Rochester Center for Economic Research

Average Marginal Tax Rates from Social Security and the Individual Income Tax

Barro, Robert J. and Chaipat Sahasakul

Working Paper No. 14
June 1985

University of
Rochester

Average Marginal Tax Rates from Social Security and the Individual Income Tax*

Robert J. Barro
Economics Department
University of Rochester

Chaipat Sahasakul
Graduate School of Management
Rutgers University

Working Paper No. 14

June 1985

*This research was supported by the National Science Foundation. We appreciate the data that were provided on income taxes by Dan Holik and on social security by Anthony Pellechio.

Average Marginal Tax Rates from Social Security
and the Individual Income Tax

ABSTRACT

We extend previous estimates of the average marginal tax rate from the federal individual income tax to include social security "contributions." The social security tax is a flat-rate levy on labor earnings (and income from self-employment) up to a ceiling value of earnings. Our computations consider first, the tax rates on employers, employees and the self employed; second, the amounts of income that accrue to persons with earnings below the ceiling; and third, the effective deductibility of employer's social security contirbutions from workers' taxable income. We find that the net impact of social security on the average marginal tax rate is below .02 until 1966, but then raises to .03 in 1968, .04 in 1973, .05 in 1974, .06 in 1979, and almost .07 in 1982. Thus, since 1965, the overall marginal tax rate rises more rapidly than that from the income tax alone. In 1982 this overall rate is 36%, down by nearly 2 percentage points from that in 1981, but nearly equal to that in 1980. We note that, in comparison with the income tax, the social security levy generates 3-4 times as much revenue per unit of contribution to the average marginal tax rate. The social security tax is relatively "efficient" because first, it is a flat-rate tax (rather than a graduated one) for earnings below the ceiling, and second, there is a zero marginal tax rate at the top. However, the last feature has become less important in recent years. The rapid increase in the ceiling on earnings raised the fraction of total salaries and wages accruing to persons with earnings below the ceiling from 29% in 1965 to 68% in 1982.

In our previous paper (Barro and Sahasakul, 1983) we provided estimates of average marginal tax rates from the federal individual income tax for 1916-80. Now we extend these figures to 1982 and supplement them to include the social security tax on labor earnings. With this addition, in 1982 the included taxes comprise 77% of federal and 49% of total government receipts. If some non-tax items are excluded, the values are 83% and 57%, respectively.[1]

In the main the social security levy is a flat-rate tax, paid partly by workers, partly by employeers, and partly by self-employed persons. The computation of average marginal tax rates is simpler than in the case of the federal income tax, which has a graduated-rate structure and allows for numerous deductions from taxable income. The main complications that arise for the social-security tax are the following:

- For workers and self-employed persons with earnings above a ceiling value, the marginal tax rate is nil.
- The tax applies only to labor earnings (and to earnings from self-employment), rather than to total income.
- The employer and employee parts of the tax differ, because the employer's payments are not counted as part of the employee's taxable income.
- An individual's future social security benefits depend positively on that person's history of contributions. This element reduces the effective tax rate that an individual faces. In fact, Gordon (1982) argues that this consideration is important for people who are close

---

[1]The data are from U.S. Survey of Current Business, July 1983.

to retirement age. Generally, the inclusion of this effect would require forecasts of benefit schedules, as well as survival probabilities. It would also be necessary to include various complexities of the social-security law, such as the declining marginal effect of past covered earnings on benefits, the exclusion of some years of earnings from the formula, and the treatment of spouses and dependents. In any event, our subsequent calculations do not take account of the effects of social-security contributions on future benefits. Thus, by including only the tax aspects of these "contributions," we somewhat overstate the effective marginal tax rates from the social security program.

Theoretical Considerations

Let s_f be the social-security tax rate (marginal and average) paid by a firm on workers' earnings. If profits are taxed at the rate τ_π, then the firm's after-tax profits are

$$(1) \quad \pi = (1 - \tau_\pi)[F(L) - wL(1 + s_f)],$$

where L is the quantity of labor input, w is the real wage rate, and F(L) is the production function. Maximization of profit implies

$$(2) \quad F' = w(1 + s_f),$$

where F' is labor's marginal product.

The representative worker's total real income, Y, equals wL + I, where I is non-labor income. As in our previous paper, this income is spent on consumption, C, or income taxes, T.[2] In addition, there is now the worker's social security tax, $s_e \cdot wL$, where s_e is the employee's (marginal and average) contribution rate. Thus, we have

$$(3) \quad Y = wL + I = C + T + s_e \cdot wL.$$

As before, income taxes T depend on taxable income, Y - D, where D is a broad concept of deductions. If utility depends positively on consumption and negatively on work, then the first-order condition for maximizing utility can be written as

$$(4) \quad \frac{-\partial U/\partial L}{\partial U/\partial C} = w(1 - T' - s_e),$$

where T' is the marginal income-tax rate.

Substituting for w from equation (2) into equation (4) implies

$$(5) \quad \frac{-\partial U/\partial L}{\partial U/\partial C} = \frac{F'(1 - T' - s_e)}{(1 + s_f)}.$$

Thus, equation (5) shows how the tax system creates a positive wedge between labor's marginal product, F', and the utility rate of substitution between consumption and leisure, $-(\partial U/\partial L)/(\partial U/\partial C)$.

---

[2] For present purposes it is unnecessary for us to consider two categories of consumption--depending on the treatment by the tax law--as we did in the earlier paper. We also do not allow here for efforts aimed at avoiding income taxes.

Let τ be the overall effective marginal tax rate on labor's marginal product, F'. Then equation (5) implies

$$(1 - \tau) = (1 - T' - s_e)/(1 + s_f),$$

or

$$(6) \quad \tau = \frac{1}{(1 + s_f)} \cdot (s_f + s_e + T').$$

Thus, the tax system effectively deflates labor's marginal product F' by the factor, $1 + s_f$ (see equation (2)), and then applies the marginal tax rate, $s_f + s_e + T'$.[3] If the social-security tax is not purely a flat-rate levy (because of the ceiling on taxable earnings in the U.S. system), then we can interpret s_f and s_e in equation (6) as the marginal social-security tax rates.

For self-employmed persons the formula is simpler. Namely, if s_s is the marginal contribution rate to social security, then the effective marginal tax rate τ_s is[4]

---

[3]Note that τ does not depend solely on the sum, $s_f + s_e$. That is because, unlike the worker's payments, the employer's payments are not part of the worker's tax base.

[4]If the marginal tax rates T' are equal, then the equation of τ_s from equation (7) to τ in equation (6) requires s_s to be less than $s_f + s_e$, as was true in the U.S. until 1984. For example, if T' = .3 and $s_f = s_e = .067$ (the value for 1982), then the equalizing value for s_s is .107. The actual value of s_s for 1982 was .0935. The social-security law passed in 1983 and effective in 1984 sets the self-employed rate equal to the sum, $s_f + s_e$, but provides for some offsetting income-tax credits.

$$(7) \quad \tau_s = s_s + T'.$$

Previously, we calculated weighted averages $\bar{T}'$ of the marginal income-tax rates T'. We weighted either by adjusted gross income or by numbers of returns, and we computed arithemetic and geometric averages. Here, we consider only the series that we focused on earlier, which is the arithmetic average weighted by adjusted gross income.

Equations (6) and (7) tell us the necessary extensions to go from the previous measures $\bar{T}'$ to weighted averages, $\bar{\tau}$, that include the social-security tax. Namely,[5]

$$(8) \quad \bar{\tau} \approx \bar{T}' + \Omega_1 \bullet \left[\frac{s_f + s_e}{1 + s_f}\right] + \Omega_2 \bullet s_s - \Omega_1 \bullet s_f \bullet \bar{T}'',$$

where

- s_f, s_e and s_s are now the social-security contribution rates for persons with earnings below the taxable ceiling[6]
- Ω_1 is the ratio to aggregate adjusted gross income of the wage and salary income of workers with earnings below the ceiling,
- Ω_2 is the corresponding ratio for self-employed persons, and
- $\bar{T}''$ is the (weighted) average marginal tax rate for workers with earnings below the ceiling.

---

[5]To get the last term, we approximate $T'/(1 + s_f) \approx T'(1 - s_f)$ in equation (6). This approximation is satisfactory for our data sample.

[6]Note that the social-security levy is a flat-rate tax in this range.

Computations of Tax Rates

Table 1 shows the salaries and wages (column 1) and self-employment income (column 3) that accrue in each year to persons with earnings below the ceiling. (In column 4 the table shows the dollar value of the ceiling for each year.) These data, combined with values of aggregate adjusted gross income, allow us to calculate the weights Ω_1 and Ω_2, which appear in equation (8). These weights are in columns 5 and 6 of Table 1.

For subsequent purposes the important variable is Ω_1, the ratio to adjusted gross income of the salaries and wages of persons below the ceiling. This ratio can be divided into two parts--first, the ratio of salaries and wages of persons below the ceiling to the aggregate of salaries and wages (column 2 of Table 1) and second, the ratio of aggregate salaries and wages to aggregate adjusted gross income. The latter ratio is highly stable about its mean value of .84. Hence, Ω_1 fluctuates mainly because of changes in the fraction of overall salaries and wages that accrue to persons below the ceiling. This fraction depends in turn on the ceiling earnings for social security in relation to the distribution of nominal earnings in the economy. For example, the decrease in Ω_1 from .46 in 1937 to .24 in 1965 corresponds to a decline in the ratio of salaries and wages for persons below the ceiling to total salaries and wages from .57 to .29. This behavior reflects the relatively slow rise in the dollar ceiling on earnings, which increases from $3,000 in 1937 to only $4,800 in 1965. However, the ceiling has advanced rapidly since 1965, reaching $32,400 in 1982. Correspondingly, the ratio of salaries and wages for persons below the ceiling to total salaries and wages goes from .29 in 1965 to .68 in 1982. This change leads to an increase in Ω_1 from .24 in 1965 to .57 in 1982.

Table 1
Social Security Variables

	(1) Salaries & Wages Below Ceiling ($ billion)	(2) (1) + Total Salaries & Wages	(3) Self-Emp. Earnings Below Ceiling ($ billion)	(4) Ceiling ($)	(5) Ω_1	(6) Ω_2	(7) $s_f = s_e$ (%)	(8) s_s (%)
1937	26.5	.57	–	3000	.46	–	1.0	0
8	23.7	.55	–	3000	.44	–	1.0	0
9	26.6	.58	–	3000	.47	–	1.0	0
1940	29.4	.59	–	3000	.48	–	1.0	0
1	36.3	.58	–	3000	.48	–	1.0	0
2	42.2	.51	–	3000	.44	–	1.0	0
3	44.6	.42	–	3000	.38	–	1.0	0
4	42.9	.37	–	3000	.33	–	1.0	0
1945	43.9	.37	–	3000	.33	–	1.0	0
6	49.7	.44	–	3000	.37	–	1.0	0
7	49.5	.40	–	3000	.33	–	1.0	0
8	47.9	.35	–	3000	.29	–	1.0	0
9	46.6	.35	–	3000	.29	–	1.0	0
1950	45.7	.31	–	3000	.25	–	1.5	0
1	65.1	.38	4.3	3600	.32	.02	1.5	2.25
2	64.6	.35	4.3	3600	.30	.02	1.5	2.25
3	63.2	.32	4.2	3600	.27	.02	1.5	2.25
4	61.4	.31	4.3	3600	.27	.02	2.0	3.0
1955	79.1	.37	8.3	4200	.32	.03	2.0	3.0
6	81.2	.36	8.8	4200	.30	.03	2.0	3.0
7	84.5	.35	8.2	4200	.30	.03	2.25	3.375
8	82.9	.34	8.2	4200	.29	.03	2.25	3.375
9	101.4	.39	9.2	4800	.33	.03	2.5	3.75
1960	100.5	.37	9.0	4800	.32	.03	3.0	4.5
1	98.5	.35	9.1	4800	.30	.03	3.0	4.5
2	99.3	.33	8.5	4800	.28	.02	3.125	4.7
3	99.6	.32	8.1	4800	.27	.02	3.625	5.4
4	100.5	.30	7.7	4800	.25	.02	3.625	5.4
1965	103.7	.29	7.2	4800	.24	.02	3.625	5.4
6	166.4	.42	10.8	6600	.35	.02	4.2	6.15
7	168.4	.39	10.1	6600	.33	.02	4.4	6.4
8	214.6	.46	12.1	7800	.39	.02	4.4	6.4
9	214.6	.42	11.9	7800	.35	.02	4.8	6.9

Table 1 (Continued)
Social Security Variables

	(1) Salaries & Wages Below Ceiling ($ billion)	(2) (1) ÷ Total Salaries & Wages	(3) Self-Emp. Earnings Below Ceiling ($ billion)	(4) Ceiling ($)	(5) Ω_1	(6) Ω_2	(7) $s_f = s_e$ (%)	(8) s_s (%)
1970	215.5	.39	11.2	7800	.34	.02	4.8	6.9
1	209.9	.36	11.1	7800	.31	.02	5.2	7.5
2	253.9	.40	13.5	9000	.34	.02	5.2	7.5
3	326.9	.47	16.3	10800	.39	.02	5.85	8.0
4	414.9	.54	19.8	13200	.46	.02	5.85	7.9
1975	430.6	.53	21.1	14100	.45	.02	5.85	7.9
6	477.0	.54	24.0	15300	.45	.02	5.85	7.9
7	528.9	.54	26.0	16500	.45	.02	5.85	7.9
8	591.1	.53	36.5	17700	.45	.03	6.05	8.1
9	778.8	.63	47.1	22900	.53	.03	6.13	8.1
1980	878.8	.65	50.9	25900	.54	.03	6.13	8.1
1	999.3	.67	57.2	29700	.56	.03	6.65	9.3
2	1067.2	.68	59.2	32400	.57	.03	6.7	9.35

Column 1: Total salaries and wages of persons whose salaries and wages fall below the ceiling.

Column 2: Column 1/total salaries and wages. The denominator is from U.S. Dept. of Commerce, National Income and Product Accounts of the U.S., 1929-1976, and U.S. Survey of Current Business, July 1983.

Column 3: Total earnings from self-employment for those whose earnings fall below the ceiling.

Column 4: The ceiling on taxable salaries and wages or self-employment earnings for social security purposes.

Column 5: Ω_1 = Col. (1)/total adjusted gross income.

Column 6: Ω_2 = Col. (3)/total adjusted gross income.

Column 7: $s_f = s_e$: social security tax rates on employers and employees.

Column 8: s_s: social security tax rate on self-employed persons.

Source: U.S. Department of Health and Human Services, Social Security Administration, Social Security Bulletin, Annual Statistical Supplement, various issues. Figures for columns (1) and (3) for 1978-82 were provided by Anthony Pellechio.

The values for $s_f = s_e$ and s_s for each year also appear in Table 1. (These values are nonzero only since the start of the social security program in 1937). Using these numbers, we can calculate the second term, $\Omega_1(s_f + s_e)/(1 + s_f)$, and the third term, $\Omega_2 \cdot s_s$, on the right side of equation (8). The results appear in columns 2 and 3 of Table 2.

It is more complicated to calculate the final term of equation (8), which depends on the average marginal tax rate $\bar{T}''$ for workers with earnings below the ceiling. From the IRS's Statistics of Income, Individual Tax Returns for each year, we approximated $\bar{T}''$ by using the marginal tax rates and associated values of adjusted gross income for the following filing units. First, we take all returns from income classes for which the average of salaries and wages per return is below the ceiling value. (For example, for 1980 when the ceiling on earnings is $25,900, we go up to an adjusted gross income per return of $30,000.) Then we include enough additional joint returns from income classes where the average of salaries and wages per return is above the ceiling, so as to exhaust the known total of salaries and wages that accrues to persons with earnings below the ceiling. However, we carry out this calculation by using the lowest possible income classes--that is, we assume that low numbers for individuals' salaries and wages correspond to low numbers for adjusted gross income per return. There is some approximation here, since some of the low values for salaries and wages may come from either multi-earner families or families with high non-labor income, which would have high marginal tax rates. But some experimentation indicates that the potential error is quantitatively unimportant. Column 4 of Table 2 shows the resulting calculation for the final term, $-\Omega_1 s_f \bar{T}''$, in equation (8). Note

Table 2
Average Marginal Tax Rates

	(1) $\bar{T}'$	(2) $\Omega_1 \cdot \frac{(s_f+s_e)}{(1+s_f)}$	(3) $\Omega_2 \cdot s_s$	(4) $-\Omega_1 \cdot s_f \cdot \bar{T}''$	(5) SS	(6) $\bar{\tau}$
1916	.012	--	--	--	--	.012
7	.037	--	--	--	--	.037
8	.054	--	--	--	--	.054
9	.052	--	--	--	--	.052
1920	.046	--	--	--	--	.046
1	.042	--	--	--	--	.042
2	.046	--	--	--	--	.046
3	.033	--	--	--	--	.033
4	.035	--	--	--	--	.035
1925	.030	--	--	--	--	.030
6	.028	--	--	--	--	.028
7	.032	--	--	--	--	.032
8	.041	--	--	--	--	.041
9	.035	--	--	--	--	.035
1930	.023	--	--	--	--	.023
1	.017	--	--	--	--	.017
2	.029	--	--	--	--	.029
3	.031	--	--	--	--	.031
4	.034	--	--	--	--	.034
1935	.038	--	--	--	--	.038
6	.052	--	--	--	--	.052
7	.046	.009	0	-.000	.009	.055
8	.034	.009	0	-.000	.009	.043
9	.038	.009	0	-.000	.009	.047
1940	.056	.010	0	-.000	.009	.065
1	.113	.010	0	-.000	.009	.123
2	.192	.009	0	-.001	.008	.200
3	.209	.007	0	-.001	.007	.216
4	.252	.007	0	-.001	.006	.258
1945	.257	.006	0	-.001	.006	.262
6	.226	.007	0	-.000	.007	.233
7	.226	.006	0	-.000	.006	.232
8	.180	.006	0	-.000	.006	.185
9	.175	.006	0	-.000	.005	.180
1950	.196	.008	0	-.000	.007	.202
1	.231	.010	.000	-.001	.009	.240
2	.251	.009	.000	-.001	.008	.259
3	.249	.008	.000	-.001	.008	.257
4	.222	.010	.001	-.001	.010	.231

Table 2 (Continued)
Average Marginal Tax Rates

	(1) $\bar{T}'$	(2) $\Omega_1 \cdot \frac{(s_f+s_e)}{(1+s_f)}$	(3) $\Omega_2 \cdot s_s$	(4) $-\Omega_1 \cdot s_f \cdot \bar{T}''$	(5) SS	(6) $\bar{\tau}$
1955	.228	.012	.001	-.001	.012	.240
6	.232	.012	.001	-.001	.012	.243
7	.232	.013	.001	-.001	.013	.245
8	.229	.013	.001	-.001	.013	.242
9	.236	.016	.001	-.001	.016	.252
1960	.234	.018	.001	-.002	.018	.253
1	.240	.017	.001	-.002	.017	.257
2	.244	.017	.001	-.002	.017	.260
3	.247	.019	.001	-.002	.018	.265
4	.221	.018	.001	-.001	.017	.238
1965	.212	.017	.001	-.001	.016	.229
6	.217	.028	.001	-.002	.028	.245
7	.223	.028	.001	-.002	.027	.250
8	.252	.032	.001	-.003	.031	.283
9	.261	.032	.001	-.003	.031	.292
1970	.243	.031	.001	-.003	.029	.272
1	.239	.031	.001	-.003	.029	.268
2	.242	.034	.001	-.003	.032	.274
3	.250	.044	.002	-.004	.041	.291
4	.257	.050	.002	-.004	.048	.305
1975	.263	.050	.002	-.005	.047	.310
6	.273	.050	.002	-.005	.046	.319
7	.281	.050	.002	-.005	.047	.328
8	.310	.052	.002	-.006	.047	.357
9	.289	.061	.003	-.007	.057	.346
1980	.304	.062	.002	-.008	.057	.362
1	.313	.070	.003	-.010	.063	.376
2	.293	.071	.003	-.008	.066	.359

Column 1: $\bar{T}'$ is the average marginal income-tax rate, weighted by adjusted gross income, from Barro and Sahasakul (1983, Table 2, column 1). Values for 1981-82 are estimates based on Thompson and Hicks (1983) and Holik (1985)

Column 2-4: Calculated with data from Table 1

Column 5: SS = column 2 + column 3 + column 4

Column 6: $\bar{\tau}$ = column 1 + column 5

that this term--which reflects the exclusion of firms' social security payments from workers' taxable income--is always below .01 in magnitude.

Our previous estimates of the average marginal tax rate when weighted by adjusted gross income, $\bar{T}'$, appear in column 1 of Table 2. With the availability of more recent data, we can now extend the series from 1980 to 1982. For 1981, where the Reagan tax cut applied only to a small extent, the effects of bracket creep actually raised the average marginal tax rate $\bar{T}'$ from 30.4% in 1980 to 31.3% in 1981. But for 1982, the first full year of the tax cuts, there is a substantial drop to 29.3%. This decline in the average marginal tax rate by 2.0 percentage points is almost as large as that (2.6 percentage points) for the Kennedy-Johnson tax cut in 1964. When later data are available it will be interesting to see the extent to which average marginal tax rates declined further in 1983 and 1984.

The overall modifications to incorporate the social-security tax--the sum of columns 2, 3 and 4 in Table 2--appear in column 5 of the table (labeled SS). Then the sum of columns 1 and 5 is the average marginal tax rate $\bar{\tau}$ from the federal individual income tax and the social security tax. These values are in column 6 of the table. Figure 1 shows the average marginal tax rate from the individual income tax $\bar{T}'$ (column 1 of Table 2), the overall effect from social security SS (column 5), and the combined average marginal tax rate $\bar{\tau}$ (column 6).

Consider the overall effects from the inclusion of social security, as shown in column 5 of Table 2 and in Figure 1. The social security term SS is in the neighborhood of 1% from 1937 until 1958, reaches 2% in 1960, 3% in

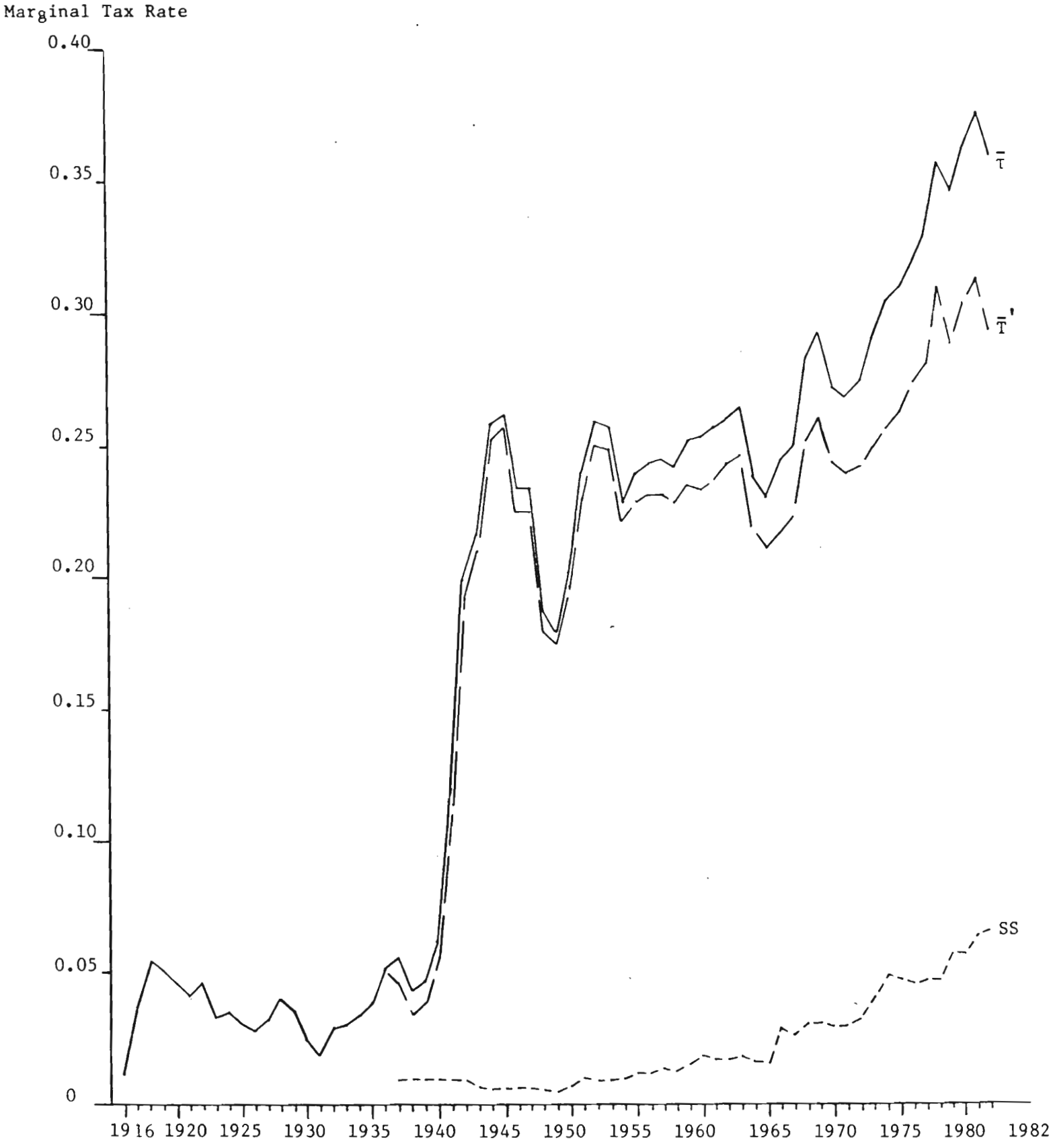

Figure 1

Average Marginal Tax Rates

1966, 4% in 1973, 5% in 1974, 6% in 1979, and almost 7% in 1982. Thus, the inclusion of this term produces a combined average marginal tax rate $\bar{\tau}$ that rises more steeply than the income-tax rate $\bar{T}'$, especially since 1965. Instead of rising from 21% in 1965 to 29% in 1982, we find that the average marginal tax rate $\bar{\tau}$ goes from 23% to 36%.

From 1980 to 1982 the rise in the social-security rate (SS) by about 1 percentage point offsets the decline in the average marginal tax rate from the individual income tax. Therefore, the overall tax rate $\bar{\tau}$ is roughly the same in 1982 (35.9%) as it was in 1980 (36.2%). However, the value for 1982 is 1.7 percentage points below the all-time peak value of 37.6% from 1981.

The overall effect from social security on the average marginal tax rate, SS, is always much less than the rate on employees below the ceiling, $(s_f + s_e)/(1 + s_f)$. Primarily this difference arises because Ω_1--the ratio of salaries and wages below the ceiling to aggregate adjusted gross income--is much less than unity. As mentioned before, the variations in Ω_1 derive mainly from changes in the ratio of salaries and wages below the ceiling to total salaries and wages, which appears in column 2 of Table 1. For example, in 1965 only 29% of total salaries and wages accrued to persons below the ceiling. If there had been no ceiling (and unrealistically, if the rate of tax, $s_f = s_e$, were unchanged) then the overall effect of social security, SS, would have increased by a factor of 3.5 from .016 to .056. On the other hand, the rapid increase of the ceiling in recent years has made this effect less important. In 1982, where 68% of total salaries and wages accrued to those below the ceiling, a removal of the ceiling (with contribution rates held fixed) would have raised the effect from social security, SS, by a factor of 1.5 from .066 to .097.

Table 3 compares the social security tax with the federal individual income tax for selected years. Notice that the ratio of revenues raised by social security to that from the income tax (shown in column 5) rises from .07 in 1945 to .63 in 1975, but equals only .60 in 1982.

Column 6 of the table shows a crude measure of the relative "efficiencies" of the two types of taxes. This measure is the revenue raised from social security divided by the contributors of this levy to the overall average marginal tax rate,[7] expressed as a ratio to the corresponding figure for the income tax. On this basis the social security tax looks strikingly more efficient. Specifically, in 1982 the social security levy generates 2.5 times as much revenue per unit of average marginal tax rate as does the income tax, whereas in 1965 the corresponding number was 4.3. The main reason for the decline in this number since 1965 is the sharp rise in the ceiling on earnings, which has a positive effect on the average marginal tax rate from social security, relative to the revenue generated.

The social security levy turns out to be relatively "efficient" because it combines two features of a tax-rate schedule that have been stressed in the literature on optimal taxation. First, it is a flat-rate levy (on labor earnings and income from self-employment) in the range where the tax rate is positive. The shift to a flat-rate income tax has been proposed by, among others, Friedman (1962, Chapter X) and Hall and Rabushka (1983). (Surprisingly, these authors do not seem to mention that, in the

---

[7] It is unclear how to allocate the cross-term, $-\Omega_1 \cdot s_f \cdot \bar{T}$" (column 4 of Table 2) between the two levies, although this term is quantitatively unimportant. The figures shown in Table 3 allocate half of this term to each type of tax.

TABLE 3
A Comparison of the Social Security Tax with the Income Tax

	(1) Social Security	(2)	(3) Federal Individual Income Tax	(4)	(5)	(6)
	Revenues ($ bill.)	Contrib. to Avg. Marg. Tax Rate	Revenues ($ bill.)	Contrib to. Avg. Marg. Tax Rate	Ratio of Revenues (Col. 1/Col. 3)	"Efficiency" Ratio (Col. 5 x col. 4 ÷ col. 2)
1940	0.66	.009	1.01	.056	.65	4.1
1945	1.26	.006	18.5	.257	.07	2.9
1950	2.62	.007	17.4	.196	.15	4.2
1955	5.95	.012	30.4	.228	.20	3.7
1960	12.0	.019	41.8	.233	.29	3.5
1965	17.7	.017	51.1	.211	.35	4.3
1970	38.9	.031	88.8	.241	.44	3.4
1975	75.6	.049	120.8	.261	.63	3.3
1980	140.2	.061	250.9	.300	.56	2.7
1982	178.5	.070	296.7	.289	.60	2.5

Note: Column 2 = SS(column 5 of Table 2) + 1/2 $\Omega_1 \cdot s_f \cdot \bar{T}''$ (column 4 of Table 2).

Column 4 = $\bar{T}'$(column 1 of Table 2) - 1/2 $\Omega_1 \cdot s_f \cdot \bar{T}''$.

Columns 1 and 3 are from U.S. Commerce Dept., U.S. Survey of Current Business, July 1983, and National Income & Product Accounts of the U.S., 1929-1976.

social-security tax, we already have a close approximation to the flat-rate income tax.) In comparison with a graduated-rate system, the flat-rate levy generates the same amount of revenues at a lower average marginal tax rate. Second, as advocated on theoretical grounds by Mirrlees (1971), the social-security tax has a zero marginal rate at the top. However, as noted before, the rapid increase of the ceiling in recent years has made this feature less important than it used to be.

References

Barro, R. J. and C. Sahasakul, "Measuring the Average Marginal Tax Rate from the Individual Income Tax," Journal of Business, October 1983.

Friedman, M., Capitalism and Freedom, Chicago, University of Chicago Press, 1962.

Gordon, Roger H., "Social Security and Labor Supply Incentives," National Bureau of Economic Research Working Paper No. 986, September 1982.

Hall, Robert E. and A. Rabushka, Low Tax, Simple Tax, Flat Tax, New York, McGraw Hill, 1983.

Holik, D., "Individual Income Tax Rates, 1982," SOI Bulletin, Vol. 4, No. 4, Spring 1985, pp. 1-11.

Mirrless, J. A., "An Exploration in the Theory of Optimum Income Taxation," Review of Economic Studies, 38, April, 1971, pp. 175-208.

Thompson, Richard and C. Hicks, "Average and Marginal Tax Rates, 1981 Individual Income Tax Returns," SOI Bulletin, Vol. 3, No. 2, Fall 1983, pp. 41-49.

To order copies of the above papers complete the attached invoice and return to Christine Massaro, W. Allen Wallis Institute of Political Economy, RCER, 109B Harkness Hall, University of Rochester, Rochester, NY 14627. Three (3) papers per year will be provided free of charge as requested below. Each additional paper will require a $5.00 service fee which must be enclosed with your order. For your convenience an invoice is provided below in order that you may request payment from your institution as necessary. Please make your check payable to the **Rochester Center for Economic Research**. **Checks must be drawn from a U.S. bank and in U.S. dollars**.

W. Allen Wallis Institute for Political Economy

Rochester Center for Economic Research, Working Paper Series

OFFICIAL INVOICE

Requestor's Name _____

Requestor's Address _____

_____

_____

_____

Please send me the following papers free of charge (**Limit: 3 free per year**).

WP# _____ WP# _____ WP# _____

I understand there is a $5.00 fee for each additional paper. Enclosed is my check or money order in the amount of $_____. Please send me the following papers.

WP# _____ WP# _____ WP# _____

WP# _____ WP# _____ WP# _____

WP# _____ WP# _____ WP# _____

WP# _____ WP# _____ WP# _____