

**Another Look at the Affordability of U.S. Social Security Cash Benefits (OASDI)**

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**Abstract**

The Annual Reports of the Trustees, for the Social Security Trust Funds, are cornucopia of data. However, the major focus is on projections expressed as a percentage of payroll. The purpose of this paper is to suggest that additional measures - which would supplement, rather than replace the percentage of payroll data - should be examined to evaluate the projected effect of the cash benefits (OASDI) program.

Using data from the 1994 Report of the Trustees, the following conclusions are noted:

\*Even with the projected increase in OASDI benefit costs, real wage income available for then-active workers is likely to increase substantially; similarly for real "net" GDP (after deducting the portion needed to pay OASDI).

\*While OASI beneficiaries also will get real increases, their benefits grow less quickly than wages, and the average beneficiary will get a decreased share of GDP.

**Introduction & Background**

The U. S. Social Security program provides income benefits to covered workers who retire due to age or disability, and to certain of their dependents and survivors. The benefits, and related financing, for disability retirees and their dependents comprise the Disability Insurance (DI) program; the remainder is called the Old Age and Survivors Insurance (OASI) program.

In the overall, those two programs are referred to as providing Cash Benefits, to distinguish them from the health insurance coverage of Medicare. This paper is only about the Cash Benefits portion of Social Security.

The main source of financing those Cash Benefits is a payroll tax (FICA = Federal Insurance Contributions Act) equally shared by employees and their employers. Self-employed persons are effectively treated as having both statuses (by SECA = Self-Employment Contributions Act). The payroll taxes usually have generated more than the benefits paid, and the difference is credited to Trust Funds (one for OASI and one for DI) invested in U. S. Government securities. Interest payments on those securities provide additional financing for the Cash Benefits.

In addition, part of the Cash Benefits collected by higher income beneficiaries is subject to income tax, and that revenue is credited back to the Trust Fund for that benefit. (That tax provision was amended in 1993. Since the resulting additional revenue goes to the HI Trust Fund, it is ignored for this paper.) There are other relative small income sources for the OASI and DI Trust Funds (less than 0.01% of total revenue) which are ignored for this paper. Even though the OASI and DI accounts are maintained separately, their combined financial effect also is reported and

considered most relevant; hence the combined acronym OASDI. That approach is used in this paper, except where specifically noted otherwise.

The Trust Funds are maintained under the supervision of five Trustees: the Secretaries of Treasury, Labor, and HHS, plus two Public Trustees appointed by the President. The Trustees issue an Annual Report for these Trust Funds, which is prepared with the assistance of the Office of the Actuary in the Social Security Administration. (There also are separate reports for the HI and SMI Trust Funds.) As will be detailed below, practically all of the data for this paper are taken from the 1994 OASDI Report (herein referred to as the Report).

That Report - and previous ones - provide a cornucopia of data, and a secondary purpose of this paper is to emphasize the wealth of information there. The Office of the Actuary publishes much additional material, and is very cooperative in providing supplementary data and interpretive comments. *However, it is not implied that my conclusions are endorsed by the Actuarial staff or the Trustees.*

The Annual Reports include projections for approximately 75 years. The 1994 Report covers the period 1994-2068. However, long range data are shown for quinquennial years ending in 0 and 5, so the final data year is 2070. The projections are usually done on three bases called Alternative I, II and III (referred to as Alt I, Alt II, and Alt III in this paper). Alternative II - also called the Intermediate projection - is designed to be the best-estimate, while Alternative I is called a Low Cost basis and Alternative III is called a High Cost basis. These alternative sets of assumptions are intended to produce a reasonable range of results (with no claim about the probability that actual experience will fall within that range), and the Report also includes sensitivity analyses of various individual assumptions.

### **Summary of Conclusions of this Paper**

An important technique of the Report is to express long range revenue and expenditure amounts as a "percentage of taxable payroll". The latter is essentially the base to which the FICA rate will be applied, with appropriate weighting for self-employment income. The projected expenditures produce a Cost Rate, and are compared with an Income Rate based on projected payroll taxes and income taxes on benefits. (Interest on Trust Fund assets is treated separately.)

Since the payroll tax traditionally has provided practically all of the revenue, the "percentage of taxable payroll" data coincide with the public emphasis on the *share* of current earnings, which employed persons (and their employers) provide for people collecting Cash Benefits. However, there generally isn't any indication of the *affordability* of that burden - although, as will be further discussed, the Report does express OASDI data as a percentage of projected Gross Domestic Product.

The primary purpose of this paper is to focus on that *affordability* issue. To do that, various measures are derived for the year 2030 (approximately the middle of the 75

year projection period) and the year 2075 (the final data year in the Report), and they are compared with the 1994 values.

The first measure considers real (i.e. constant dollar) average wages, net of OASDI financing. Note this is not traditional "disposable income" since only OASDI costs are considered; in effect, it is the earnings available for everything else, including various taxes. Since future FICA rates already specified by legislation almost certainly will not be adequate to cover projected benefits, projected benefit outgo levels (rather than FICA income levels) are used to determine the future payroll cost of OASDI.

A frequently debated question is whether employers shift their share of the payroll tax to employees. It is not necessary to resolve that dispute for this analysis (as will be further discussed in the next section), and the calculations are less complicated if only the employee share is considered. On that basis, we find the following:

| <i>Ratio of Real Average Wage less the employee's share (i.e. 50%) of payroll cost for then current OASDI benefits</i> | <u>Alt I</u> | <u>Alt II</u> | <u>Alt III</u> |
|--|--------------|---------------|----------------|
| Year 2030/Year 1994  | 1.69         | 1.36          | 1.09           |
| Year 2070/Year 1994  | 3.03         | 1.98          | 1.26           |

Thus, on the "most likely" (Alternative II) basis, even after deducting the employee share of FICA, average wage levels in 2030 are projected to be 36% higher than now, and almost double the current levels by 2070, in constant dollar terms.

A second measure considers Gross Domestic Product (GDP) less Cash Benefits (OASDI) per worker, in constant dollar terms:

|                     | <u>Alt I</u> | <u>Alt II</u> | <u>Alt III</u> |
|---------------------|--------------|---------------|----------------|
| Year 2030/Year 1994 | 1.74         | 1.46          | 1.22           |
| Year 2070/Year 1994 | 3.26         | 2.31          | 1.62           |

This measure shows greater growth, than the net average wage discussed above, due to the increase in non-wage compensation (e.g. employee benefits) and other portions of GDP.

Since both of the above measures (of items other than OASDI) show substantial increases, it seems relevant to consider the rate at which Cash Benefits increase. OASI benefits were used (combining with DI is less appropriate here, and the latter considered alone are subject to larger estimating errors) to determine the following:

| <i>OASI Real Benefits per Beneficiary</i> | <u>Alt I</u> | <u>Alt II</u> | <u>Alt III</u> |
|---|--------------|---------------|----------------|
| <i>Ratios for years indicated:</i>        |              |               |                |
| Year 2030/Year 1994                       | 1.48         | 1.30          | 1.09           |
| Year 2070/Year 1994                       | 2.55         | 1.85          | 1.30           |
| <i>\$ annually, per Billion GDP</i>       |              |               |                |
| 1994                                      | 1.13         | 1.14          | 1.15           |
| 2030                                      | 0.74         | 0.84          | 0.91           |
| 2070                                      | 0.55         | 0.72          | 0.93           |

Hence, the following conclusions:

- \*Even with the projected increase in OASDI benefit costs, in relation to payroll as well as absolutely, real wage income available for then-active workers will increase substantially (modestly for the "pessimistic" Alternative III projection); similarly for real "net" GDP (after deducting the portion needed to pay OASDI).
- \*While OASI beneficiaries also will get real increases, the benefits grow less quickly than wages (again Alternative III is troublesome), and the average beneficiary will get a decreased share of GDP.

Those conclusions are essentially the same as were developed from a similar analysis, based on the 1993 Report of the Trustees. However, the new projections of active worker shares are less favorable, mainly because the real wage growth rate assumption was decreased in the 1994 Report.

### **Calculation Procedure**

The attached Exhibits show the data obtained from the Report - references to various "Tables" mean the corresponding ones, on the page numbers indicated, in the Report - and indicate the procedure used to determine the affordability measures.

Exhibit I develops the projected real average wage, net of OASDI requirements. The latter are based on projected benefit payments (rather than the already legislated FICA rates), reduced by the portion expected to be recovered by the income tax on such benefits.

It was noted above that there is controversy about the appropriate treatment of the employer share of FICA. Exhibit I develops projections (a) which treat the employer share as being shifted to the employee (see Note 1 on the Exhibit), and (b) which ignores the employer share (see Note 2 on the Exhibit). The differences shown (4 percentage points less growth to 2030, and 8 percentage points less to 2070) are small, and would be eliminated by using the logical implication that the employer FICA is equivalent to additional compensation.

An intermediate result, shown in Exhibit I, is that real average wages (before any deductions) are projected to grow by 40% over the 36 years from 1994 to 2030. A conveniently available comparison, using the *Statistics for Pension Actuaries*, is that the corresponding 36 year growth rate from 1954 to 1990 was 37%.

Exhibit II disaggregates the projected OASDI benefits, by using the ratio of OASI to total FICA rates. Since OASI is such a large part of the total, the rounding errors introduced by this procedure do not affect the results substantially.

Nevertheless, the resulting growth rate in real (constant dollar) OASI benefits per beneficiary involves a changing mix of primary (retired worker) and auxiliary (dependents and survivors) benefits. The Report does not provide separate dollar

amounts for those benefits, but it does give numbers of recipients in each category (Table II.H2 on pages 156-7). Therefore, the following comparison of growth rates is possible.

| Alternative II<br>Ratios | OASI Real Benefits<br>per Beneficiary | OASI Real Benefits<br>per Retired Worker |
|--------------------------|---------------------------------------|--|
| Year 2030/Year 1994      | 1.30                                  | 1.10                                     |
| Year 2070/Year 1994      | 1.85                                  | 1.53                                     |

While these "per retired worker" results are not independently meaningful, as they use inconsistent numerators and denominators, they seem to indicate the "per beneficiary" growth rates do not understate the improvement in the status of OASI recipients.

A final point, regarding this Exhibit, is that Table III.B5 (on page 182) of the Report does show various projections of average benefits payable to retired workers. However, they involve "standardized" cases with steady pre-retirement earnings levels, and thus are even more hypothetical than the data used in the Exhibit.

Exhibit III develops the relationship to Gross Domestic Product (GDP). Although the Report provides projections (in Table III.C1 on pages 185-6) of the share of GDP which would go to OASDI benefits, there isn't any recognition in that Table of the changing proportion of active workers and beneficiaries. Therefore, Exhibit III develops the figures on a per covered worker basis, with the worker count equal to the number of persons expected to have any FICA (or SECA) earnings during the year. Also the per beneficiary data, from Exhibit II, are related to the GDP levels.

Here again, a convenient comparison can be made using *Statistics for Pension Actuaries*. The Alternative II projection of GDP (before any deductions) per covered worker shows a 41% growth rate from the year 2000 to 2030. The corresponding data, for the 30 years from 1960 to 1990, involves Gross National Product (GNP; which used to be tabulated rather than GDP) per covered worker; the result is a 35% growth rate.

### Comparison with 1993 Projections

A similar analysis was done in 1993, using that year's Report of the Trustees. Therefore, it is interesting to do a year to year comparison of the results, and recognize the main causes for the differences. In order to limit the amount of data involved, only the Alternative II results are compared.

The 1994 Report of the Trustees states:

"The most significant change in an ultimate economic or demographic assumption [used in the Report] is a decrease in the annual rate of change in the real average wage. The assumed real-wage differential is reduced from 1.1 percent in the 1993 report to 1.0 percent for the intermediate set of assumptions in this report, ..." (p.12)

On the same page, it is also stated that:

"Revisions of other economic and demographic assumptions ... had little effect on these ultimate annual rates, with the exception of life expectancy. ... Projected values for life expectancy ... are thus somewhat higher than estimated a year ago ..."

In fact, there is little impact on projected number of covered workers or OASI beneficiaries; therefore, this life expectancy effect will not be considered further.

The change in assumed real-wage differential has a substantial *direct* impact on the affordability analysis, as well as an *indirect* impact through its effect on projected payroll cost rates and on future benefit levels and GDP.

Another reason for a year to year difference in this analysis of growth rates is the shorter time duration; i.e. from 1994 (rather than 1993) to 2030 and 2070.

Therefore, Exhibit IV compares the 1994 results with: (1) the original 1993 results; (2) projections with a 1994 start date, but otherwise using projections from the 1993 Report; and (3) for the "Real Average Wage less payroll cost" similar projections (1994 start date with 1993 assumptions), but using the payroll cost rates (for future year benefits) in the 1994 Report.

With respect to the latter, it could be argued that the analysis should try to isolate the effect of the changed assumptions before considering the payroll cost changes. However, aside from the difficulty in doing that, it is more realistic to recognize that FICA rates can be revised legislatively, whether or not the assumptions are changed; thus a combination of 1993 assumptions and 1994 payroll cost projections is not unreasonable. Conversely, combining 1994 assumptions with 1993 payroll cost projections would not make sense, since it is highly unlikely that long-term FICA rates will be unaffected by such changes in assumptions.

- end -

| Exhibit I                      | Projected Change in Real Average Wage<br>less OASDI Requirements  |        |         |         |  |
|--------------------------------|---|--------|---------|---------|--|
|                                |   | Alt I  | Alt II  | Alt III |  |
| Table III.B1 (p174-5)          |   |        |         |         |  |
| Average Wage Index (AWI)       |   |        |         |         |  |
|                                | 1994  | 24231  | 24090   | 24053   |  |
|                                | 2030  | 119399 | 134266  | 159696  |  |
|                                | 2070  | 694467 | 945229  | 1359541 |  |
| Adjusted CPI (1994 = 100)      |   |        |         |         |  |
|                                | 2030  | 289.28 | 398.16  | 582.90  |  |
|                                | 2070  | 943.64 | 1911.56 | 4103.61 |  |
| Real Average Wage Ratio        |   |        |         |         |  |
|                                | 2030/1994   | 1.70   | 1.40    | 1.14    |  |
|                                | 2070/1994   | 3.04   | 2.05    | 1.38    |  |
| "Net" of FICA needed for OASDI |   |        |         |         |  |
| Outgo (% of Payroll)           |   |        |         |         |  |
| Table II.F13 (p106-7)          |   |        |         |         |  |
|                                | 1994  | 11.50  | 11.64   | 11.73   |  |
|                                | 2030  | 13.67  | 17.22   | 20.59   |  |
|                                | 2070  | 12.49  | 19.00   | 28.72   |  |
| Tax on Benefits (% of Payroll) |   |        |         |         |  |
| Table II.F16 (p116-7)          |   |        |         |         |  |
|                                | 1994  | 0.22   | 0.23    | 0.23    |  |
|                                | 2030  | 0.57   | 0.73    | 0.88    |  |
|                                | 2070  | 0.62   | 0.94    | 1.43    |  |
| Ratio to 1994                  |   |        |         |         |  |
| Using Total FICA - Note 1      |   |        |         |         |  |
|                                | 2030  | 1.67   | 1.32    | 1.03    |  |
|                                | 2070  | 3.02   | 1.90    | 1.13    |  |
| Using 50% of FICA - Note 2     |   |        |         |         |  |
|                                | 2030  | 1.69   | 1.36    | 1.09    |  |
|                                | 2070  | 3.03   | 1.98    | 1.26    |  |
| Note 1 -                       | Multiply the Real Average Wage Ratio by the following Adjustment Ratio (for Future Year/1994)<br>$1 - (\text{Outgo} \% - \text{Tax} \%) / 100$                      |        |         |         |  |
|                                | However, if the "tax shift" affects gross wage levels, the latter should be increased before subtracting the FICA. The result would be the same as in Note 2 below. |        |         |         |  |
| Note 2 -                       | Multiply the Real Average Wage Ratio by the Future Year/1994 ratio of<br>$1 - 0.5(\text{Outgo} \% - \text{Tax} \%) / 100$   |        |         |         |  |

| Exhibit II                                   | OASI Benefit Growth   |      |  | Alt I  | Alt II  | Alt III |
|--|---|------|--|--------|---------|---------|
|  |   |      |  |        |         |         |
| Current \$ OASDI Benefit Payments - Billions |   |      |  |        |         |         |
| Table III.B4 (p180-1)                        |   | 1994 |  | 324    | 325     | 326     |
|  |   | 2030 |  | 2477   | 3177    | 4122    |
|  |   | 2070 |  | 16583  | 25754   | 41951   |
| Adjusted CPI                                 |   |      |  |        |         |         |
| Table III.B1 (p174-5)                        |   | 1994 |  | 100    | 100     | 100     |
|  |   | 2030 |  | 289.28 | 398.16  | 582.90  |
|  |   | 2070 |  | 943.64 | 1911.56 | 4103.61 |
| Cost Rates - % of Payroll                    |   |      |  |        |         |         |
| Table II.F13 (p106-7)                        |   |      |  |        |         |         |
|  | OASI  | 1994 |  | 10.13  | 10.24   | 10.30   |
|  |   | 2030 |  | 12.20  | 15.03   | 17.74   |
|  |   | 2070 |  | 11.11  | 16.71   | 25.45   |
|  | OASDI   | 1994 |  | 11.50  | 11.64   | 11.73   |
|  |   | 2030 |  | 13.67  | 17.22   | 20.59   |
|  |   | 2070 |  | 12.49  | 19.00   | 28.72   |
| OASI Beneficiaries - millions                |   |      |  |        |         |         |
| Table II.F18 (p119-20)                       |   | 1994 |  | 37.208 | 37.213  | 37.220  |
|  |   | 2030 |  | 67.420 | 69.822  | 72.549  |
|  |   | 2070 |  | 79.912 | 83.314  | 90.467  |
| OASI Real Benefits/Beneficiary - Note 1      |   |      |  |        |         |         |
|  | \$ thousands, annually  | 1994 |  | 7.67   | 7.68    | 7.69    |
|  |   | 2030 |  | 11.33  | 9.97    | 8.40    |
|  |   | 2070 |  | 19.56  | 14.22   | 10.01   |
|  | Ratio to 1994   | 2030 |  | 1.48   | 1.30    | 1.09    |
|  |   | 2070 |  | 2.55   | 1.85    | 1.30    |
| Note 1 -                                     | $\{ (\text{Curr } \$ \text{ OASDI}) / (\text{CPI} / 100) \} * \{ (\text{OASI rate}) / (\text{OASDI rate}) \} / \{ \text{OASI Beneficiaries} \}$ |      |  |        |         |         |

|   | Exhibit III                                | OASDI relation to GDP |         |         |         |  |
|---|--|-----------------------|---------|---------|---------|--|
|   |  |                       | Alt I   | Alt II  | Alt III |  |
| <b>Current \$ GDP - Billions</b>                        |  |                       |         |         |         |  |
| Table III.B1 (p174-5)                                   |  | 1994                  | 6787    | 6726    | 6697    |  |
|   |  | 2030                  | 44143   | 47321   | 53989   |  |
|   |  | 2070                  | 335891  | 375336  | 441747  |  |
| <b>Current \$ OASDI Benefits - Billions</b>             |  |                       |         |         |         |  |
| Table III.B4 (p180-1)                                   |  | 1994                  | 324     | 325     | 326     |  |
|   |  | 2030                  | 2477    | 3177    | 4122    |  |
|   |  | 2070                  | 16583   | 25754   | 41951   |  |
| <b>Adjusted CPI</b>                                     |  |                       |         |         |         |  |
| Table III.B1 (p174-5)                                   |  | 1994                  | 100     | 100     | 100     |  |
|   |  | 2030                  | 289.28  | 398.16  | 582.90  |  |
|   |  | 2070                  | 943.64  | 1911.56 | 4103.61 |  |
| <b>Covered Workers - Millions</b>                       |  |                       |         |         |         |  |
| Table II.F18 (p119-20)                                  |  | 1994                  | 137.876 | 137.178 | 136.914 |  |
|   |  | 2030                  | 176.087 | 162.821 | 151.163 |  |
|   |  | 2070                  | 221.769 | 169.607 | 128.887 |  |
| <b>Real "Net" GDP per Worker (using GDP-OASDI)</b>      |  |                       |         |         |         |  |
| \$ thousands, annually                                  |  | 1994                  | 46.88   | 46.66   | 46.53   |  |
|   |  | 2030                  | 81.80   | 68.09   | 56.59   |  |
|   |  | 2070                  | 152.58  | 107.82  | 75.59   |  |
|   | Ratio to 1994                              | 2030                  | 1.74    | 1.46    | 1.22    |  |
|   |  | 2070                  | 3.26    | 2.31    | 1.62    |  |
| *****   |  |                       |         |         |         |  |
| <b>OASI Real Benefits/Beneficiary - from Exhibit II</b> |  |                       |         |         |         |  |
| \$ thousands, annually                                  |  | 1994                  | 7.67    | 7.68    | 7.69    |  |
|   |  | 2030                  | 11.33   | 9.97    | 8.40    |  |
|   |  | 2070                  | 19.56   | 14.22   | 10.01   |  |
|   | \$ annually / Billion GDP                  | 1994                  | 1.13    | 1.14    | 1.15    |  |
|   | - see Note 1                               | 2030                  | 0.74    | 0.84    | 0.91    |  |
|   |  | 2070                  | 0.55    | 0.72    | 0.93    |  |
| Note 1 -  | {1000*OASI / Beneficiary} / {GDP/ICPI/100} |                       |         |         |         |  |

### EXHIBIT IV

The results below show that, in general, shortening the growth period by one year reduces the "net wage" and "net GDP" growth rates by 1 to 3 percentage points. Also, combining the 1994 cost rate projections with 1993 assumptions cuts only 1 percentage point off the "net wage" growth rates. On the other hand, switching to the 1994 assumptions (which mainly means projecting lower real wage increases) cuts 5 to 7 percentage points off those net growth rates by 2030 and cuts 15 to 20 percentage points by 2070.

The effect on OASI real benefits, per beneficiary and per billion dollars of GDP, is less easily summarized.

|  | <u>Projections for<br/>Future Year = 2030</u> | <u>Projections for<br/>Future Year = 2070</u> |
|--|---|---|
| <b>Ratio of Real Average Wage<br/>before any FICA deduction</b>  |   |   |
| 1993 Alternative II  |   |   |
| Future Year/Year 1993  | 1.47  | 2.23  |
| Future Year/Year 1994  | 1.45  | 2.21  |
| 1994 Alternative II  |   |   |
| Future Year/Year 1994  | 1.40  | 2.05  |
| <b>Ratio of Real Average Wage less the<br/>employee's share (i.e. 50%) of payroll cost<br/>for then current OASDI benefits</b> |   |   |
| 1993 Alternative II  |   |   |
| Future Year/Year 1993  | 1.43  | 2.16  |
| Future Year/Year 1994  | 1.42  | 2.14  |
| 1993 Assumptions & 1994 cost rates   |   |   |
| Future Year/Year 1994  | 1.41  | 2.13  |
| 1994 Alternative II  |   |   |
| Future Year/Year 1994  | 1.36  | 1.98  |
| <b>Ratio of Real (GDP-OASDI) per Worker</b>  |   |   |
| 1993 Alternative II  |   |   |
| Future Year/Year 1993  | 1.55  | 2.54  |
| Future Year/Year 1994#   | 1.53  | 2.51  |
| 1994 Alternative II  |   |   |
| Future Year/Year 1994  | 1.46  | 2.31  |
| <b>OASI Real Benefits per Beneficiary</b>  |   |   |
| 1993 Alternative II  |   |   |
| Future Year/Year 1993  | 1.30  | 1.94  |
| Future Year/Year 1994#   | 1.29  | 1.93  |
| 1994 Alternative II  |   |   |
| Future Year/Year 1994  | 1.30  | 1.85  |
| <b>\$ annually, per Billion GDP</b>  |   |   |
| 1993 Alternative II  |   |   |
| Year 1993 = 1.18; Year 1994 = 1.16   |   |   |
| Future Year  | 0.81  | 0.70  |
| 1994 Alternative II  |   |   |
| Year 1994 = 1.14   |   |   |
| Future Year  | 0.84  | 0.72  |

# The 1993 Report does not show the number of covered workers and OASI beneficiaries for 1994; therefore those were calculated as the arithmetic mean of 1993 and 1995 figures in that Report.