

ACTUARIAL NOTE

NUMBER 65

JANUARY 1970

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
SOCIAL SECURITY ADMINISTRATION

AUTOMATIC ADJUSTMENT OF THE EARNINGS BASE UNDER OASDHI

By Marice C. Hart
Office of the Actuary

An important provision of the Old-Age, Survivors, Disability, and Hospital Insurance system (OASDHI) relates to the maximum taxable and creditable earnings base, the amount above which earnings in a year are neither taxed nor creditable toward benefits. The earnings base has been increased a number of times in the past, as follows:

<u>Period</u>	<u>Base</u>
1937-50	\$3,000
1951-54	3,600
1955-58	4,200
1959-65	4,800
1966-67	6,600
1968 and after	7,800

In September 1969, President Nixon proposed that the Social Security Act be amended to provide for an automatic-adjustment procedure to increase the earnings base when the general earnings level increases significantly, with the base remaining unchanged if the general earnings level should remain relatively level (or fall). This automatic-adjustment procedure would first become effective for calendar year 1974, related to an earnings base of \$9,000 beginning in 1972. The earnings base for 1974 and 1975 would be \$9,000 multiplied by the ratio of the average taxable wage for the first quarter of 1972 to such average for the first quarter of 1970, rounded to the nearest multiple of \$600 (but not decreased below

\$9,000). This proposal is contained in legislative form in H.R. 14080.

Other determinations of the earnings base would be made in each even-numbered year thereafter, based on the ratio of the average taxable wage for the first quarter of that year to such average for 1970, and would become effective for the two years beginning with the succeeding even-numbered year. Thus, any increase in the base would become effective only in an even-numbered year (1974, 1976, etc.) and only in multiples of \$600, the derived figure being rounded to the nearest \$600 and never decreasing from the previous base.

Results that Would Have Occurred if Proposal Had Been Instituted in the Past

To examine the manner in which this automatic-adjustment procedure would operate, it has been applied as though it had become effective following each of the last four increases in the earnings base (to \$4,200 in 1955, \$4,800 in 1959, \$6,600 in 1966, and \$7,800 in 1968). The results are shown in Table 1.

Under either of the first two effective dates, the base would have reached \$7,800 in 1971, the same as the base under present law, but would have been higher than the actual \$4,800 earnings base in the years 1961-65. Had the procedure become effective when the base was raised to \$6,600 in 1966, the earnings base for 1970 would be \$7,800. The base for that year would be

\$9,000 if the procedure had been instituted with the earnings base increase to \$7,800 in 1968.

If recent trends in earnings levels continue, it would be reasonable to expect that an increase in the earnings base may occur every 2 years, and will certainly occur every 4 years. The first quarter average taxable wage has been increasing at a rate of about 5% a year, and it requires only a 2-year $6\frac{2}{3}\%$ increase over the average for the initial quarter, applied to \$9,000, to produce \$600 (with a corresponding increase in the earnings base), although the earnings base may increase with a smaller percentage rise in average taxable wage as a result of rounding to the nearest multiple of \$600.

Detailed Description of Application of Proposal

The factor used in the automatic-adjustment procedure, referred to as the "average taxable wage in first quarter", is the quotient of total taxable wages paid in the first calendar quarter and included in reports processed by the Social Security Administration in the succeeding 6 months, divided by the number of wage-items in the reports of such wages. In other words, persons who work for more than one employer are counted more than once, so that the amount is properly termed "average taxable wage per wage-item for first quarter".

There were a number of reasons for selecting the wage-item summary data as a basis for an automatic-adjustment procedure. For one thing, the wage-item summary is available promptly, generally in October, so that data for any year are available at least 2 months before the end of the year. The summary is substantially complete, covering about 98% of the total taxable wages paid in the quarter, including those contained in subsequent and revised reports. Thus, no estimating is required to produce an average that is consistent from year to year.

Data for the first quarter of the year are selected to eliminate substantially the dampening effect of the earnings base, since taxable earnings in excess of the maximum earn-

ings base are not reported. An annual salary of more than \$30,000 is required before earnings in the first quarter would exceed \$7,800, so that there are probably less than half a million persons whose total earnings are not fully taxable in the first quarter, and there are no instances where none of an employee's earnings are reported, as might be the case for subsequent quarters of the year, after maximum wages have been paid in an earlier quarter.

The wage-item summary data are in sufficient detail to permit exclusion of self-employment income, which is reported on an annual basis rather than a quarterly basis. Agricultural wages, reported annually beginning in 1955, and military wages, part of which are reported semi-annually, can also be excluded to eliminate the effect of wages covering more than one quarter. Tips are excluded, from the beginning of their coverage in 1966, so as to produce comparability with prior years and to eliminate a known duplication of wage-items. No other adjustment of the wage-item summary data tabulated in the process of posting the earnings records is made. The basic data, beginning with 1954, are shown in Table 2, together with the "average taxable wage per wage-item".

The wage-item summary from which these data are secured is prepared quarterly, in the process of posting wages to the individual earnings records. Its primary function is as an internal operating control on the volume of reports received. Therefore, it may not fully reflect adjustments that are made in the posting process. Its relative accuracy may be judged by comparison of the amounts of wages in the summary with the amounts certified quarterly to the Secretary of the Treasury for transfer of wage taxes to the trust funds. The amounts so certified exclude wages of state and local employees, for which the amounts equivalent to the appropriate payroll taxes are deposited directly in the trust funds, and they include estimates of military wages submitted in advance of the semi-annual reports.

The wages reported by wage-items on the employer reports, partially adjusted for these

differences, are compared with the wages certified to the Secretary of the Treasury in Table 3. They differ generally by about 1%, except for 1966 when installation of new equipment delayed the posting of about 10% of the employer reports. The certification to the Secretary of the Treasury was processed on schedule deferring the wages contained in the delayed reports to the next certification, but those wages were included in the wage-item summary. There were some differences in 1956 and 1957, due to the change to an annual basis in reporting agricultural wages and to problems in reporting newly-covered military personnel. Reports for state and local government wages were not received in time to be included in the current wage-item summary for years before 1957. The slight difference in the two amounts of wages in other years is due to three factors:

- (1) Some of the adjustments made during the posting cycle may not be reflected in the wage-item summary.
- (2) The certification includes estimates of military wages in advance of reporting, while the wage-item summary includes only military wages actually reported.
- (3) Reports for the second calendar quarter received on tape from employers and posted early may be included in the wage-item summary, but they are certified separately to the Secretary of the Treasury.

The differences are too small to have a significant effect on the averages. It is not possible to derive averages from the certification of wages because the associated numbers of employees are not available.

The extent to which wages certified for a quarter are complete at the end of the first posting cycle is indicated in Table 4. Wages for a quarter are certified separately at the end of the first two posting cycles after the end of the quarter, and at the end of the third cycle in years preceding a year in which the tax rate changes. Wages reported early on tape and certified in advance of the usual first report are also certified separately. Because the primary purpose of the certification is to determine the amount of taxes due the

trust funds, wages reported subsequently are accumulated by tax rate and year, without separation by quarter.

As shown in the last column of Table 4, the percentage of the total wages for the first quarter of each year that were certified in the succeeding 6 months has ranged from 96% to 99%, except for 1966 when a delay was occasioned by the inauguration of a new procedure. It seems reasonable, then, to assume that the summary data are about 99% accurate and that they are 98% complete insofar as the amount of wages reported is concerned.

These data are, of course, confined to taxable wages, the only wages reported to the Social Security Administration. The change in the level of the earnings base should more properly be related to total earnings, rather than taxable earnings. This is, in essence, done under the proposal by selecting taxable wages for the first quarter, when the earnings base affects relatively few persons. As shown in Table 5, the average taxable wage is about 98% of the average total wage in the first quarter of each year. It declines thereafter, fluctuating with changes in the earnings base, and ranges from 88% to 95% in the second quarter, 70% to 85% in the third quarter, and 60% to 70% in the fourth quarter. The data shown in Table 6, upon which these percentages are based, are estimates insofar as average total wages are concerned. The figures as to average taxable wages are largely estimates, particularly for the later years. Furthermore, the foregoing program estimates become available about 6 months later than the wage-item summary data, which are not estimates, but rather are entirely tabulated experience data.

Taxable wages used in the program estimates differ from the wage-item summary data, as shown in Table 7, especially in 1954-57, largely because of delayed reporting of wages for the military and for state and local government employees. Beginning with 1958, the wage-item summary data represent from 97% to 99% of the program estimates of taxable wages. Assuming that the program estimates are accurate, the wage-item summary amounts are understated

for the most part less than 3%. It must be noted that the wage-item summary data are available before the end of the year, while preliminary program estimates are not available until April of the following year and are subject to subsequent (and often substantial) revision. The comparison in Table 7 is made with the most recent revisions of the program estimates.

It is apparent that the average taxable wage per wage-item will be somewhat less than the average wage per employee, since more than one wage-item is included for employees who work for more than one employer. Such a difference would have no effect upon the ratio used to determine the earnings base, provided the relationship between the number of wage-items and the number of employees is reasonably constant. As shown in Table 8, the number of wage-items has exceeded the number of employees by from 1% to 16%. In the last 10 years, the

excess has ranged from 8% to 16%. The greater difference in the later years may be due in part to comparison with preliminary program estimates for those years.

As shown in Table 9, the relationship of average taxable wage per wage-item to average taxable wage per employee has ranged from 87% to 91% during 1954-68, while average taxable wage per wage-item as a percentage of average total wage per employee has ranged from 85% to 89%. This last average is, of course, the most desirable one to use as a basis for future adjustment of the earnings base. The relatively close correspondence that exists between this independently estimated amount and the average based on the wage-item summary *aggregate* data, which is promptly available, led to the inclusion in the proposal of "average taxable wage per wage-item for first quarter" to provide a basis for the automatic-adjustment procedure.

Table 1

APPLICATION OF AUTOMATIC ADJUSTMENT OF EARNINGS BASE
IF EFFECTIVE WHEN PAST INCREASES WERE ENACTED

Base Year and Year of Determination	Average Taxable Wage in First Quarter	Ratio to Average Wage in First Quarter of Base Year	Ratio Times Earnings Base in Second Year After Base Year	Year of Earnings Base Increase	Earnings Base Under Determination	Actual Earnings Base in Year
FIRST EFFECTIVE FOR 1957						
1953	\$682	1.000	-----	1955	-----	\$4,200
1955	717	1.051	\$4,414	1957	\$4,200	4,200
1957	800	1.173	4,927	1959	4,800	4,800
1959	853	1.251	5,254	1961	5,400	4,800
1961	918	1.346	5,653	1963	5,400	4,800
1963	980	1.437	6,035	1965	6,000	4,800
1965	1,026	1.504	6,317	1967	6,600	6,600
1967	1,139	1.670	7,014	1969	7,200	7,800
1969	1,282	1.880	7,896	1971	7,800	7,800
FIRST EFFECTIVE FOR 1961						
1957	\$800	1.000	-----	1959	-----	\$4,800
1959	853	1.066	\$5,117	1961	\$5,400	4,800
1961	918	1.148	5,510	1963	5,400	4,800
1963	980	1.225	5,880	1965	6,000	4,800
1965	1,026	1.283	6,158	1967	6,000	6,600
1967	1,139	1.424	6,835	1969	6,600	7,800
1969	1,282	1.603	7,694	1971	7,800	7,800
FIRST EFFECTIVE FOR 1968						
1964	\$1,010	1.000	-----	1966	-----	\$6,600
1966	1,071	1.060	\$6,996	1968	\$7,200	7,800
1968	1,219	1.207	7,966	1970	7,800	7,800
FIRST EFFECTIVE FOR 1970						
1966	\$1,071	1.000	-----	1968	-----	\$7,800
1968	1,219	1.138	\$8,876	1970	\$9,000	7,800

Table 2
AVERAGE TAXABLE WAGE PER WAGE-ITEM
FOR FIRST QUARTER

Year	Wage-Items (000)	Taxable Wages (000,000)	Average Taxable Wage per Wage-Item
1954	48,598	\$33,568	\$691
1955	49,423	35,459	717
1956	49,801	37,750	758
1957	54,294	43,439	800
1958	53,645	44,308	826
1959	54,604	46,601	853
1960	57,761	51,379	890
1961	57,183	52,520	918
1962	59,334	56,759	957
1963	60,742	59,550	980
1964	62,897	63,554	1,010
1965	65,045	66,766	1,026
1966	69,856	74,846	1,071
1967	72,387	82,433	1,139
1968	74,070	90,262	1,219
1969	77,312	99,085	1,282

Note: Excludes agricultural wages after 1954, military wages, and tips.

Table 3
TAXABLE WAGES FOR FIRST QUARTER
(in millions)

Year	Wage-Item Summary	Treasury Certification	Summary as Percent of Certification
1954	\$33,568	\$33,798	99%
1955	35,459	35,691	99
1956	37,750	38,892	97
1957	41,744	43,777	95
1958	43,327	43,488	100
1959	45,519	45,048	101
1960	49,466	49,198	101
1961	49,728	50,064	99
1962	53,594	53,970	99
1963	55,721	56,215	99
1964	59,713	60,048	99
1965	62,626	63,065	99
1966	70,659	61,302	115
1967	77,006	76,951	100
1968	84,487	83,722	101

Note: Excludes agricultural wages after 1954, tips, and wages of state and local government employees.

Table 4

**AGGREGATE TAXABLE WAGES FOR FIRST QUARTER OF YEAR
CERTIFIED WITHIN A YEAR AFTER END OF QUARTER**

Year	Aggregate Wages Certified (in millions)				First Certification as Percent of Total
	Through September	October- December	January- March	Total	
1954	\$33,798	\$1,180	\$87	\$35,065	96%
1955	35,691	769	*	36,460	98
1956	38,892	1,554	*	40,446	96
1957	43,777	962	205	44,944	97
1958	43,488	525	*	44,013	99
1959	45,048	1,765	90	46,903	96
1960	49,198	687	177	50,062	98
1961	50,064	342	*	50,407	99
1962	53,970	358	157	54,485	99
1963	56,215	275	198	56,688	99
1964	60,048	331	*	60,379	99
1965	63,065	281	*	63,346	99
1966	61,302	9,458	17	70,777	87
1967	76,951	683	223	77,857	99
1968	83,722	112	178	84,012	99

*Not available.

Note: Excludes agricultural wages after 1954, tips, and wages of state and local government employees.

Table 5

AVERAGE TAXABLE WAGE AS PERCENT OF
AVERAGE TOTAL WAGE

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1954	97%	93%	82%	64%
1955	97	95	85	68
1956	98	95	83	67
1957	98	91	79	64
1958	98	90	78	64
1959	98	92	81	68
1960	98	91	79	65
1961	98	91	78	65
1962	98	90	76	62
1963	98	89	74	60
1964	98	88	72	60
1965	98	88	71	60
1966	98	93	83	70
1967	98	93	80	67
1968	98	95	82	72

Table 6

**PROGRAM ESTIMATES OF AVERAGE TOTAL AND TAXABLE
QUARTERLY WAGE PER EMPLOYEE**

Year	First Quarter		Second Quarter		Third Quarter		Fourth Quarter	
	Average Total Wage	Average Taxable Wage	Average Total Wage	Average Taxable Wage	Average Total Wage	Average Taxable Wage	Average Total Wage	Average Taxable Wage
1954	\$800	\$779	\$810	\$750	\$790	\$650	\$870	\$561
1955	840	815	840	797	850	723	920	626
1956	890	872	880	835	880	726	950	641
1957	916	899	933	850	926	733	964	620
1958	923	906	950	858	945	734	982	628
1959	972	952	1,015	933	994	807	1,029	702
1960	1,012	992	1,043	949	1,032	818	1,054	683
1961	1,030	1,011	1,060	963	1,043	818	1,088	703
1962	1,084	1,064	1,106	996	1,080	821	1,125	695
1963	1,108	1,086	1,146	1,022	1,121	830	1,169	707
1964	1,150	1,128	1,183	1,046	1,163	843	1,209	721
1965	1,176	1,154	1,228	1,078	1,208	859	1,242	744
1966	1,245	1,221	1,285	1,190	1,287	1,064	1,325	924
1967	1,318	1,291	1,333	1,239	1,367	1,091	1,392	937
1968	1,401	1,376	1,419	1,346	1,452	1,189	1,498	1,079

Note: Excludes agricultural wages after 1954.

Table 7
TAXABLE WAGES FOR FIRST QUARTER
(in millions)

Year	Wage-Item Summary	Program Estimate	Summary as Percent of Estimate
1954	\$33,568	\$35,813	94%
1955	35,459	38,053	93
1956	37,750	43,031	88
1957	43,459	47,662	91
1958	45,981	47,283	97
1959	48,787	50,499	97
1960	53,161	54,108	98
1961	53,843	54,842	98
1962	58,202	59,021	99
1963	60,760	61,850	98
1964	65,194	66,100	99
1965	68,324	69,600	98
1966	77,488	77,900	99
1967	84,822	86,100	99
1968	93,532	94,700	99

Note: Excludes agricultural wages after 1954.

Table 8
**COMPARISON OF NUMBER OF WAGE-ITEMS AND
 EMPLOYEES FOR FIRST QUARTER**
 (in thousands)

Year	Wage-Items	Employees	Wage-Items as Percent of Employees
1954	48,598	45,984	106%
1955	49,423	46,699	106
1956	49,801	49,333	101
1957	54,392	53,044	103
1958	55,624	52,186	107
1959	57,333	53,020	108
1960	61,094	54,560	112
1961	59,591	54,256	110
1962	62,178	55,493	112
1963	63,118	56,900	111
1964	65,831	58,600	112
1965	67,470	60,300	112
1966	73,893	63,800	116
1967	76,230	66,700	114
1968	78,685	68,800	114

Note: Excludes agricultural employees after 1954.

Table 9

AVERAGE TAXABLE WAGE PER WAGE-ITEM
AS PERCENT OF AVERAGE TOTAL AND
TAXABLE WAGES PER EMPLOYEE,
FIRST QUARTER OF YEAR

Year	Percent of Average Wage	
	Total	Taxable
1954	86%	89%
1955	85	88
1956	85	87
1957	87	89
1958	89	91
1959	88	90
1960	88	90
1961	89	91
1962	88	90
1963	88	90
1964	88	90
1965	87	89
1966	86	88
1967	86	88
1968	87	89