurance plan that was designed to be financed on a pay-as-you-go basis with the expectation of a continuing pool of new entrants, like OASDI, the closed group transition cost cannot be applied as a measure of financial status because it is inconsistent with the design and intent of the program. However, the concept can be used in the context of a continuing social insurance program that is converting to another form, where there is a desire to keep the financing of the old and new forms separate for analytical purposes.

### **4. Maximum Transition Cost**

The “maximum transition cost” represents the transition cost for continuing the Social Security program in a different form, with all payroll taxes for work after the valuation date credited to the new benefit form. The maximum transition cost is equivalent to the unfunded accrued obligation of a plan designed to be fully advance funded at the time of plan termination and would be an appropriate calculation to evaluate the actuarial status of an ERISA plan. However, this concept may be applied when a continuing plan that has been financed on a pay-as-you-go basis is being converted abruptly to a new form that will apply not only for future participants but also with respect to all future taxes or premiums of current participants.

### **5. Definitions**

The definitions of various measures and the terms used in the attached tables are given below.

**Accrued benefit obligations**—This measure reflects future benefit obligations based on past earnings as of the valuation date. Thus, these accrued benefit obligations are relevant only to current participants as of the valuation date. The accrued benefit obligations are based on the primary insurance amount (PIA), the early retirement or delayed retirement factors, and other rules of payment. The accrued benefit obligations include:

- 1) Benefits scheduled to be paid for current (i) retired-worker beneficiaries and (ii) disabled-worker beneficiaries who continue to be disabled after the valuation date.
- 2) Retired worker benefits based on PIAs determined as of the valuation date for workers who have reached benefit eligibility age (62) and are not yet receiving benefits.
- 3) Benefits calculated on a proportional past-service-credit basis determined as of the valuation date for current active participants under age 62. These benefits require a computation of a PIA ( $PIA_{DIB}$ ), as of the valuation date, as if the worker had just become eligible to receive a disabled-worker benefit. These benefits are then adjusted so they may be viewed as benefit levels of a worker aged 62. The adjustments are made depending on the type of worker, as illustrated below.<sup>4</sup>
  - a. For workers who survive to age 62 and are not disabled after the valuation date,  $PIA_{DIB}$  would be indexed to age 62 by the Social Security Average Wage Index, and would then be multiplied by the fraction
 
$$\frac{(\text{age as of the valuation date} - 22)}{40}$$
  - b. For workers who survive to age 62, are not disabled as of the valuation date, and become disabled before age 62,  $PIA_{DIB}$  would be indexed to the date of disability by the Social Security Average Wage Index, and would then be multiplied by the fraction
 
$$\frac{(\text{age as of the valuation date} - 22)}{(\text{age as of the date of disability} - 22)}$$
  - c. For beneficiaries who are disability beneficiaries as of the valuation date, recover from disability before age 62, and survive to age 62, benefits would equal the disability benefit scheduled to be paid until recovery. After reaching age 62, benefits would be computed based on indexing the final dis-

ability benefit received before recovery ( $PIA_{DIB-RECOV}$ ) to age 62 by the Social Security Average Wage Index, and would then be multiplied by the fraction

$$(\text{age as of recovery from disability} - 22)/40.$$

Benefits for auxiliary beneficiaries would be based on the primary worker's benefits as described above.

**Closed group transition cost**—This measure is computed like the open group unfunded obligation for a 100-year projection period, with the exception that future participants are not included. Specifically, the future cost and future scheduled tax income for only current participants are included in the calculations along with the trust fund assets at the start of the period. The period is extended to 100 years past the valuation date in order to capture the lifetime of all the current participants included in the valuation.

**Current participants**—All individuals (generations) who are age 15 and older as of the valuation date. This includes all individuals who have been, are, or will be workers and/or beneficiaries. (As noted in Table 2, the age 15 varies slightly for valuation dates before 1984.)

**Future cost**—The value of OASDI program benefits scheduled in current law and the cost of administering the program.

**Future participants**—Future workers and beneficiaries, who are under age 15 or not yet born, as of the valuation date. (As noted in Table 2, the age 15 varies for valuation periods before 1984.)

**Future scheduled tax income**—OASDI tax income scheduled in current law.

**Maximum transition cost**—This measure represents the cost of meeting the accrued benefit obligations of the old form while continuing the Social Security program in a completely different form, with all payroll taxes for work after the valuation date credited to the new benefit form. The maximum transition cost is determined as of the valuation date for current and past participants only. It is computed as the difference between

- (a) The present value of all future accrued benefit obligations payable on the old form; and
- (b) The value of the assets on the valuation date plus the present value of revenue from taxation of future accrued benefit obligations payable on the old form.

The projection period ends 100 years past the valuation date in order to capture the lifetime of all the current participants included in the valuation.

<sup>4</sup> For the purpose of this measure, the accrued benefit obligations for current active participants under age 22 are assumed to be zero.

**Open group unfunded obligation**—This measure is determined as of the valuation date over a specified time period (such as over the long-range 75-year period). It is computed as the difference between:

- (a) The present value of the future cost of the program between the valuation date and the end of the specified time period, and
- (b) The sum of the assets in the trust fund as of the valuation date and the present value of the future scheduled tax income of the program between the valuation date and the end of the specified time period.

Future scheduled tax income and cost are projected using the intermediate assumptions for the indicated Trustees Report (the year of the Trustees Report corresponds with the year of the valuation date). All current participants, as well as future participants to the system, over the specified time period are included in the computations.

**Past participants**—Those who contributed money to the program or received benefits from the program and are no longer alive as of the valuation date.

**Sustainable solvency**—This term is used to indicate that the combined OASDI Trust Funds are expected to be able to pay all scheduled benefits on time over the 75-year projection period and to continue paying all benefits on time for the foreseeable future. Thus, the following two conditions are required to be met:

- (a) The level of the trust funds at each point in time during the 75-year projection period is zero or positive, and
- (b) The level of the trust funds, expressed as a percent of annual program cost, is stable or rising at the end of the 75-year period.

**Valuation date**—Beginning of the projection period or January 1 of the starting projection year. This date defines the point in time for determining present values.

**Table 1.—Open Group Unfunded Obligation for the Combined  
Old-Age and Survivors Insurance and Disability Insurance (OASDI) Program**

Valuation date: January 1 of year	Ultimate valuation interest rate	Open group unfunded obligation for the 75-year projection period beginning at valuation date			Open group unfunded obligation for the infinite future projection period beginning at valuation date		
		As a percent of future:			As a percent of future:		
		Present value <sup>1</sup>	Taxable payroll	GDP	Present value <sup>1</sup>	Taxable payroll	GDP
1979	6.600	\$0.8	—	—	—	—	—
1980	6.080	1.4	—	—	—	—	—
1981	6.080	1.5	—	—	—	—	—
1982	6.080	1.5	—	—	—	—	—
1983	6.080	-0.1	—	—	—	—	—
1984	6.080	0.0	—	—	—	—	—
1985	6.080	0.3	—	—	—	—	—
1986	6.080	0.3	—	—	—	—	—
1987	6.080	0.4	—	—	—	—	—
1988	6.080	0.6	0.6	—	—	—	—
1989	6.080	0.8	0.7	—	—	—	—
1990	6.080	1.2	0.9	—	—	—	—
1991	6.392	1.1	0.9	—	—	—	—
1992	6.392	1.7	1.3	0.5	—	—	—
1993	6.392	1.8	1.3	0.5	—	—	—
1994	6.392	2.7	2.0	0.8	—	—	—
1995	6.392	2.7	2.0	0.8	—	—	—
1996	6.392	2.9	2.0	0.8	—	—	—
1997	6.295	2.8	2.1	0.8	—	—	—
1998	6.398	2.9	2.1	0.8	—	—	—
1999	6.399	2.9	1.9	0.8	—	—	—
2000	6.399	2.9	1.8	0.7	—	—	—
2001	6.399	3.2	1.7	0.7	—	—	—
2002	6.090	3.3	1.7	0.7	—	—	—
2003	6.090	3.5	1.8	0.7	\$10.5	3.8	—
2004	5.884	3.7	1.8	0.7	10.4	3.5	1.2

<sup>1</sup> Present value in trillions of dollars as of the valuation date.

Notes:

1. All estimates are based on the intermediate set of economic and demographic assumptions (Alternative II, or Alternative II-B for 1982 through 1990) in the OASDI Trustees Report for the specified valuation year.
2. All values are subject to uncertainty, especially values over the infinite horizon.

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**Table 2. Decomposition of the Unfunded Obligation and Transition Cost for the Combined Old-Age and Survivors Insurance and Disability Insurance (OASDI) Program**

Valuation date: January 1 of year	Ultimate valuation interest rate	Decomposition of infinite future unfunded obligation								
		Closed group <sup>1</sup> transition cost (100-year projection period)			Net shortfall for future participants only through the infinite future			Maximum transition cost (100-year projection period)		
		As a percent of future:			As a percent of future:			As a percent of future:		
		Present value <sup>2</sup>	Taxable payroll	GDP	Present value <sup>2</sup>	Taxable payroll	GDP	Present value <sup>2</sup>	Taxable payroll	GDP
1980	6.080	\$5.3	—	—	—	—	—	—	—	—
1981	6.080	5.5	—	—	—	—	—	—	—	—
1982	6.080	5.4	—	—	—	—	—	—	—	—
1983	6.080	4.8	—	—	—	—	—	—	—	—
1984	6.080	3.9	—	—	—	—	—	—	—	—
1985	6.080	4.3	—	—	—	—	—	—	—	—
1986	6.080	5.0	—	—	—	—	—	—	—	—
1987	6.080	5.2	—	—	—	—	—	—	—	—
1988	6.080	5.4	5.0	—	—	—	—	—	—	—
1989	6.080	5.7	5.0	—	—	—	—	—	—	—
1990	6.080	6.7	5.2	—	—	—	—	—	—	—
1991	6.392	6.2	5.2	—	—	—	—	—	—	—
1992	6.392	6.9	5.4	2.2	—	—	—	—	—	—
1993	6.392	7.2	5.3	2.1	—	—	—	—	—	—
1994	6.392	7.9	5.8	2.3	—	—	—	—	—	—
1995	6.392	7.7	5.8	2.3	—	—	—	—	—	—
1996	6.392	8.4	5.8	2.2	—	—	—	\$8.9	6.2	2.3
1997	6.295	7.5	5.7	2.1	—	—	—	8.7	6.6	2.5
1998	6.398	8.0	5.6	2.2	—	—	—	9.5	6.7	2.6
1999	6.399	8.3	5.5	2.1	—	—	—	10.2	6.7	2.6
2000	6.399	8.8	5.3	2.0	—	—	—	10.8	6.5	2.5
2001	6.399	9.6	5.3	2.0	—	—	—	11.7	6.4	2.4
2002	6.090	10.1	5.2	2.0	—	—	—	12.2	6.3	2.4
2003	6.090	10.5	5.3	2.0	—	—	—	12.6	6.3	2.4
2004	5.884	11.2	5.3	2.0	-\$0.8	-0.3	-0.1	13.5	6.4	2.4

<sup>1</sup> The closed group consists of current participants. The youngest age in the closed group is 15, 16, 17, and 18 for 1980-1983 respectively.

<sup>2</sup> Present value in trillions of dollars as of the valuation date.

Notes:

1. All estimates are based on the intermediate set of economic and demographic assumptions (Alternative II, or Alternative II-B for 1982 through 1990) in the OASDI Trustees Report for the specified valuation year.
2. All values are subject to uncertainty, especially values over the infinite horizon.

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