

AN ECONOMETRIC MODEL OF UNEMPLOYMENT INSURANCE TAX RECEIPTS

A CBO Technical Analysis Paper

August 1977



Congress of the United States
Congressional Budget Office
Washington, D.C.

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**The Congress of the United States
Congressional Budget Office**

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PREFACE

This technical staff paper is one of a series that describes the methodology for deriving estimates on a variety of budget issues and related topics. Such papers are intended to aid persons engaged in the more technical aspects of budgetary and related questions of public policy. In accordance with the Congressional Budget Office's mandate to provide objective and impartial analysis, this paper contains no recommendations.

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August 1977

Alice M. Rivlin
Director

1. The first part of the document is a list of the names of the members of the committee.

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CHAPTER I. SUMMARY AND INTRODUCTION

This paper is a description of a model of unemployment insurance tax receipts which was developed at the Congressional Budget Office. The model is used to estimate expected future receipts and to estimate the changes in revenues which would result from legislative initiatives.

The unemployment insurance system is financed by a two-part payroll tax levied at the state and federal levels. The tax applies to almost every employer in covered industries. The principal industries which are not now covered are state and local government, agriculture, and domestic service. Most employers in these industries will be covered beginning in 1978.

The taxable payroll for each covered employer is defined under federal law as total wages paid, up to a limit of \$4,200 per employee for each year. This \$4,200 limit is called the "taxable wage base." Twenty-two states have instituted higher taxable wage bases for their state taxes. On January 1, 1978, the federal taxable wage base will rise to \$6,000.

The Federal Tax

The Federal Unemployment Tax Act (FUTA) established a tax of 3.2 percent on taxable payrolls. The tax is reduced by 2.7 percent, however, for employers in states with approved unemployment compensation programs. Since all states have federally approved programs, an employer's effective federal tax rate is only 0.5 percent. These FUTA taxes flow into three federal accounts:

- the Employment Security Administration Account (ESAA), which finances federal and state costs associated with administering the unemployment compensation program;

- the Extended Unemployment Compensation Account (EUCA), which pays for 50 percent of the benefits under the Extended Benefits (EB) program. Up until March 31, 1977, this account also financed the Federal Supplemental Benefits (FSB) program, which is now paid for directly out of general federal funds; and
- the Federal Unemployment Account (FUA), which provides interest-free loans to states that cannot meet their benefit costs. If the loans are not repaid after a given period, the law requires that the federal tax on employers in the state be increased until they are repaid (unless the Secretary of Labor grants a waiver of this penalty increase).

Beginning January 1, 1977, the effective FUTA tax rate was raised to 0.7 percent and will remain there until all loans to the EUCA account have been repaid.

The State Tax

The taxes levied at the state level go into separate unemployment insurance trust funds for each state. ^{1/} In any given state these funds are used to pay for the regular benefits and half the extended benefits drawn by unemployed persons who previously worked in that state.

While the federal tax remains at a uniform rate of 0.5 percent, all 50 states and the District of Columbia have enacted an experience-rating system. This varies an employer's tax rate on the basis of the benefits received by his employees, thereby penalizing employers whose employees experience high levels of unemployment by imposing higher tax rates on their taxable payrolls (up to a maximum tax rate established by each state). Hawaii, Washington, and the District of Columbia have temporarily suspended their experience-rating systems in favor of a uniform rate, and Puerto Rico has no provision for experience rating under the Federal Unemployment Tax Act (FUTA).

^{1/} In addition to the 50 states, the District of Columbia and Puerto Rico are also treated as separate jurisdictions in the unemployment insurance system.

Under federal law, states may have minimum tax rates as low as zero. At present, four states are using minimum tax rates this low. Maximum tax rates can rise above 2.7 percent, and three states are now applying a tax rate of at least 6.0 percent to some employers. The average tax rate for calendar 1976 is estimated by the Department of Labor to be approximately 2.5 percent. The maximum, minimum, and estimated average tax rates for each state in calendar 1976 are presented in Appendix Table A-1.

A Note on Modeling Tax Receipts and Sources of Data

The primary purpose of this model is to estimate UI tax receipts in future periods as a function of economic assumptions generated by the CBO. Because these assumptions do not generally contain disaggregations of economic series, the type of modeling which can be performed is constrained. In particular, various structural approaches are for the most part not feasible.

For example, covered employment is estimated from employment in the entire economy. This is not very revealing from a structural point of view. Covered employment could, on a historical basis, be estimated as a function of employment trends in specific industries.

Economic downassumptions of the CBO do not, however, contain detailed breakdowns of employment by industry. If breakdowns of employment by industry were used in the historical estimation of UI taxes, therefore, then a second model would be needed to estimate these industry breakdowns as a function of total employment for future periods. Besides entailing substantial extra effort, this indirect approach would probably not achieve significantly better results. Hence, this model was constructed so that the only independent variables used are those regularly available in the economic assumptions of the CBO.

The source of the data on unemployment insurance revenues for this model is the form BA-R 1114 of the Division of Government Financial Operations, Department of the Treasury. This form is issued quarterly and is therefore more convenient to use than the Monthly Treasury Statement (MTS). The form BA-R 1114 also contains information such as interest earned, trust fund balances, and advances, including state-by-state detail, none of which is available in the MTS.

Because of the structural changes that occur over the long run in the economy, and because of the difficulties involved in constructing a complete data set, it was decided somewhat arbitrarily to start the estimation period in 1965. Because the quarterly UI revenue data exhibit seasonal fluctuations and the economic assumptions of the CBO are seasonally adjusted, the equations which follow incorporate quarterly seasonal dummies. T-statistics are printed in parentheses beneath the coefficients.

CHAPTER 11. THE MODEL OF THE STATE FUNDS

Basic Structure of the Model of State Taxes

The state tax portion of the unemployment insurance tax receipt model can be described briefly as follows:

First, total covered wages are estimated from total wages and salaries in the entire economy. Then, covered employment is estimated from total employment. These two variables yield an average annual wage in covered employment.

The ratio of total taxable payroll to total covered payroll is then estimated as a function of the ratio of the taxable wage base to the average covered wage and also as a function of time. Multiplying the ratio of total taxable payroll to total covered payroll by the total covered payroll yields estimated total taxable payroll.

Next, the national average state tax rate is estimated from past ratios of state trust fund reserves to taxable payrolls. Multiplying total taxable wages by this estimated average state tax rate yields estimated state tax revenues.

Earned interest for a given period is estimated as a function of the balance in the trust fund, the interest rate, and the difference between revenues and outlays. This interest is then added to taxes to yield total state trust fund revenues.

Finally, the initial trust fund balance for the next period is calculated from the balance, taxes, interest, and benefit payments during the last period.

This system can be described symbolically:

total covered wages = $f(\text{total wages + salaries in economy})$

covered employment = $f(\text{total employment in economy})$

average covered wage = $\frac{\text{total covered wages}}{\text{covered employment}}$

$$\frac{\text{total taxable wages}}{\text{total covered wages}} = f\left(\frac{\text{taxable wage base}}{\text{average covered wage}}, \text{time}\right)$$

$$\text{total covered wages} \times \frac{\text{total taxable wages}}{\text{total covered wages}} = \text{total taxable wages}$$

$$\text{average tax rate} = f\left(\frac{\text{trust fund balance}}{\text{total taxable payroll}} [\text{for past years}]\right)$$

$$\text{total state UI tax receipts} = \text{total taxable wages} \times \text{average tax rate}$$

$$\text{earned interest} = f(\text{previous balance, interest rate, revenues-outlays})$$

$$\text{total state trust fund receipts} = \text{state taxes} + \text{interest}$$

$$\text{balance}_{t+1} = \text{balance}_t + \text{taxes}_t + \text{interest}_t - \text{benefit payments}_t$$

Total Covered Wages

Total covered wages in private industry are primarily a function of wages and salaries in the entire economy for the same period. In addition, a dummy variable is added to reflect the change in the coverage of the UI system in 1972. ^{1/}

$$\begin{aligned} \log(\text{covered wages}) = & -1.58 + 0.969 \log(\text{wages+salaries}) \\ & (-19.1) \quad (72.0) \\ & + 0.069 \text{ D-Cov} - 0.029 \text{ Season2} \\ & \quad (10.7) \quad (-7.1) \\ & + 0.038 \text{ Season3} + 0.71 \text{ Season4} \\ & \quad (9.0) \quad (17.9) \\ R^2 = & .999 \quad DW = 2.058 \quad \text{Rho} = 0.16 \end{aligned}$$

^{1/} The firm size requirement for employers in covered industries was lowered from eight or more workers to one worker (on at least one day in each of 20 weeks in a calendar year). The logged relationship used reflects the assumption that the independent variables will have a constant proportional relationship with the dependent variable, rather than a constant absolute relationship.

where

covered wages = total covered wages per calendar
quarter (billions of dollars)

wages and salaries = quarterly wages and salaries
(billions of dollars) in entire
to 1 from 1972 on, zero
elsewhere

D-Cov = dummy for extension of coverage of
unemployment compensation system,
set equal to 1 from 1972 on, zero
elsewhere

Season2, Season3, Season4 = dummies for second, third, and fourth
calendar quarters, respectively

The actual values for covered wages, the predicted values,
and the difference between the two are displayed in Appendix
Table A-2.

Covered Employment

Covered employment is estimated as a function of total
employment in the economy, and once again a dummy is included to
reflect the extension of coverage of the unemployment insurance
system. ^{2/}

$$\begin{aligned}\log(\text{covered employment}) = & -4.64 + 1.37 \log(\text{employment}) \\ & (-5.82) \quad (19.38) \\ & + 0.063 \text{ D-Cov} + 0.025 \text{ Season2} \\ & \quad (9.44) \quad (12.58) \\ & + 0.039 \text{ Season3} + 0.028 \text{ Season4} \\ & \quad (17.38) \quad (13.90) \\ R^2 = .997 \quad DW = 1.74 \quad Rho = 0.74\end{aligned}$$

^{2/} The logged relationship used again reflects the assumption
that the independent variables will have a constant propor-
tional relationship with the dependent variables, rather than
a constant absolute relationship.

where

covered employment = average covered employment in private industry per quarter (thousands).

employment = average employment in entire economy, seasonally adjusted (thousands).

D-Cov = dummy for extension of coverage of UC system, set equal to 1 from 1972 on, zero before 1972.

Season2, Season3, Season4 = dummies for second, third, and fourth calendar quarters respectively.

The coefficient of 1.37 on the employment variable indicates that covered employment has grown at a slightly faster percentage rate than total employment, even after controlling for the extension of coverage in 1972. This is probably a reflection of the fact that coverage of additional employment has been elected at the state level on a continuing basis over time, not just as a result of federal requirements such as the legislation which took effect in 1972. As coverage approaches universality, this coefficient should decrease in future reestimations of this equation.

Appendix Table A-3 presents the actual values, estimates, and errors for covered employment.

Average Covered Wage

This variable is not estimated from exogenous variables, but is calculated by dividing estimated covered wages by estimated covered employment.

Ratio of Taxable Wages to Covered Wages

In order to derive total taxable wages, the ratio of total taxable wages to total covered wages is estimated as a function of the ratio of the taxable wage base to the average covered wage, plus a time trend.

This specification was chosen for a variety of reasons. The relationship between the ratios was the one believed to be the most stable. With the inclusion of the taxable wage base in the ratio, this equation also allows one to estimate the effects of changes in this important parameter of the program. Finally, the time trend serves to capture trends in the dispersion of earnings and possibly in turnover of employees which would affect the relationship between the ratios but are not easily modeled. 3/

$$\frac{\text{taxable wages}}{\text{total wages}} = \frac{1.310}{(107.4)} \left(\frac{WB_1}{AW_1} \right)^{\frac{1}{2}} + \frac{0.873}{(70.6)} \left(\frac{WB_2}{AW_2} \right)^{\frac{1}{2}} + \frac{0.511}{(43.8)} \left(\frac{WB_3}{AW_3} \right)^{\frac{1}{2}} + \frac{0.364}{(29.7)} \left(\frac{WB_4}{AW_4} \right)^{\frac{1}{2}} - \frac{0.00151}{(-5.39)} T$$
$$R^2 = .995 \quad DW = 2.12$$

where AW = the average quarterly wage per covered worker

WB = taxable wage base

3/ The square-root relationship was chosen because it is an easily performed transformation which embodies the expected relationship between the ratio of taxable to total wages and the ratio of the wage base to average wages--namely that $\frac{\text{taxable wages}}{\text{total wages}} = 0$ when the wage base = 0 and that $\frac{\text{taxable wages}}{\text{total wages}}$ increases as the wage base increases, but at a decreasing rate. This relationship can also be described as one where the first derivative is positive and the second derivative is negative.

$\frac{WB}{AW}$ = one fourth of the taxable wage base,
divided by the average covered wage
in a given quarter

$\frac{WB_1}{AW_1}, \frac{WB_2}{AW_2}, \frac{WB_3}{AW_3}, \frac{WB_4}{AW_4} = \frac{WB}{AW}$ for the first, second,
third, and fourth calen-
dar quarters respec-
tively, equal to zero
otherwise. 4/

T = time trend, set equal to 1 in 1965:III.

The taxable wage base variable (WB) is not the FUTA wage base because at any given time various states will have adopted taxable wage bases higher than the FUTA base. Instead, an average "effective" wage base was constructed by weighting each state's wage base by its proportion of covered wages. The resulting series and the source data are presented in Appendix Table A-4.

Total Taxable Wages

Total wages are obtained by multiplying estimated total covered wages by the ratio described in the preceding section. These estimates are presented in Table 1.

The advantages of estimating UI receipts on a quarterly basis become apparent here. Because of the low taxable wage base, unemployment insurance tax receipts are strongly seasonal. For example, the total of \$6.4 billion in state taxes for fiscal year 1976 was distributed 23 percent, 14 percent, 11 percent, and 52 percent among the four quarters. As is demonstrated in Table 1, the model captures this seasonality in taxable wages.

The quarterly model is also useful in estimating the effects of program changes because increases in the taxable wage base usually occur at the beginning of a calendar year, but revenue estimates are also needed on a fiscal year basis.

4/ Alternatively, these four variables can be described as the result of taking four seasonal dummies and multiplying each one by $\frac{WB}{AW}$.

TABLE 1. TOTAL TAXABLE WAGES IN PRIVATE INDUSTRY: FOR CALENDAR YEARS 1965 (FIRST QUARTER) THROUGH 1975 (FIRST QUARTER); IN BILLIONS OF DOLLARS

Year	Actual	Estimated	Error
1965: IV	18.0	18.1	+0.1
1966: I	61.2	65.3	+4.1
1966: II	47.7	45.1	-2.6
1966: III	28.5	26.8	-1.7
1966: IV	19.3	19.5	+0.2
1966	156.7	156.7	0.0
1967: I	66.6	68.1	+1.5
1967: II	48.1	46.7	-1.4
1967: III	27.5	27.6	+0.1
1967: IV	18.9	19.7	+0.8
1967	161.1	162.1	+1.0
1968: I	72.0	71.4	-0.6
1968: II	50.4	49.5	-0.9
1968: III	28.7	29.1	+0.4
1968: IV	20.3	20.5	+0.2
1968	171.4	170.5	+0.9
1969: I	78.2	75.6	-2.6
1969: II	52.4	52.1	-0.3
1969: III	29.7	30.5	+0.8
1969: IV	21.2	21.0	-0.2
1969	181.5	179.2	-2.3
1970: I	82.5	80.0	-2.5
1970: II	52.0	53.3	+1.3
1970: III	28.5	30.3	+1.8
1970: IV	19.4	20.5	+1.1
1970	182.4	184.1	+1.7
1971: I	82.8	81.3	-1.5
1971: II	51.9	54.2	+2.3
1971: III	28.2	30.6	+2.4
1971: IV	20.0	21.0	+1.0
1971	182.9	187.1	+4.2
1972: I	98.9	102.5	+3.6
1972: II	69.2	69.8	+0.6
1972: III	40.3	39.5	-0.8
1972: IV	27.9	27.3	-0.6
1972	236.3	239.1	+2.8
1973: I	108.7	109.0	+0.3
1973: II	72.4	74.2	+1.8
1973: III	42.6	41.8	-0.8
1973: IV	30.8	28.3	-2.5
1973	254.5	253.3	-1.2
1974: I	117.6	115.2	-2.4
1974: II	74.6	77.5	+2.9
1974: III	43.0	43.1	+0.1
1974: IV	30.2	28.2	-2.0
1974	265.4	264.0	-1.4
1975: I	120.7	116.4	-4.3

Although the estimates are certainly acceptable on a quarterly basis, it should be noted that the percentage error for any annual period is generally even less because of offsetting errors in the quarterly estimates.

Average State Tax Rate

As noted earlier, each state has its own system for determining an employer's tax rate. These systems involve some type of formula which relates an employer's record in laying off workers to the size of his taxable payroll. An experience schedule yields a specific tax rate for a specific value of the formula. Alternate schedules may be used, depending on the condition of the trust fund of the entire state.

There are basically four categories of formulas:

- (1) reserve-ratio formulas, in which an employer's reserves are divided by his taxable payroll.
- (2) benefit-ratio formulas, in which an employer's benefit payments are divided by his taxable payroll.
- (3) benefit-wage-ratio formulas, in which the taxable wages of those workers who become unemployed and receive benefits are divided by the employer's total taxable payroll.
- (4) payroll variation formulas, in which the tax rate is a function of the percentage change in an employer's payroll over time.

The reserve-ratio formula is by far the most popular method and is used by 33 states at present. These states contained 62 percent of all covered workers and collected 69 percent of all state taxes in calendar 1975.

In the following equation, the average state tax rate was modeled approximately along the lines of a reserve-ratio experience-rating formula, using a second-degree distributed lag constrained to equal zero at both ends:

TABLE 2. AVERAGE STATE TAX RATES: CALENDAR YEARS 1968 (FIRST QUARTER) THROUGH 1975 (FIRST QUARTER); IN PERCENTS

Year <u>a/</u>	Actual	Estimated	Error
1968:I	1.56	1.58	+.02
1968:II	1.53	1.53	.00
1968:III	1.51	1.50	-.01
1968:IV	1.49	1.48	-.01
1969:I	1.44	1.47	+.03
1969:II	1.42	1.44	+.02
1969:III	1.41	1.43	+.02
1969:IV	1.41	1.41	.00
1970:I	1.38	1.41	+.03
1970:II	1.37	1.39	+.02
1970:III	1.37	1.38	+.01
1970:IV	1.36	1.38	+.02
1971:I	1.41	1.39	-.02
1971:II	1.43	1.43	.00
1971:III	1.45	1.47	+.02
1971:IV	1.46	1.50	+.04
1972:I	1.62	1.54	-.08
1972:II	1.69	1.66	-.03
1972:III	1.72	1.74	+.02
1972:IV	1.75	1.79	+.04
1973:I	1.88	1.85	-.03
1973:II	1.96	1.95	-.01
1973:III	2.00	2.01	+.01
1973:IV	2.02	2.02	.00
1974:I	2.00	2.02	+.02
1974:II	1.99	2.00	+.01
1974:III	1.98	1.99	+.01
1974:IV	1.98	1.98	.00
1975:I	1.97	1.99	+.02

a/ For the twelve-month period ending with the quarter listed.

Total State Tax Receipts

Total state tax receipts are produced by multiplying estimated taxable wages by the estimated average state tax rate. Because there is approximately a one-quarter lag in receipt of funds by the treasury, tax receipts for a given quarter are the product of the taxable wages and tax rate for the preceding quarter. The estimates of state tax receipts are presented in Table 3, where they are compared with the actual figures reported in the appropriate volumes of The Budget of the United States.

Included in the state tax figures are payments made to the trust fund on a reimbursable basis. Some state and local governments and nonprofit organizations have elected to finance unemployment compensation benefit payments on this basis. Instead of being taxed beforehand, these employers are "billed" whenever a former employee collects benefits. Such reimbursements have not always been consistently reported as trust fund income by all states, although they are now required to do so.

TABLE 3. STATE TAXES: FISCAL YEARS 1968 THROUGH 1975

Year	Estimated Taxable Wages <u>b/</u> (Billions of Dollars)	Estimated Tax Rate <u>b/</u> (Percents)	Estimated State Taxes <u>b/</u> (Billions of Dollars)	Actual State Taxes <u>a/</u> (Billions of Dollars)	Error (Billions of Dollars)
1968	165.4	1.56	2.58	2.60	-0.02
1969	174.7	1.44	2.52	2.56	-0.04
1970	183.6	1.38	2.53	2.56	-0.03
1971	185.4	1.41	2.61	2.58	+0.03
1972	208.3	1.62	3.37	3.23	+0.14
1973	245.6	1.88	4.62	4.63	-0.01
1974	259.5	2.00	5.19	5.26	-0.07
1975	265.2	1.97	5.22	5.30	-0.08

a/ SOURCE: The Budget of the United States Government, years 1970-1977.

b/ Because of the one-quarter lag in depositing receipts in the Treasury, these columns are calculated for the 12-month period ending with the first quarter of the calendar year.

These reimbursable payments introduce other inaccuracies into the estimation procedure. Workers in nonprofit organizations are included in the employment figures in this model, but the payments made on their behalf on a reimbursable basis are not identical to those which would have been made through a payroll tax. Hence, estimates generated by applying a tax rate to payrolls will be slightly inaccurate. Covered state and local government workers are not included in the employment figures but some of the reimbursable payments for them are included in the state tax figures. It is very difficult to model these payments explicitly, but as long as they are constant or follow a trend they will be implicitly incorporated into the estimates produced by the model.

When the coverage of state and local government employees is significantly expanded, however (which will happen in 1978 as a result of PL 94-566), adjustments must be made. As an approximate solution to this situation, the CBO estimating procedure adds to the estimate of state taxes an amount equal to the estimated additional benefit payments resulting from the new coverage.

Earnings

State trust fund earnings are estimated as a function of the trust fund balance at the beginning of the period, the interest rate, and the adequacy of current income to cover outgo. ^{5/}

$$\log(\text{earnings}) = -6.96 + 1.09 \log(\text{balance, start of period})$$

$$(-5.37) \quad (13.48)$$

$$+ 0.567 \log(\text{bond rate}) + 0.584 \text{ flow adequacy}$$

$$(4.38) \quad (7.47)$$

$$R^2 = .974 \quad DW = 1.64 \quad \text{Rho} = 0.85$$

^{5/} The logged relationship here results from the fact that if the general equation is earnings = rate x balance, then taking the logs provides a linear relationship.

where bond rate = yield on Moody's AAA corporate bonds (in percentage points)

$$\text{flow adequacy} = \frac{\text{deposits} - \text{withdrawals}}{\text{balance, start of period}}$$

and earnings and balance are measured in thousands of dollars.

The flow-adequacy variable is related to the amount of fund balance which will be used in benefit payments. The three-month Treasury bill rate was tried as a measure of the interest rate, but it did not perform as well as the bond rate.

The actual values, the estimated values, and the errors are presented in Appendix Table A-5.

Total State Trust Fund Receipts

Total state trust fund receipts are obtained by adding earnings to taxes.

The balance at the beginning of the next period is calculated according to the following formula:

$$\begin{aligned} \text{balance}_{t+1} = & \text{balance}_t + \text{taxes}_t + \text{earnings}_t \\ & - \text{benefit payments}_t \quad 6/ \end{aligned}$$

6/ For a description of the method used by CBO to estimate benefit payments, see Estimating Outlays for Unemployment Compensation Programs, Congressional Budget Office, Technical Analysis Paper No. 1, October 27, 1976.

Beginning early in calendar 1975, a number of state trust funds have required repayable advances which have totaled hundreds of millions of dollars in most of the quarters since then. These advances complicate the process of calculating the end-of-quarter balance. Although large amounts of new advances will probably not be needed in the foreseeable future, some state funds will continue to borrow, and the repayment of these advances should also be included in the calculations.

Sufficient data have not been available to create a rigorous model of this advance-and-repayment process. At present, therefore, this process is dealt with on a quarter-to-quarter ad hoc basis, taking into account new data and anticipated developments. Although the new balance calculation is important in considering the status of the trust fund and projecting budget authority, it should be emphasized that it only affects a small part of direct trust fund receipts (i.e., earnings), and even this small part is not included in a unified budget.

CHAPTER III. FUTA TAXES AND RAILROAD RETIREMENT

FUTA Taxes

FUTA taxes are the taxes collected at the federal level. These taxes are estimated in a manner similar to that used to estimate state taxes.

Total covered wages, total covered employment, and average covered wage are estimated by means of the equations described in the state model. The ratio of taxable wages to total wages is then also calculated using the equation described in Part Two. The FUTA taxable wage base is used, however, instead of the average effective state wage base. ^{1/}

FUTA taxes are then derived by multiplying the estimated total taxable wages by the effective FUTA tax rate. This effective tax rate was 0.4 percent from 1961 to 1969, was 0.5 percent from 1970 to 1976 (with a 0.08 percent surcharge added for calendar year 1973), and was raised to 0.7 percent in 1977. It will remain at this level until all loans to the FUTA accounts are repaid.

The estimated FUTA taxes, along with the actual receipts recorded in the Budget of the United States, are presented in Table 4.

^{1/} The FUTA base was \$3,000 through 1971, and \$4,200 for the period 1972-1977, and it will be \$6,000 in 1978. There are no aggregate data available on wages subject to the FUTA tax.

TABLE 4. ESTIMATED FUTA TAXES: FISCAL YEARS 1967 THROUGH 1976

Year	Estimated Taxable Wages (Billions) of Dollars)	FUTA Tax Rate (Percent)	Estimated FUTA Taxes (Billions of Dollars)	Actual FUTA Taxes <u>a/</u> (Billions of Dollars)	Error (Billions of Dollars)
1967	151.2	0.4	0.605	0.589	+0.016
1968	157.0	0.4	0.628	0.601	+0.027
1969	164.9	0.4	0.660	0.629	+0.031
1970	172.4	0.4/0.5	0.765	0.770	-0.005
1971	174.6	0.5	0.873	0.964	-0.091
1972	201.9	0.5	1.01	1.01	0
1973	243.2	0.5/0.58	1.30	1.30	0
1974	256.7	0.58/0.5	1.40	1.45	-0.05
1975	261.9	0.5	1.31	1.36	-0.05
1976	266.5	0.5	1.33	1.53	-0.20

1/ SOURCE: The Budget of The United States Government, various years.

Earnings and the new trust fund balance are calculated by using the equations presented for the state trust fund. As is the case with the state trust fund, the recent recession created a large need for advances to the federal extended unemployment compensation account (EUCA), which financed federal supplemental benefits (FSB) and half the cost of extended benefits (EB). The meager reserves in this account were exhausted during the second quarter of 1975, and thereafter FSB and the federal share of EB were in effect paid out of general revenues (by means of advances). Because of the change to general revenue financing of FSB and the increase in the FUTA tax rate, however, further advances are not anticipated in the future.

Railroad Unemployment Tax Receipts

The financial transactions of the railroad unemployment insurance system are made through the unemployment trust fund. These transactions are small in relation to the other trust fund components, however. In fiscal year 1976 for example, railroad unemployment tax receipts were less than 2 percent the size of state tax receipts.

Because of its small size this account was not modeled as a trust fund. Instead, estimated receipts were set equal to estimated outlays for administration and benefit payments. The estimated outlays were generated by a separate model. 2/

Total Receipts from All Sources

Total receipts for the entire unemployment trust fund are obtained by combining the state taxes, the FUTA tax, railroad retirement contributions, and earnings from all sources. When revenues are needed on a unified budget basis, however, earnings are not included in the total, because the earnings are both paid out and received by the federal government.

2/ See Estimating Outlays for Unemployment Compensation Programs, Congressional Budget Office, Technical Analysis Paper No. 1, October 27, 1976.

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APPENDIX

TABLE A-1. AVERAGE, MAXIMUM, AND MINIMUM STATE TAX RATES, 1976 a/

State	Maximum Percentage	Average Percentage (estimated)	Minimum Percentage
Alabama	4.0	1.8	0.5
Alaska	4.8	3.7	2.3
Arizona	2.9	1.9	0.1
Arkansas	4.4	1.8	0.5
California	4.9	3.6	1.4
Colorado	3.6	1.9	0.0
Connecticut	4.5	3.0	1.6
Delaware	4.5	2.5	1.6
District of Columbia	2.7	2.7	2.7
Florida	4.5	2.1	0.7
Georgia	4.03	1.8	0.05
Hawaii	3.0	3.0	3.0
Idaho	3.6	1.7	0.5
Illinois	4.0	1.9	0.1
Indiana	3.3	1.8	0.3
Iowa	4.7	2.3	0.7
Kansas	3.6	2.3	0.0
Kentucky	4.2	2.5	0.4
Louisiana	3.3	1.9	0.7
Maine	5.0	3.1	2.4
Maryland	3.6	2.0	2.8 <u>b/</u>
Massachusetts	5.1	4.1	3.9
Michigan	6.6	3.7	0.8
Minnesota	6.0	1.8	0.9
Mississippi	2.7	2.2	1.3
Missouri	3.2	2.8	0.5
Montana	3.1	2.2	1.5
Nebraska	3.7	2.6	0.1
Nevada	3.5	3.2	1.1
New Hampshire	4.15	2.5	2.4

(continued)

TABLE A-1. (CONTINUED)

State	Maximum Percent	Average (est.) Percent	Minimum Percent
New Jersey	6.2	3.4	1.2
New Mexico	3.6	1.9	0.6
New York	5.2	3.5	1.5
North Carolina	4.7	1.4	0.3
North Dakota	4.2	2.2	0.9
Ohio	4.3	2.3	0.6
Oklahoma	2.7	1.7	1.2
Oregon	4.0	3.3	2.6
Pennsylvania	4.0	2.9	1.0
Puerto Rico ^{c/}	3.45	3.0	2.95
Rhode Island	5.0	3.9	3.2
South Carolina	4.1	2.1	1.3
South Dakota	2.7	1.0	0.0
Tennessee	4.0	1.6	0.4
Texas	4.0	0.6	0.1
Utah	2.8	1.7	1.3
Vermont	5.0	2.3	1.0
Virginia	2.7	1.2	0.55
Washington	3.0	3.0	3.0
West Virginia	3.3	1.9	0.0
Wisconsin	5.2	2.1	0.5
Wyoming	3.86	2.2	1.16
United States		2.5	

a/ SOURCE: Significant Provisions of State Unemployment Insurance Laws, January 3, 1977, and Attachment to Unemployment Insurance Program Letter 28-76, both U.S. Department of Labor, Unemployment Insurance Service.

b/ The disparity between the minimum and the average tax rates for Maryland results from the fact that Maryland raised its minimum rate from 0.7 percent to 2.8 percent in the middle of the year.

c/ Puerto Rico does not have an experience-rating system. This rate applies to employers subject to Puerto Rico law, but not to the FUTA.

TABLE A-2. TOTAL COVERED PAYROLL IN PRIVATE INDUSTRY: IN BILLIONS OF DOLLARS

Year	Actual	Estimated	Error
1965:IV	70.3	69.2	-1.1
1966:I	65.4	66.0	+0.6
1966:II	69.7	69.4	-0.3
1966:III	73.0	71.9	-1.1
1966:IV	75.6	75.8	+0.2
1967:I	71.5	71.4	-0.1
1967:II	74.1	74.3	+0.2
1967:III	76.1	76.4	-0.3
1967:IV	80.0	80.7	+0.7
1968:I	77.7	77.1	-0.6
1968:II	81.2	81.5	+0.3
1968:III	83.4	84.2	+0.8
1968:IV	88.7	88.8	+0.1
1969:I	85.2	84.4	-0.8
1969:II	89.6	89.2	-0.4
1969:III	92.1	92.3	+0.2
1969:IV	97.8	96.8	-1.0
1970:I	90.8	91.8	+1.0
1970:II	94.6	94.9	+0.3
1970:III	96.6	96.9	+0.3
1970:IV	100.7	100.3	-0.4
1971:I	93.6	95.9	+2.3
1971:II	99.9	100.0	+0.1
1971:III	103.3	102.7	-0.6
1971:IV	108.4	108.1	-0.3
1972:I	110.4	111.3	+0.9
1972:II	115.4	116.7	+1.3
1972:III	118.5	119.7	+1.2
1972:IV	125.0	127.2	+2.2
1973:I	123.5	121.9	-1.6
1973:II	129.3	128.9	-0.4
1973:III	132.4	132.7	+0.3
1973:IV	139.9	140.7	+0.8
1974:I	135.0	133.0	-2.0
1974:II	141.7	140.4	-1.3
1974:III	145.9	145.0	-0.9
1974:IV	152.1	151.5	-0.6
1975:I	141.6	140.6	-1.0

TABLE A-3. TOTAL COVERED EMPLOYMENT IN PRIVATE INDUSTRY: IN MILLIONS OF DOLLARS

Year	Actual	Estimated	Error
1965: IV	46.18	46.03	-0.15
1966: I	45.39	45.30	-0.09
1966: II	47.35	46.91	-0.44
1966: III	48.76	48.39	-0.37
1966: IV	48.61	48.53	-0.08
1967: I	47.18	47.05	-0.13
1967: II	48.40	48.63	+0.23
1967: III	49.63	49.66	+0.03
1967: IV	49.52	49.51	-0.01
1968: I	48.38	48.05	-0.33
1968: II	49.99	50.26	+0.27
1968: III	51.34	50.82	-0.52
1968: IV	51.29	51.02	-0.27
1969: I	50.32	50.31	-0.01
1969: II	52.16	51.82	-0.32
1969: III	53.46	53.21	-0.25
1969: IV	52.99	53.05	+0.06
1970: I	51.45	51.64	+0.19
1970: II	52.23	52.52	+0.29
1970: III	52.86	53.00	+0.14
1970: IV	51.55	52.31	+0.76
1971: I	50.66	50.36	-0.30
1971: II	52.18	52.26	+0.08
1971: III	53.11	53.48	+0.37
1971: IV	52.92	53.26	+0.34
1972: I	55.88	55.99	+0.11
1972: II	58.26	58.05	-0.21
1972: III	59.50	59.69	+0.19
1972: IV	60.10	59.46	-0.64
1973: I	59.58	59.22	-0.36
1973: II	61.81	61.82	+0.01
1973: III	62.94	63.01	+0.07
1973: IV	63.13	63.07	-0.06
1974: I	61.43	61.76	+0.33
1974: II	63.27	63.07	-0.20
1974: III	64.15	64.22	+0.07
1974: IV	63.00	62.88	-0.12
1975: I	59.52	60.11	+0.59

TABLE A-4. STATES WITH TAXABLE WAGE BASES GREATER THAN THE FUTA BASE: CALENDAR YEARS 1965 THROUGH 1976

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Alaska	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	10,000	10,000	10,000
Arizona	3,600	3,600	3,600	3,600	3,600	3,600	3,600					7,000
California	3,800	4,100	3,800	3,800	3,800	3,800	3,800				6,000	6,000
Connecticut	3,600	3,600	3,600	3,600	3,600	3,600	3,600					
Delaware	4,200	4,300	4,600	4,800	5,000	5,500	6,000	6,300	6,500	6,800	7,300	7,800
Hawaii	3,600	3,600	3,600	3,600	3,600	3,600	3,600					7,800
Idaho	3,600	3,600	3,600	3,600	3,600	3,600	3,600					
Massachusetts	3,600	3,600	3,600	3,600	3,600	3,600	3,600					5,400
Michigan	3,600	3,600	3,600	3,600	3,600	3,600	3,600					6,200
Minnesota	3,600	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	6,100
Nevada	3,800	3,800	3,800	3,800	3,800	3,800	3,800	4,400			4,800	5,400
New Jersey												
North Dakota	3,600	3,600	3,600	3,600	3,600	3,600	3,600					7,000
Oregon	3,600	3,600	3,600	3,600	3,600	3,600	3,600		5,000		5,000	
Pennsylvania	3,600	3,600	3,600	3,600	3,600	3,600	3,600					
Rhode Island	3,600	3,600	3,600	3,600	3,600	3,600	3,600				4,800	4,800
Tennessee	3,300	3,300	3,300	3,300	3,300	3,300	3,600					
Utah	4,200	4,200	4,200	4,200	4,200	4,200	4,200					6,000
Vermont	3,600	3,600	3,600	3,600	3,600	3,600	3,600					
West Virginia	3,600	3,600	3,600	3,600	3,600	3,600	3,600					
Wisconsin		3,600	3,600	3,600	3,600	3,600	3,600					6,000
Wyoming												
Alabama												4,800
Georgia												6,000
Iowa												6,000
Missouri												4,500
Montana												4,800
Puerto Rico												
Washington												
Average State												
Taxable Wage												
Base a/	3,244	3,321	3,289	3,328	3,330	3,332	3,357	4,263	4,273	4,324	4,361	4,976

SOURCES: Handbook of Unemployment Insurance Financial Data, 1938-1970, (Unemployment Insurance Service, Department of Labor, 1971) and Joseph Hickey, Unemployment Insurance Service.

NOTE: FUTA Taxable Wage Base was \$3,000 through 1971 and \$4,200 thereafter.

a/ Average derived by weighting states by their covered payrolls in 1970.

TABLE A-5. TRUST FUND EARNINGS: IN MILLIONS OF DOLLARS

Year	Actual	Estimated	Error
1965:IV	72.8	75.0	+ 2.2
1966:I	72.5	74.4	+ 1.9
1966:II	76.9	78.6	+ 1.7
1966:III	87.5	88.0	+ 0.5
1966:IV	92.4	93.8	+ 1.4
1967:I	93.3	90.0	- 3.3
1967:II	96.8	97.5	+ 0.7
1967:III	103.1	106.7	+ 3.6
1967:IV	105.1	111.5	+ 6.4
1968:I	105.7	106.7	+ 1.0
1968:II	108.6	109.1	+ 0.5
1968:III	122.1	114.6	- 7.5
1968:IV	124.0	128.0	+ 4.0
1969:I	123.8	129.3	+ 5.5
1969:II	127.5	130.1	+ 2.6
1969:III	141.1	137.6	- 3.5
1969:IV	143.8	150.4	+ 6.6
1970:I	143.5	147.9	+ 4.4
1970:II	146.8	147.4	+ 0.6
1970:III	162.2	151.0	-11.2
1970:IV	157.2	155.0	- 2.2
1971:I	144.6	136.8	- 7.8
1971:II	136.6	136.5	- 0.1
1971:III	125.9	134.2	+ 8.3
1971:IV	119.9	117.9	- 2.0
1972:I	109.2	105.7	- 3.5
1972:II	107.0	105.9	- 1.1
1972:III	112.3	113.4	+ 1.1
1972:IV	113.8	113.9	+ 0.1
1973:I	109.6	109.2	- 0.4
1973:II	116.5	115.7	- 0.8
1973:III	144.9	132.7	-12.2
1973:IV	148.4	149.0	+ 0.6
1974:I	145.4	142.6	- 2.8
1974:II	150.7	148.6	- 2.1
1974:III	173.6	164.2	- 9.4
1974:IV	162.9	166.7	+ 3.8
1975:I	131.9	126.9	- 5.0
1975:II	108.3	96.5	-11.8
1975:III	84.8	85.2	+ 0.4
1975:IV	55.4	61.9	+ 6.5