ESTIMATING OUTLAYS FOR UNEMPLOYMENT COMPENSATION PROGRAMS

by

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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 those engaged in the more technical aspects of budgetary and related public policy questions. The views expressed in this paper are those of the author and do not imply endorsement by the Congressional Budget Office.

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I. Introduction

The unemployment insurance system has undergone a number of changes in recent years. These changes, combined with the variability in the unemployment rate, make outlay projections of the various programs a complex task. In order to estimate program outlays, a statistical analysis of the basic underlying relationships within the unemployment insurance system has been developed. This statistical analysis forms the base of the projection model utilized by the Congressional Budget Office (CBO).1/ The first two parts of this paper describe the major parameters and programs of the unemployment insurance system, while the third section discusses the CBO model for estimating unemployment insurance outlays.

II. Characteristics of the Unemployment Insurance System

Program Parameters

The unemployment insurance system operates in reaction to changes in the labor market during any particular period. A model to project the scope and expenses of the unemployment insurance system, therefore, necessarily utilizes statistical measures that reflect changes in various dimensions of the labor market.

The civilian work force or labor force is defined by the monthly Current Population Survey as the sum of people who are classified as employed or unemployed, depending on certain specifications outlined by that survey. Individuals have "employed" status if they have worked at all during the week of the survey either for pay, in their own enterprise, or for 15 hours or more in a family enterprise. Individuals have "unemployed" status if they are without jobs but have either searched for work at some time during the preceding four weeks or are waiting to resume or start a specific job within four weeks. Unemployment is, however, usually discussed in reference to percentages of working populations which are idle, or the unemployment rate. The unemployment compensation model depends on two such rates.

The global unemployment rate is the percentage which indicates what proportion of the entire civilian labor force which is unemployed in a particular week. The insured unemployment rate is also a percentage, but it is the proportion of workers in jobs covered by unemployment insurance

1/ The economic variables used for the analysis, such as the unemployment rate, are developed by the Fiscal Analysis Division of the Congressional Budget Office. Actual data are taken from Economic Indicators and The Economic Report of the President produced by the Council of Economic Advisers, and Weekly Unemployment Insurance Claims and Employment and Earnings produced by the Department of Labor.

programs who are receiving or claiming unemployment insurance benefits. For example, in 1960, the civilian labor force numbered about 72 million, with almost 4 million counted as unemployed; therefore, the global unemployment rate for that year was approximately 5.5 percent. Out of that 72 million, only 40 million worked in covered employment, or in jobs covered by the existing unemployment programs. This subset is defined as the covered work force. Out of the covered work force of 40 million, almost two million were receiving or claiming unemployment benefits; thus, the insured unemployment rate for 1960 was approximately 4.7 percent, compared to the global unemployment rate of 5.5 percent.

The relationship between the global and insured unemployment rate from 1955 to 1975 is illustrated in Figure 1. Generally, the rates move together since changes in unemployment motivate changes in unemployment insurance beneficiaries.

Figure 2 presents the size of the covered work force relative to the entire work force. As the graph indicates, the covered proportion of total employment has increased over time, particularly with the legislation of the past few years, such as the Unemployment Compensation Amendments of 1970.

Figure 3 charts the dollar amount of benefits paid over the same 20-year period covered by Figures 1 and 2. The peaks and troughs in Figure 3 tend to follow those for both unemployment rates in Figure 1. This relationship will tend to be a fairly direct one, due to the fact that larger numbers of unemployed mean higher amounts of benefits which will be paid. It is particularly interesting to note the sharp increase in benefit outlays since 1973. This increase has been caused by: (1) a severe recession resulting in high unemployment; (2) new legislation resulting in a greater number of individuals eligible to receive benefits; and (3) higher wage earners collecting unemployment benefits.

Once a reliable measure of insured unemployment has been established, it must be translated into the corresponding number of successful claims for unemployment assistance which in turn will result in benefit payments. The number of claims resulting in benefit payments is often referred to as a program caseload and has a direct influence on outlays.

Having determined a particular program's caseload, the final step in estimating outlays involves the average amount of benefits paid an individual every week. This dollar amount, often referred to as the average weekly benefit (AWB), is multiplied by the caseload to determine the total dollar amount of benefits paid. For example, if the monthly caseload for a specific program is 100,000 and the AWB is $70, the total amount of benefits paid for that month would be $7 million.

FIGURE 1

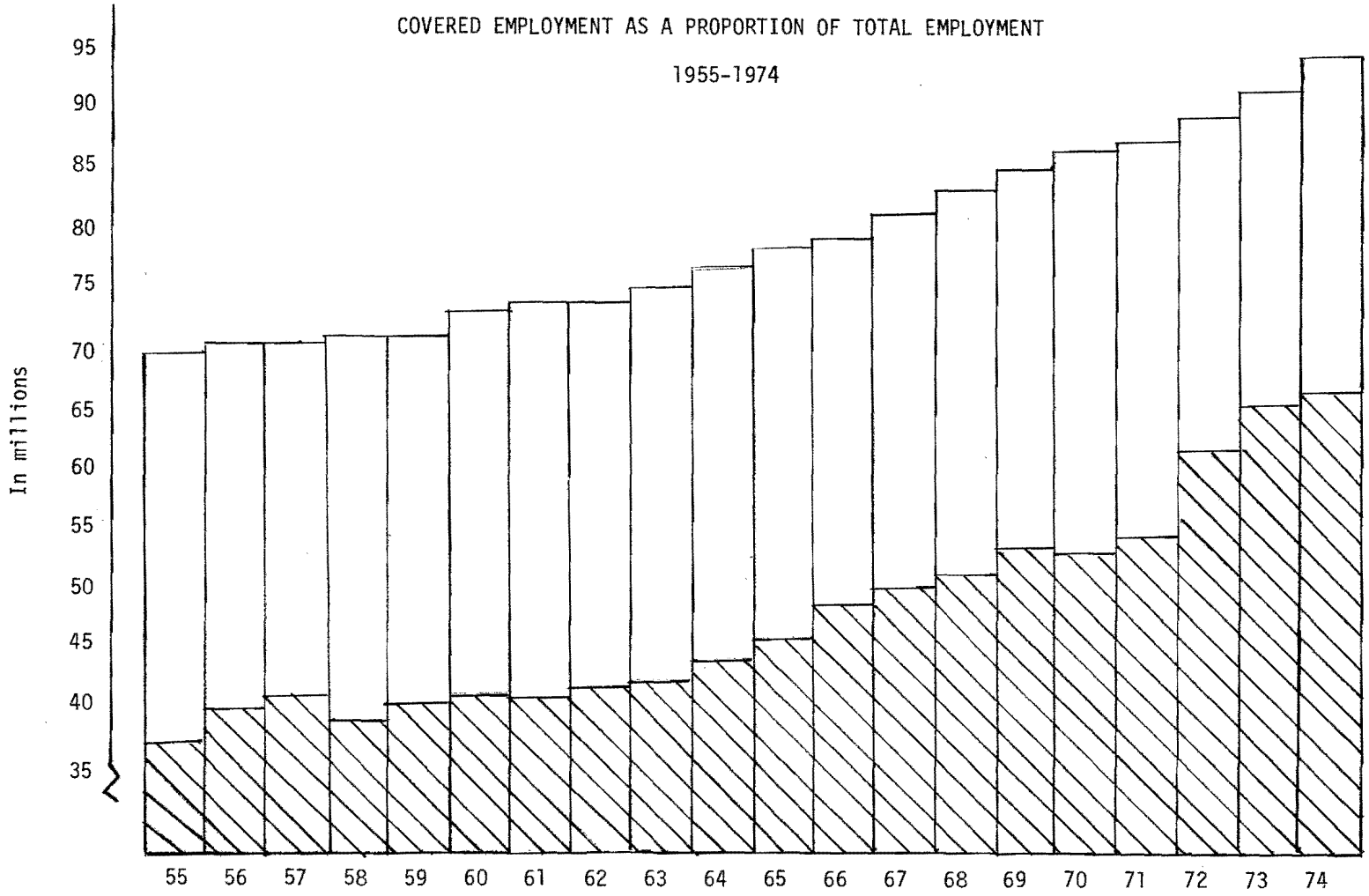
RELATIONSHIP BETWEEN GLOBAL AND INSURED UNEMPLOYMENT RATES

SOURCES: Handbook of Unemployment Insurance Financial Data, 1938-1970, U.S. Department of Labor Manpower Administration, 1971; and Economic Report of the President, January 1976; U.S. Government Printing Office 1976.

FIGURE 2

COVERED EMPLOYMENT AS A PROPORTION OF TOTAL EMPLOYMENT

1955-1974

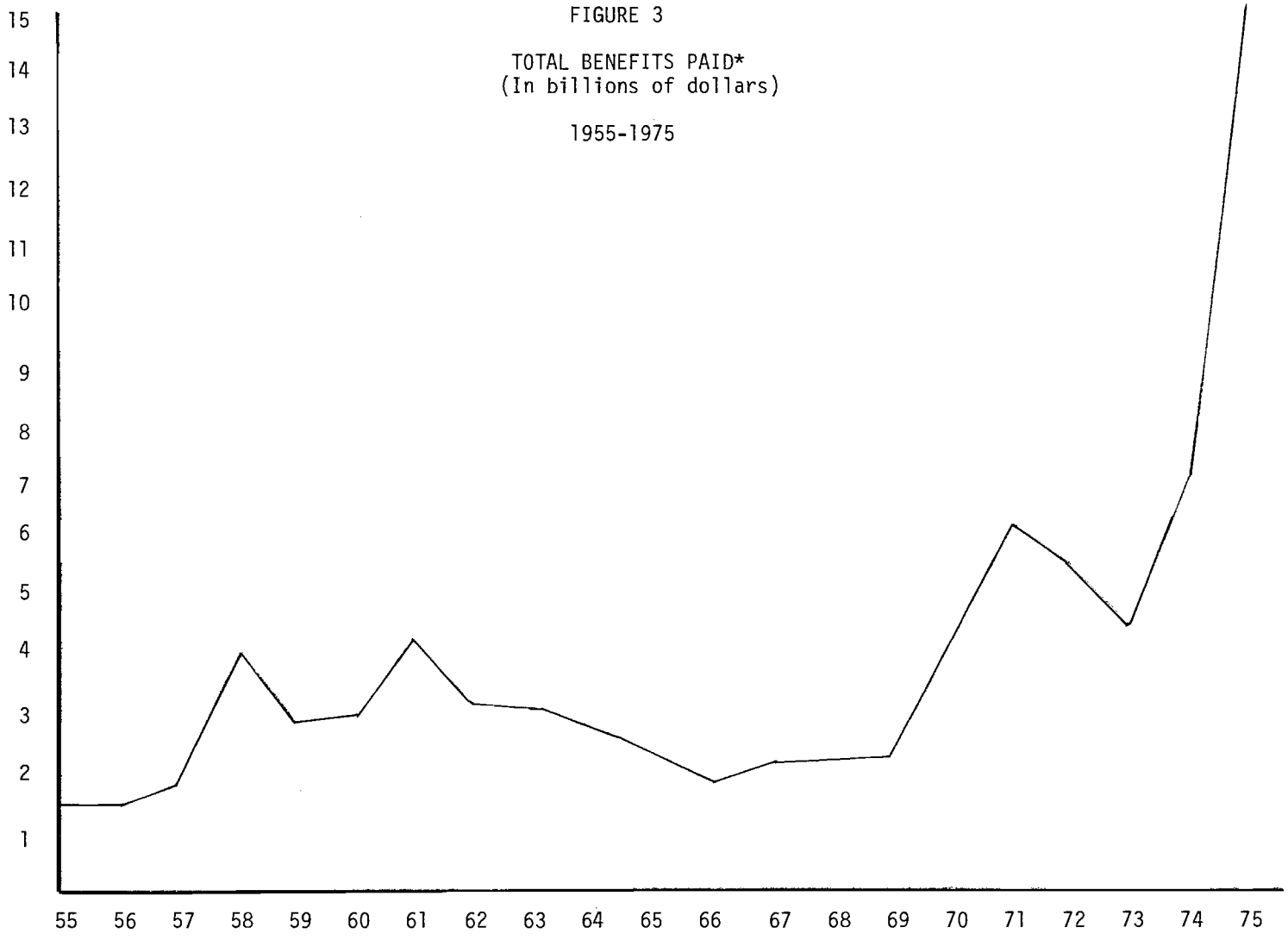


SOURCES: Handbook of Unemployment Insurance Financial Data, 1938-1970, U.S. Department of Labor Manpower Administration, 1971; and Economic Report of the President, January 1976; U.S. Government Printing Office 1976.

FIGURE 3

TOTAL BENEFITS PAID*
(In billions of dollars)

1955-1975



*Does not include Administrative Costs.

SOURCE: Economic Report of the President, January 1976; U.S. Government Printing Office 1976.

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Table 1 represents the AWB for the regular unemployment compensation program from 1966 to 1975. The steady increase in benefit levels is due to inflation, higher wages, and higher percentages of wage replacement through state legislation.

TABLE 1

AVERAGE WEEKLY BENEFITS FOR REGULAR PROGRAM
1966-1975

1966	40.00
1967	41.00
1968	43.00
1969	46.00
1970	50.00
1971	54.00
1972	58.00
1973	59.00
1974	64.00
1975	70.00

III. Unemployment Programs

The unemployment insurance system has two major components. The first, the Unemployment Trust Fund, is comprised of the regular, Extended Benefit (EB), and Federal Supplemental Benefits (FSB) programs, as well as the Railroad Unemployment Insurance program. The second component is the Federal Unemployment Benefit Allowance account, which includes the Special Unemployment Assistance (SUA) program, Unemployment Compensation for Ex-Servicemen and Federal Employees, and Trade Adjustment Assistance.

Unemployment Trust Fund

Regular Program

The regular program of unemployment compensation has existed since the Social Security Act of 1935, and can provide an eligible worker with up to 26 weeks of unemployment benefits. A worker's entitlement to these benefits, the period of eligibility, and the ratio of benefits to wages depend on two main factors: the individual's work history and the duration of employment in a job covered by this program. Maximum benefit levels are usually a percentage of an average wage in "covered" employment within each state, and vary along with other specific regulations from state to state. The funding for separate state programs is provided by a specific employer payroll tax levied on a taxable wage base, except in three states where employees are required to pay a share. These taxes are funneled into state trust funds maintained by the federal Treasury. The outlays for this program totaled $10 billion in fiscal year 1975.

Extended Benefit Program (EB)

The Extended Benefit program for unemployment compensation is a federal-state coordinated program which can provide an additional 13 weeks to unemployed workers who have exhausted their regular state unemployment benefits. This program was established by the Federal-State Extended Unemployment Compensation Act (P.L. 91-373) in 1970, and is triggered on when the national insured unemployment rate (the percentage of covered workers unemployed) reaches 4.5 percent. However, states may elect to participate if their insured unemployment rate is at least 4.0 percent. The funding of EB programs is provided on an equal basis by state and federal trust funds supported by specific payroll taxes. The outlays for this program in fiscal year 1975 were $1.2 billion.

Federal Supplemental Benefits Program (FSB)

The Federal Supplemental Benefits program has been functioning as a temporary program since 1971. The original maximum coverage of 13 weeks was doubled by the second Emergency Unemployment Compensation Act in 1974. At present, the FSB program can provide up to 26 weeks of benefits once an individual has exhausted benefits from both the regular and EB programs. Unlike the two previous programs, however, the FSB program has a complex trigger mechanism which determines the eligibility of any given state, and consequently an unemployed individual's benefits.

In states with insured unemployment rates of 6 percent or more, FSB provides a maximum of 26 additional benefit weeks. In states with insured unemployment rates between 5 and 5.9 percent, FSB provides a maximum of 13 additional weeks. States below the 5 percent insured unemployment rate are currently not eligible for FSB. The FSB program is entirely supported by federal general revenue funds and is slated to expire during fiscal year 1977 under current law. In fiscal year 1975 outlays for this program were $699 million.

Railroad Unemployment Program

The Railroad Unemployment Compensation Program was designed exclusively for the coverage of railroad workers, and has been in operation since the Railroad Unemployment Insurance Act of 1938. This basic act was updated by amendments in 1946, 1948, 1954, and 1975, and currently can provide up to 26 weeks of regular benefits and up to 26 weeks of extended benefits for eligible railroad employees. Specific eligibility requirements and benefit amounts have been revised since 1938, and the most recent legislation (P.L. 94-92, effective July 1, 1975) increased the maximum daily benefit rate from $12.70 to $24 ($25 in July 1976). The program is financed by a payroll tax paid by railroad employers, which is based on a sliding scale of contribution rates, depending on the balance in the Railroad Unemployment Insurance Account. The Federal Railroad Retirement Board administers this program through its regional and district offices. The cost for this program in fiscal year 1975 was $83 million.

Federal Unemployment Benefit Allowance Account

Special Unemployment Assistance (SUA)

The Emergency Jobs and Unemployment Assistance Act of 1974 established a temporary two-year program of federally supported unemployment assistance for workers who are not eligible for unemployment benefits under any other law. The major groups affected are state and local government employees, farm workers, and domestic workers. The maximum duration of benefits is 39 weeks. In order to be eligible, an individual must meet the regular State employment and earning requirements, but during the most recent 52-week period rather than during the regular state base period. Weekly benefit amount and number of weeks of benefits are determined by state law. This program expires during fiscal year 1977, although a number of proposals are pending to extend SUA through fiscal year 1977. Outlays for this program totaled $259 million in fiscal year 1975.

Unemployment Compensation for Federal Civilian Employees and Ex-Servicemen (UCFEX)

The unemployment compensation programs for federal civilian employees and ex-servicemen was added to the regular system of unemployment compensation in 1954 and 1958 respectively, and can provide up to 26 weeks of benefits. In addition to this, federal civilian employees and ex-servicemen may continue receiving benefits from the EB and FSB programs should they qualify. These programs are financed by federal general funds, but are administered by states according to their own laws and program rules as agents for the Federal government. The cost for this program in fiscal year 1975 was $564 million.

Trade Adjustment Assistance (TAA)

The Trade Adjustment Assistance program is a specific unemployment compensation program intended to remedy any adverse effects on employment due to U.S. trade agreements. Having had several names in the past, it was established by the Trade Expansion Act of 1962, and currently modified by the Trade Act of 1974. Essentially, the program provides allowances to workers who are unemployed or underemployed as a result of increased foreign imports. This allowance may be added to state unemployment insurance up to a maximum percentage of previous wage, and all recipients are subject to special eligibility criteria. The amount for which workers are eligible under existing state programs is financed by federal general revenue funds for benefit levels that exceed State authorized amounts. The Department of Labor is responsible for the administration of the program through state employment security agencies.2/ The cost for this program in fiscal year 1975 was $13 million.

2/ These program descriptions were taken from two sources, both of which provide detailed descriptions of the unemployment insurance system: Handbook of Public Income Transfer Programs: 1975, Joint Economic Committee, and a CBO staff working paper on unemployment compensation.

IV. CBO Unemployment Model

The purpose of the CBO model is to develop reliable projections of unemployment insurance outlays. The equations have been developed solely for that purpose and are specified at an aggregate level. More specifically, the model does not provide detailed behavioral explanations of the unemployment insurance system.3/ Alternatively, the objective is to provide Congress with a simple yet reliable estimate of the outlays associated with the unemployment insurance system, which should in turn lead to more precision in dealing with unemployment insurance in the budget resolution. The model can also be utilized to make cost estimates of legislation in the unemployment insurance area. For example, the possible extensions of FSB and SUA can be costed by utilizing the equations specified in the model. Furthermore, other potential legislative changes, such as increases in the covered work force, can also be accommodated by slight modifications of the existing model.

3/ It should also be noted that the explanatory variables which can be used in these equations are restricted to those which can be projected over a five-year period by CBO's Fiscal Analysis Division.

Unemployment Trust Fund Model

Regular Program

The CBO model estimates trust fund outlays by quarter for the regular unemployment program. The general equation is specified as Equation (1) below:

(1) $O_q = REG_q \times AWB_q \times P$

where:

O_q = outlays for quarter (q)

REG_q = $IUR_q \times CWF_q$

$REG_{(q)}$ = regular program caseload for quarter (q)

$AWB_{(q)}$ = average weekly benefit for quarter (q)

P = pay out ratio

$IUR_{(q)}$ = insured unemployment rate seasonally adjusted for quarter (q)

$CWF_{(q)}$ = covered work force for the regular program for quarter (q)

This general model is used for the unemployment trust fund regular program. Because of data limitations, modifications of this general form are utilized to project outlays for the other programs in the unemployment insurance system such as the railroad program, Special Unemployment Assistance, and Unemployment Compensation for Ex-Servicemen and Federal Employees. Equation (1), then, represents a general model that could be utilized for all unemployment insurance programs; however, variations are made because of the lack of historical data on the covered work force and insured unemployment rates in many of these programs. Each of these variables is independently estimated through a series of equations except for the pay out ratio, which is estimated by the Department of Labor.

Because the unemployment insurance system has undergone such a number of legislative changes in recent years such as the Unemployment Compensation Amendments of 1970, the EB extension, and FSB extension, it is very difficult to develop a reliable estimate of the insured unemployment rate. This problem is further compounded by the growth in recent years of women and teen-agers in the labor market.

A number of equations for the insured unemployment rate were estimated both in linear and nonlinear forms over several time periods. Equation (2) captures measures of labor market changes and was the most significant equation obtained.

$$(2) \quad \text{Log } IUR_q = \underset{(7.10814)}{-1.14060}\,^{4/} + \underset{(15.8259)}{1.37636} \times \text{Log } U_q$$

where:

Log IUR_q = log insured unemployment rate seasonally adjusted in quarter (q) for the regular unemployment program

Log U_q = log national unemployment rate seasonally adjusted in quarter (q)

R^2 = .95
D.W. = 1.8312
S.E. = .0755173

The coefficient of U_q in Equation (2) is greater than one, which indicates that IUR_q grows at a faster rate than U_q over the range of observations. This implies that at different unemployment rates, the insured versus uninsured composition of the unemployed will be different. For example, at higher levels of unemployment--between 5 and 6 percent--those least likely to be laid off and most likely to obtain unemployment insurance are receiving benefits. Conversely, at lower levels of unemployment, the unemployed are composed of workers who are "first fired" and as a consequence are less likely to receive unemployment benefits.

As Table 2 indicates, the insured unemployment rate has had periods of stability and instability during the time period the regression covers. The time period is also one in which a number of changes have occurred in the unemployment system and the labor market.5/

4/ For all equations, (t) statistics are in parentheses.

5/ In Methods of Projecting Outlays for Unemployment Assistance, Executive Office of the President, Office of Management and Budget, October 1, 1975, the insured unemployment rate is estimated in linear form.

TABLE 2

ACTUAL VS. ESTIMATED VALUES FOR THE INSURED UNEMPLOYMENT RATE

	Actual Insured Unemployment Rate	Estimated Insured Unemployment Rate
FY 73:3	2.9	2.9
4	2.7	2.8
FY 74:1	2.6	2.7
2	2.7	2.7
3	3.3	3.1
4	3.3	3.0
FY 75:1	3.3	3.3
2	4.3	4.3
3	5.9	5.7
4	6.8	6.4
FY 76:1	5.9	6.1
2	5.3	6.0

The equation utilized to estimate the covered work force is specified in Equation (3):

$$(3) \quad CWF_y = \underset{(9.55699)}{150.851} + \underset{(9.02037)}{82.4703} \times DU_y + \underset{(18.9315)}{0.337489} \times GNP_y + \underset{(.908475)}{.229757} \times \text{ERROR 1}$$

where:

CWF_y = covered work force yearly of those individuals covered by the regular unemployment trust fund programs

DU_y = dummy variable which equals 1 after 1972

GNP_y = real GNP in year y

ERROR 1 = lagged residual

R^2 = .9846
D.W. = 1.2012
S.E. = 10.8591

The dummy variable relates to the Unemployment Compensation Amendments of 1970 which expanded unemployment insurance coverage beginning in January 1972. The GNP variable is used to assess the impact of aggregate demand on the covered labor force. It is assumed that as real GNP

increases, the covered work force will increase.6/ This relationship is supported by Equation (3). A number of equations were also specified using the seasonally adjusted and unadjusted unemployment rate as well as the insured unemployment rate; however, the (t) statistics associated with these variables were insignificant.

As initially specified, autocorrelation existed in Equation (3). This statistical problem was handled by a two-stage differencing procedure in which the residuals from the first stage were lagged a period and used as an explanatory variable in the second stage.

Table 3 below gives the actual and fitted values for the covered work force projected by Equation (3) by calendar year. These values are put into quarterly form for use in Equation (1).

TABLE 3

ACTUAL VS. ESTIMATED VALUES FOR THE COVERED WORK FORCE

Calendar Year	Actual	Estimated
56	39,000,000	37,500,000
57	39,700,000	38,400,000
58	38,100,000	38,400,000
59	39,500,000	39,400,000
60	40,200,000	40,000,000
61	40,100,000	40,600,000
62	41,300,000	42,000,000
63	42,000,000	43,000,000
64	43,200,000	44,300,000
65	45,100,000	46,000,000
66	47,700,000	47,900,000
67	48,000,000	49,000,000
68	50,400,000	50,530,000
69	52,400,000	51,470,000
70	52,200,000	51,600,000
71	53,100,000	52,700,000
72	60,800,000	63,000,000
73	64,700,000	64,300,000
74	65,700,000	63,900,000

6/ For example, the actual data indicate that between 1969- 1970, GNP decreased as did the actual covered work force. Projections of the covered work force between 75-81 indicate that it will be increasing, assuming that GNP continues to rise.

It should be noted that a significant portion of the covered work force is not captured by Equation (3). While most employers are required to pay taxes, nonprofit organizations and state and local government employers are required, or have an option, to reimburse the state for unemployment compensation benefit payments attributable to services performed for them instead of paying regular state taxes. Those employers who use the reimbursement method of financing benefits are not subject to the Federal Unemployment Tax Act (FUTA) and are only required to pay taxes or finance benefits under state law.7/ According to the most recent data, this group is approximately 10 percent of the covered work force and the estimates from Equation (3) are adjusted by that percentage throughout the projection period.

The average weekly benefit figure for an individual in the unemployment insurance program has increased over the last 20 years. This value is estimated by Equation (4):

$$(4) \quad AWB_y = \underset{(-0.945058)}{-3.51571} + \underset{(15.5059)}{0.461213} \times CPI_y + \underset{(1.87993)}{.656761} \times \text{ERROR 1}$$

where:

AWB_y = average weekly benefit for the regular unemployment insurance program in year y

CPI_y = consumer price index in year y

ERROR 1 = lagged residual

R^2 = .9719
D.W. = 1.38
S.E. = 1.64084

Similar to Equation (3), this equation also produces annual results which are put into quarterly form consistent with Equation (1).

The pay out ratio accounts for individuals: (1) who receive only partial benefits because benefits have nearly run out due to previous unemployment or a short work history; (2) who are disqualified because of refusal to take a job; (3) who if ill cannot receive benefits in many states because they are not fit for work; (4) who are disqualified because they left job voluntarily or were fired for cause; or (5) who may fail to show up in a particular week.8/

7/ Unemployment Compensation Amendments, American Enterprise Institute for Public Policy Research, Washington, D.C., April 22, 1976.

8/ Additional detail on the pay out ratio can be found in Methods of Projecting Outlays for Unemployment Assistance, Op. Cit., p. 5, from which this discussion is taken.

Historically, according to the Department of Labor, the pay out ratio has been 85 percent. However, the impact of higher unemployment appears to have had an impact on the pay out ratio. For example, to facilitate the processing of claims, local officials were relocated to areas of high unemployment and many municipal buildings were opened as temporary claims offices. In addition, standard working procedures were modified. Furthermore, over 60 percent of the states shifted to the use of mail for the filing of continued claims and almost 50 percent of the states required less frequent reporting by claimants.9/

The inference from these changes in the operational procedure because of high unemployment is that the unemployment insurance system did not have the time or resources to check claimants as closely as they would have under more stable economic conditions. By mailing out claims, many individuals who might be disqualified for refusal to take a job or who left their jobs voluntarily had a higher probability of receiving benefits. Furthermore, with over 50 percent of the states requiring less frequent reporting by claimants, the number of individuals receiving benefits who may have been previously ineligible, is likely to increase. A final point to note, which has an important impact on the pay out ratio, is that with high unemployment the likelihood of individuals refusing to take a job is diminished as the supply of available jobs to turn down is decreased. With lower unemployment rates, refusals to take jobs probably increase as there are more jobs available.

Based on this evidence, a pay out ratio of 90 percent was utilized for fiscal year 76 and fiscal year 77 to account for high rates of unemployment. For longer range projections, which forecast a substantially reduced unemployment rate, the historical pay out ratio of 85 percent will be used. As economic conditions change, the pay out ratio must be carefully reviewed.

Extended Benefit Program

To project outlays for the Extended Benefit Program, a slightly different approach is used because of the difficulty in estimating an insured unemployment rate for this particular program. The Extended

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9/ Employment and Training Report of the President, U.S. Department of Labor and the U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, 1976.

Benefit caseload is predicted on a monthly basis and then translated into quarterly form.10/ As Equation (5) illustrates, the Extended Benefit program is functionally related to the regular program:

$$(5) \quad EB_m = \underset{(10.1917)}{306.662} + \underset{(19.8805)}{.134672} \times REG_{m-6}$$

where:

EB_m = extended benefit monthly caseload

REG_{m-6} = regular program monthly caseload lagged 6 months

$R^2 = .98$
D.W. = 1.8876
S.E. = 10.960

A series of regular program monthly caseloads was developed for Equation (5) by using Equation (2) which predicts the IUR for the regular program and Equation (3) which predicts the covered work force. Once regular program caseloads are determined, Equation (5) can be utilized to devise projections of the Extended Benefit caseload. Since workers move from the regular program to the EB program after their benefits are exhausted, the EB caseload is related on a lag basis to the regular program.11/

The average weekly benefit for the EB program is predicted by increasing the current actual EB benefit amount by the same percentage increase as that associated with the regular program weekly benefit which is specified in Equation (4).

The projection of EB outlays is further complicated because of the 4.5 percent national insured unemployment rate trigger. When the national trigger is not in effect (below 4.5 percent), state participation in the EB program is substantially reduced and this, combined with decreasing caseloads in the regular program due to lower insured unemployment rates, leads to a significant decrease in outlays. Historically, when the national trigger is not in effect, outlays are reduced by about 60 percent. This assumption is in the CBO model with the national insured unemployment rate being estimated by Equation (2) to determine the national trigger.

10/ In Methods of Projecting Outlays for Unemployment Assistance, Op. Cit., an alternative approach is used to predict EB and FSB outlays. This approach relies on predicting a total insured unemployment rate for these programs.

11/ A number of labor market variables such as the unemployment rate were tried in this equation; however, these did not prove to be significant.

Federal Supplemental Benefit Program

Because the FSB program has only been in effect for a short period of time and has complicated trigger mechanisms, its parameters are extremely difficult to estimate. However, as Equation (6) illustrates, the FSB program is functionally related to the EB program:

$$(6) \quad \text{Log } FSB_m = \underset{(6.43722)}{3.16476} + \underset{(7.39798)}{.5510212} \times \text{Log } EB_{m-3}$$

where:

$\text{Log } FSB_m$ = log FSB monthly caseload

$\text{Log } EB_{m-3}$ = log EB monthly caseload lagged three months

$R^2 = .82$
D.W. = 1.85
S.E. = .09543

Workers in most states who have exhausted their EB benefits and are still unemployed move to the FSB program, and as a result the FSB caseload is related on a lag basis to the EB program. The EB monthly caseloads are determined from Equation (5) and transformed into logs for Equation (6). Table 4 gives the actual and fitted caseloads for the FSB program. As more data become available, this equation will be reestimated; however, as Table 4 indicates, the current equation is a reasonably reliable estimate of the FSB caseload.

TABLE 4

ACTUAL AND ESTIMATED CASELOAD OF THE FSB PROGRAM

FY Monthly	Actual	Estimated
75:4	465,000	506,000
75:5	809,000	665,000
75:6	818,000	809,000
75:7	868,000	880,000
75:8	887,000	919,000
75:9	926,000	981,000
75:10	968,000	1,034,000
75:11	1,031,000	1,055,000
75:12	1,065,000	1,063,000
76:1	1,113,000	972,000
76:2	1,067,000	1,062,000
76:3	998,000	973,000
76:4	852,000	955,000

The average weekly benefit for the FSB program is projected by increasing the most current actual FSB benefit amount by the same percentage increase as that associated with the regular program weekly benefit which is specified in Equation (4).

Finally, FSB caseloads are adjusted to account for the impact of the triggers on outlays and its concommitant impact on benefit weeks.12/ For example, using Equation (6) and an average weekly benefit figure for FSB of $67, outlays for FSB are estimated to be approximately $1,200 million for the first half of fiscal year 77. As Table 5 illustrates, under the current triggers, 12 percent of the FSB caseload are expected not to be participating in FSB by fiscal year 77. In addition, another 10 percent of the caseload is between 5 and 5.99 percent and these states are also assumed to trigger out of FSB by fiscal year 77 under current law. The impact of the triggers in fiscal year 77 is then a reduction of 22 percent of the total cost for the first six months of fiscal year 77 ($1.2 billion x .22), which decreases the total to $936 million.

12/ For a fuller description of FSB triggers and their relation to benefit weeks, see Section II of this paper.

TABLE 5

FSB CASELOAD BY STATE

Below 5 Percent	Trigger Rate	Caseload
Colorado	3.16	4,518
District of Columbia	4.20	3,654
Indiana	4.63	17,595
Kansas	4.00	3,527
Louisiana	3.97	6,410
Mississippi	4.89	3,617
Nebraska	4.81	2,758
Ohio	4.91	52,800
Oklahoma	4.97	7,012
South Dakota	3.87	522
Texas	2.64	17,566
Virginia	3.21	6,900
Wyoming	3.42	209
Between 5 - 5.99 Percent	**Trigger Rate**	**Caseload**
Delaware	5.22	2,489
Florida	5.58	41,134
Georgia	5.68	18,355
Iowa	5.27	4,295
New Hampshire	5.95	2,399
New Mexico	5.90	2,148
North Carolina	5.28	21,658
North Dakota	5.07	322
South Carolina	5.95	10,201
Utah	5.82	2,600

SOURCE: U.S. Department of Labor, ETA, UIS Office of Research, Legislation, and Program Policies, April 5, 1976.

Besides estimating the impact of the triggers, an assessment must be made of the effect of the reduction in benefit weeks on total outlays. For estimating purposes, it is assumed that those states between a 6 percent and 7 percent unemployment rate which are eligible for 26 weeks of FSB benefits, will be reduced to 13 weeks of FSB by the first half of fiscal year 77. Table 6 details those states currently between 6 percent and 7 percent along with their current FSB caseloads. The caseloads of these states total about 11 percent of the current FSB caseload. It is estimated that by fiscal year 77 approximately 5.5 percent of this caseload will be reduced from 26 weeks of FSB benefits to 13. The costs of FSB, then, for the first half of fiscal year 77 are then reduced by 5.5 percent to $884 million.

TABLE 6

FSB CASELOAD BETWEEN 6-7 PERCENT BY STATE

State	Caseload
Alabama	11,293
Arizona	10,082
Hawaii	3,582
Kentucky	11,269
Maryland	13,567
Minnesota	12,622
Missouri	18,534
Tennessee	19,129
West Virginia	3,793
Wisconsin	13,612

SOURCE: U.S. Department of Labor, ETA, UIS Office of Research, Legislation, and Program Policies, April 5, 1976.

The impact of the triggers and the reduction in benefit weeks on outlays are thus adjusted for in the model by making assessments of the likely impact of these two factors on outlays. Quarterly adjustments will be made to FSB outlays based on the Department of Labor's quarterly report on state triggers.

Railroad Unemployment

The lack of available data on the railroad unemployment program necessitated a modification of the general model outlined in Equation (1) in which railroad unemployment outlays are linked to the unadjusted unemployment rate. Furthermore, because the caseload of the program

appeared more sensitive to the monthly unadjusted unemployment rate, the regression was specified using monthly data. The initial equation indicated a high degree of autocorrelation. This statistical problem was minimized by a two-stage procedure in which the residuals from the first stage were lagged a period and used as an explanatory variable in the second stage. The equation utilized for projecting caseloads is presented below:

$$(7)\quad RRC_m = \underset{(-5.14144)}{-21238.9} + \underset{(10.3851)}{5822.14} \times UNAU_m + \underset{(6.56659)}{.853907} \times ERROR\ 1$$

where:

RRC_m = monthly railroad caseload

$UNAU_m$ = monthly unadjusted unemployment rate

ERROR 1 = lagged residual

$R^2 = .8551$
D.W. = 1.8887
S.E. = 4338.53

It should be noted that a number of alternative specifications were evaluated for the railroad program; however, Equation (7) appears to be the most reliable estimate.

The average weekly benefit for the railroad program is projected by increasing the current benefit level amount by the same percentage increase as that associated with the regular program weekly benefit which is specified in Equation (4).

Administrative Costs

These costs include those of administering the unemployment insurance system, as well as grants to the states for employment services.13/ Federal administrative costs, which are a small part of total costs, are assumed to increase at a constant rate of 5 percent per year. The state administrative costs are funded by federal grants from the Unemployment Trust Fund and are the largest component of administrative costs. These Federal grants are based on a workload formula and for projection purposes are assumed to be proportional to the unemployment rate. The size of the federal trust fund grant per percentage point of unemployment is assumed to increase 5 percent per year. This increase reflects the effects of higher wages and nonwage costs net of productivity increases.14/

13/ A detailed discussion of employment services and grants to the states can be found on p. 516-517 of the Budget of the United States Government for FY 77.

14/ This discussion of administrative costs and the method of projecting them is taken from Methods of Projecting Outlays for Unemployment Assistance, Op. Cit., p. 2-3.

Federal Unemployment Benefit Allowance Account Model (FUBA)

Special Unemployment Assistance (SUA)

The SUA program is extremely difficult to estimate because it has been in operation for a very short time, and as a result the general model characterized by Equation (1) was modified. In addition, throughout fiscal year 1976, its caseload has been quite variable.15/

While the unemployment variable in Equation (8) has a very low (t) statistic, over a longer period of time this statistic is likely to become more significant. This statement is supported by regressions run over a shorter time period than Equation (8). In those regressions, the unemployment variable was less significant than in Equation (8), and a trend variable which was used in those equations was highly significant. Similar to many other new initiatives, in the case of the SUA caseload the trend variable swamps all the other possible explanatory variables. However, for projecting caseloads over an extended period of time, a trend variable was not included in Equation (8) as it has the effect of biasing the SUA caseloads upward. The SUA equation used for the projection, which has been adjusted for autocorrelation, is specified in Equation (8):

$$(8) \quad \text{Log } SUA_m = \underset{(2.42356)}{3.91011} + \underset{(1.05717)}{.82305} \times \text{Log } U_m + \underset{(3.9560)}{.558723} \times DU_m + \underset{(1.24053)}{.373527} \times \text{ERROR 1}$$

where:

$\text{Log } SUA_m$ = log SUA monthly caseload

$\text{Log } U_m$ = log unadjusted unemployment rate monthly

DU_m = dummy variable where July, August, September = 1 and all other months = 0

ERROR 1 = lagged residual

$R^2 = .64$
D.W. = 2.4694
S.E. = .20250

15/ Since SUA is a relatively new program, only one year of monthly observations were available to run the regression.

The dummy variable is used in this equation to account for the large number of teachers and nonprofessional school employees who participated in this program during its first year and as Equation (8) indicates, it is highly significant. However, legislation is currently being considered which would eliminate teachers and school employees from participating in SUA. If this legislation which is part of the SUA extension package passes, it would mean that a dummy variable should not be included for projecting fiscal year 77 outlays.

As Table 7 illustrates, Equation (8) has a large error in terms of projecting caseloads in the early part of fiscal year 1976; however, over the last three quarters it is a fairly accurate estimator. For the first 11 months of fiscal year 1976, the actual caseload averaged about 355,000, while the fitted caseload is about 344,000, a percentage error of about 3 percent.

TABLE 7

ACTUAL AND ESTIMATED SUA CASELOADS

	Actual	Estimated
FY 75:11	172,000	254,000
FY 75:12	278,000	260,000
FY 76:1	501,000	521,000
FY 76:2	663,000	486,000
FY 76:3	410,000	537,000
FY 76:4	284,000	249,000
FY 76:5	261,000	278,000
FY 76:6	282,000	269,000
FY 76:7	339,000	306,000
FY 76:8	326,000	322,000
FY 76:9	315,000	299,000
FY 76:10	285,000	276,000
FY 76:11	248,000	246,000

Finally, it should be noted that as more observations become available, Equation (8) will be updated.

For projecting outlays, the caseloads predicted by Equation (8) are multiplied by the average weekly benefit for SUA. For projection purposes, the SUA benefit levels are assumed to increase by the same percentage amount as the regular program.

UCFEX

Similar to the SUA and railroad programs, the lack of historical data forced a modification of the general model specified in Equation (1). For the UCFEX program, the caseload was estimated in a two-step process due to the presence of autocorrelation in the original specification. Equation (9) follows:

$$(9)\quad UCFEX_m = \underset{(4.80672)}{37257.8} + \underset{(12.1967)}{12811.2} \times UNAU_m + \underset{(5.45398)}{.782604} \times ERROR\ 1$$

where:

$UCFEX_m$ = monthly UCFEX caseload

$UNAU_m$ = unadjusted unemployment rate monthly

ERROR 1 = lagged residual

R^2 = .8807
D.W. = 1.8984
S.E. = 8141.95

For estimating the EB and FSB parts of the UCFEX program, it is assumed that the caseloads are proportional to the caseloads of EB and FSB for the regular unemployment trust fund program. For example, in fiscal year 1976 it is estimated that the EB caseload is approximately 25 percent of the regular trust fund program; thus, the EB caseload of the UCFEX program is assumed to be 25 percent of the regular UCFEX program caseload. This proportion between the regular and extended caseload will of course vary with different unemployment rates.16/

The average weekly benefit for this program is assumed to increase by the same percentage as the regular unemployment trust fund program benefit. These benefit figures are then multiplied by the caseloads to determine UCFEX outlays.17/

Trade Adjustment Assistance (TAA)

For this program, the Department of Labor estimate will be utilized until CBO develops a satisfactory approach for projection purposes. Generally, the costs associated with this program are between $50 and $100 million.

16/ This approach for estimating the EB and FSB in this fashion is necessitated by the lack of available data for the caseloads for these programs.

17/ For the EB, FSB, UCFEX, and SUA programs, it is assumed that the percentage benefit increases in these programs parallel those of the regular program over time. Since the benefit level increases are all state controlled in these programs, it is reasonable to assume that on the average, the percentage benefit increases will be similar to the regular program for these programs.

V. Conclusion

As the Appendix illustrates, both the Unemployment Trust Fund and Federal Unemployment Benefit Allowance models project accurately unemployment insurance outlays. For example, for fiscal year 1976 the difference between the actual and predicted outlays for the Unemployment Trust Fund is less than 1 percent, while for the Federal Unemployment Benefit Allowance account the difference is 5 percent.

Although the models have projected unemployment insurance outlays quite accurately, there are several areas where additional work could prove beneficial. First, average weekly benefit equations could be developed for all of the unemployment programs. Second, state-insured unemployment rate equations could be built which would be extremely useful for estimating the unemployment programs with state triggers. Finally, a model for the Trade Adjustment Assistance program could be developed.

APPENDIX

ACTUAL AND PREDICTED OUTLAYS OF THE UNEMPLOYMENT TRUST FUND

Unemployment Trust Fund
($ in millions)

FY 76	Actual Outlays	Predicted Outlays
1st Quarter	4,537	4,681
2nd Quarter	4,357	4,733
3rd Quarter	5,087	4,540
4th Quarter	3,939	3,880
Total	17,920	17,834

Federal Unemployment Benefit Allowance Account*
($ in millions)

FY 76	Actual Outlays	Predicted Outlays
1st Quarter	504	550
2nd Quarter	475	391
3rd Quarter	486	416
4th Quarter	427	431
Total	1,892	1,788

* The predicted outlays for TAA, a component of the FUBA account, are taken from the President's budget estimates. While estimated outlays for the programs in the FUBA account can be broken out, the Treasury statement from which the actual outlays are taken does not have individual program data.