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IMPACT OF THE ALTERNATIVE BASE PERIOD ON THE TRUST FUND

(Volume IV)

by

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1. INTRODUCTION: EFFECTS ON STATE UI TRUST FUNDS

One obvious effect of offering an alternative base period (ABP) is to increase total payouts from UI trust funds. The presence of ABP in a state increases total eligibility, hence total benefit payments.

The project examined effects on UI trust funds using simulation models developed in five separate states. The next three chapters present detailed descriptions of these models and the findings in Washington, Ohio and Vermont respectively. Each chapter focuses exclusively on the experiences of a single state. Chapter 5 then draws together the findings from all five state models (the preceding three plus Massachusetts and New Jersey). During the next few years several other states may consider adopting an ABP. The findings of Chapter 5 are presented in such a way that a state could make rough estimates of the costs to its trust fund from such a change.

In conducting the state-level analyses, there were several common aspects to the approach. 1) The simulation models in the five states follow earlier models developed by Vroman (1990). The five models were also similar in their reliance on common macro assumptions, e.g., the rate of wage inflation and underlying unemployment rate for the baseline analyses. 2) In all five states the simulations emphasized the period from start of its ABP program through the year 2005. The use of a lengthy simulation period (ranging from 11 years in New Jersey to 19 years in Washington) allowed experience rating to operate so that the automatic response of UI taxes to trust fund drawdowns was incorporated into the analysis. 3) Where states had more than one ABP, the analysis made estimates of the effects of the individual elements of its ABP. Thus the contribution of the individual parts as well as the full effect of the ABP were estimated. As of 1997, there are eight states with ABPs. Model-based estimates were developed in the states with the most interesting ABPs, e.g., Massachusetts, New Jersey and Vermont. This point receives greater emphasis later in Chapter 5.

1.1 THE ABP AND OVERALL FINANCING

The trust fund effects of the ABP depend not only upon the definition of the ABP used by a state but also on the state's overall financing situation. Many states have a structural imbalance in their financing due to differential indexation of benefits and taxes. About two thirds of the UI programs in the U.S. index the maximum weekly benefit. This maximum increases automatically when the average weekly wage in UI covered employment increases. However only about one third of the states index their taxable wage base. For the other two thirds, the tax base is static and increases only through legislation. For these states, the long run historical experience is that with the passage of time taxable wages increase more slowly than total covered wages, i.e., the taxable wage share of total wages decreases. Several states have increased their tax base only when it is required by federal legislation that increases the tax base for the federal UI tax, currently $7000 per employee.

Thus about one third of the states, including many larger ones, have automatic increases on the benefit side but not on the tax side of their programs when money wages increase. This situation holds for three of the five states where ABP models were developed, Massachusetts, Ohio and Vermont.

This asymmetry in UI financing strongly affected the results of the simulations. Particularly in estimating the effects of the ABP in recessionary situations, it was found that the presence of ABP benefit payouts served to further increase trust fund drawdowns and retard accumulations during subsequent economic recoveries. This point is emphasized in Chapters 5 and 6 which respectively focus on Ohio and Vermont.

A second "fact" of UI financing, the motivation of policy makers in several states to reduce employer UI taxes, also affects the findings of the models. In two ABP states (New Jersey and Washington) legislation was enacted during the 1990s that measurably reduced employer UI taxes. Washington adopted a new set of tax schedules twice, in 1994 and in 1995.[1] New Jersey

[1] See Vroman (1996) for an analysis of the effects of these tax schedule reductions in Washington.

retained the set of tax schedules implemented in 1986, but for the years 1993 through 1997 temporarily reduced the tax rates below the rates on its tax schedules.[2] Massachusetts which experienced severe financing problems associated with its recession of the early 1990s, enacted a new set of higher tax rate schedules in order to increase UI taxes starting in 1992. However, for each of the years 1992 through 1996, special temporary tax provisions were enacted that caused the actual tax rate schedule to be a lower schedule than the schedule specified by the statute.

This inclination to reduce employer taxes is difficult to incorporate into a model-based simulation analysis. The approach used in each of the state models was to incorporate the tax reductions for past periods through 1996. For future years, however, it was assumed that the tax statutes and associated tax schedules in place as of January 1997 were allowed to operate as intended during the years 1997 through 2005. This may not be realistic, as elected officials are likely to enact further UI tax reductions. Since there was no easy way to incorporate such political considerations into the simulation models, they operated with existing tax statutes starting in 1997.

1.2 POSSIBLE BIASES IN ESTIMATED EFFECTS

To estimate the effects of the ABP on total UI benefit payments, the models utilized historic information on actual ABP recipients and the level of their weekly UI benefits. At least two shortcomings of this procedure can be identified. The first relates to delayed filing and the second to reduced eligibility among persons who apply for benefits in consecutive benefit years, so called recidivists. Both merit brief discussions.

In a state with only a regular base period, a person who applies for benefits and is found to be monetarily ineligible may achieve eligibility through a delayed filing. A person who files in June 1997, for example, could be ineligible using a base period that ends on December 31, 1996.

[2] The rates on all five tax schedules were reduced by 0.1 percent for all five years 1993 through 1997. Additionally there were proportional reductions of 52 percent during 1993 and 36 percent during 1994 and 1995. The monies were diverted to other uses, mainly to state-financed health care benefits.

Either through their own knowledge of the definition of the base period or using information supplied by the UI claims taker, however, such persons may be eligible if the application occurs in early July 1997. The delayed filing in July would have a base period that ended on March 31 1997. Thus claimants with substantial earnings during the January-March 1997 quarter would be eligible under a delayed filing.

To the extent that delayed filing would otherwise occur, the estimated effect of the ABP on the number of beneficiaries and associated benefit payouts would be exaggerated. Historic data will show the numbers eligible under the ABP but not the number of such persons who would have delayed filing and would have been eligible absent the ABP. While the direction of the bias is clear the size of the effect is not obvious.

The project did examine weekly application data from several states to test for the possible bunching of applications during the first week of each calendar quarter. If bunching does occur a dummy variable equal to one for the first week of the quarter would be expected to have a positive and significant coefficient. Conversely, dummy variables for the last weeks of each quarter would be expected to have negative and significant coefficients. Further, the sum of the negative and positive coefficients would be expected to sum to zero. Such patterns were not found in regressions for ten states covering the weeks from 1987 to 1995. Thus the project was not able to develop reliable empirically based estimates of the quantitative importance of delayed filing.

Using historic data could also lead to upward biased estimates of the effects of the ABP on payouts for persons who experience unemployment and apply for benefits in consecutive benefit years. Again, the logic is straightforward. If a person is eligible only under the ABP for the current year that quarter of covered earnings (the full lag quarter in nearly all ABP states) will already have been used when the person files for benefits in the following benefit year. Thus the ABP will increase eligibility in the current year but eligibility will be reduced in the following year.

The importance of this effect depends on the extent of recidivism among claimants. A tabulation supplied to the project by analysts in Washington, indicated the size of this effect is small.[3] Cohorts eligible under the regular base period and the ABP during calendar years 1988 and 1992 were followed in subsequent years. The rates of reapplying in subsequent years were about the same for both groups. For the 1992 cohorts ABP eligibles had measurably lower reapplication rates in 1993, i.e., 0.202 for ABP applicants versus 0.271 for regular base period applicants. This analysis suggested the loss of eligibility among ABP claimants was very small.

Thus the models in the five states use actual ABP claimants and beneficiaries as the basis for estimating the increase in total payouts due to the ABP. While the preceding indicates there is an upward bias in this procedure, the size of the effect is difficult to estimate. The loss of eligibility due to year-to-year recidivism among ABP claimants appeared to be very small based on data from Washington. The bias due to delayed filing was not satisfactorily estimated from the data on weekly applications. This topic will be revisited in Chapter 2.

2. THE UI TRUST FUND IN WASHINGTON

2.1 THE ALTERNATIVE BASE PERIOD IN WASHINGTON

The state of Washington instituted an ABP program in 1987 and started to pay ABP benefits in July 1987. The ABP program's main provisions have remained unchanged since its inception.

Monetary eligibility for UI claimants in Washington is determined from hours of work in covered employment during the base period, the earliest four completed quarters of the past five fully completed quarters. To be eligible, a claimant must have at least 680 hours of base period

[3] Wayne McMahon of the Washington Employment Security Department conducted these tabulations.

employment. For persons who satisfy the hours requirement, the weekly benefit amount (WBA) is determined as 1/25th of earnings during the highest two base period quarters but capped by a maximum WBA set at 70 percent of the average weekly wage from two years ago. The maximum potential benefit is set at one/third of base period earnings up to a maximum which is the product of the 30 (maximum weeks of potential duration) times the maximum WBA.

If a claimant is not eligible under the regular base period, she of he can have monetary eligibility determined under the state's alternative base period (ABP). This is defined as the four most recent fully completed quarters. Only persons ineligible under the regular base period may have an ABP eligibility determination.

The characteristics of ABP eligibles present clear contrasts with regular base period eligibles. On average, ABP eligibles are more likely to be young, female, from minority groups and persons with below-average educational attainment.[4] Each of these characteristics is associated with below-average levels of earnings. ABP claimants also have above-average representation from selected industries, e.g., agriculture, mining, construction, retail trade and services. They also have higher representation in the state's low-wage counties.

Because many ABP claimants are low wage workers their UI benefit entitlements differ systematically from those of regular UI claimants. On average, their weekly benefits, total entitlements and potential benefit durations are all much lower than for other claimants.

Since the program's inception in 1987 ABP claimants have constituted a small but measurable share of the state's claimant caseload. In each year from 1988 to 1994 ABP beneficiaries have averaged more than 5.0 percent of all UI beneficiaries. This caseload volume is large enough to have quantifiable effects on the state's UI trust fund, the focus of the present report.

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[4] Information on personal characteristics appears in Table 2 of Wayne Vroman, "The Alternative Base Period in Unemployment Insurance: Final Report," Unemployment Insurance Occasional Paper 95-3,(Washington, D.C.: U. S. Department of Labor, January 1995). Tables 3,5 and 6 of this same report summarize other dimensions of ABP eligibility to be discussed in the text.

2.2 THE WASHINGTON STATE SIMULATION MODEL

To estimate the impact of the Alternative Base Period (ABP) on UI benefit payouts and trust fund balances, a set of simulation models were developed which imbedded ABP provisions within a full UI trust fund simulation model for each state. The models were implemented as spreadsheets. Simulations were run with the ABP program both "on" and "off." Comparisons of outcomes under "on" and "off" scenarios then provide the basis for estimating the impact of the ABP program. The first model to be developed was for Washington State.

Like models in the other states, the Washington model has five main sections or modules which are described in the following pages. A complete listing of names, definitions and the exact behavioral or definitional relationship for each variable is given in Appendix 1.

2.2.1 Overview of the Washington Model

The Washington model has 97 equations that characterize the important relationships needed to simulate benefits, taxes, interest income and end-of-year trust fund balances. The model is annual covering 21 years from 1985 to 2005. Since Washington started to pay ABP benefits in July 1987 the model covers the state's full historical experience with the ABP program. For the years through 1995 historic levels of the variables are used but with the ability to alter important exogenous variables such as the state's unemployment rate. For the ten years 1996 to 2005 simulated outcomes are based on behavioral and definitional relations developed from historic data coupled with statutory provisions of the state's UI laws and projected time paths of important exogenous variables.

The logic of the model allows the user to modify important exogenous variables and trace the effects of each modification throughout the model. In the terminology of simulation analysis, the model yields deterministic solutions. Identical sets of time paths for the exogenous variables yield identical output paths for all variables. Thus the user can obtain point estimates of the effects of a change in a single variable on all variables in the model.[5]

[5] This contrasts with stochastic outcome paths where identical patterns for exogenous variables will yield

The model has a recursive structure with five main modules or blocks: the labor market, benefits, taxes, interest income and the trust fund balance. These blocks determine important variables from the state's economy and the UI program. The blocks are grouped so that variables that have close logical relations are found in adjacent equations. The details of the individual blocks are given below.

2.2.2 The Labor Market

The labor market sets key employment, unemployment and wage variables that are the important background factors determining benefit payouts, tax receipts and interest income. There are five key exogenous variables: 1) the growth rate in the civilian labor force, 2) the growth rate in average wages of taxable employers, 3) the growth rate in average wages of reimbursable employers, 4) the interest rate paid on trust fund balances, and, most important, 5) the unemployment rate. The latter is the so called total unemployment rate or TUR, the ratio of unemployment to the labor force as measured by the household labor force survey.

The exogenous labor force growth rate combines with the level of last year's labor force to determine the labor force for the current year. The product of the labor force and the exogenous unemployment rate (TUR) is the level of total unemployment (TU). When TU is subtracted from the labor force it yields the level of employment as measured by the household survey (ECPS).

Between 1985 and 1994 the growth in total employment (ECPS) was almost identical to growth in employment covered by the UI program (ECOV). Employment growth during these years was 613,000 for ECPS and 637,000 for ECOV. Over this period taxable covered employment accounted for a 0.771 share of total employment growth while reimbursable employment accounted for the other 0.229 share. In the model the aggregates for ECPS and ECOV are

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different simulated outcomes due to the effects of random variation from disturbance terms and/or coefficients in one or more behavioral relationship within the model.

assumed to grow identically after 1994 while the 1985-1994 employment growth shares between taxable and reimbursable employment are assumed to persist into the future.

Average weekly wages for both taxable and reimbursable employment are determined as the product of the lagged average weekly wage and an exogenous wage growth rate. The average weekly wage for total (taxable plus reimbursable) employment is then simply the employment-weighted average of the average weekly wage for the two types of employment.

Finally, the interest rate paid on trust fund balances is also treated as exogenous. For the years through 1995 the model uses actual historic interest rates. The average real interest rate exceeded 3.5 percent during these years, but this is assumed to be unsustainable in future years. Starting in 1996 the nominal interest rate is assumed to be a 2.0 percent real interest rate, i.e., it equals the rate of wage inflation plus 2.0 percent.

2.2.3 UI benefits

For regular UI benefits, ABP benefits and benefits paid through the Federal-State Extended Benefits program, total benefit payouts are modeled as the product of the number of weeks compensated times the average weekly benefit. The average weekly benefit amount (WBA) in the regular UI program determines weekly benefits in the other two programs while weeks compensated in each of the programs is modeled differently. The following descriptions reproduce the ordering of the three programs within the model.

Claims for benefits in the regular UI program are extremely volatile from one year to the next. Partly this reflects the underlying volatility of Washington's economy, but other factors are operative as well. The state's unemployment rate (TUR) has changed sharply over the past thirty years and has been significantly higher than the national average for sustained periods such as 1970-1973 and 1980-1984. Additionally, the level of UI claims (insured unemployment or IU) has shown wide variation relative to the level of total unemployment (TU). Between 1967 and 1994 the IUTU ratio averaged 0.442, but it ranged from a low of 0.335 in 1979 to a high of 0.573

in 1974. This volatility in IUTU has persisted up to the present with the ratio increasing from 0.414 in 1993 to 0.545 in 1994.

Several time series relationships were estimated in attempting to capture the volatility in the IUTU ratio, but a fully satisfactory equation was not achieved. The model determines IUTU with four explanatory variables, but the regression relationship covering the years 1967 to 1993 explains only about one third of annual variation in IUTU. Three of the explanatory variables are standard for investigations of the IUTU ratio: the TUR, the TUR lagged and a dummy variable for the years starting in 1981. Each has the expected sign on its coefficient (positive for the TUR, negative for the TUR lagged and negative for the 1981 dummy variable), but only the 1981 dummy has a t ratio that exceeds 2.0. The fourth explanatory variable, a dummy variable for years starting in 1990, has a strictly empirical rationale, i.e., it significantly improves the fit of the regression. Its coefficient suggests the rate of UI claims shifted up in the 1990s relative to earlier years and the magnitude of the shift (0.0709) almost fully offsets the downward shift that started in 1981 (-.0825). The regression's adjusted R^2 of 0.355 would be even lower with the inclusion of 1994.

This relationship projects IUTU ratios in the 0.43-0.49 range for future years. Since this range is so small relative to the historic volatility of the IUTU ratio, the model also can have this regression relationship overridden with historic patterns of IUTU ratios from the 1970s and the 1980s. Probably the most important point to make regarding UI claims is that year-to-year volatility arises both from variability in the underlying state unemployment rate (TUR) and from changes in the proportion of the unemployed who claim benefits, i.e., the IUTU ratio. As a consequence, forecasting regular UI claims is extremely hazardous in Washington.

Two factors act to reduce the effect of a given volume of claims on the outflow of benefit payments from the UI trust fund. First, a small fraction of claims arise from reimbursable employment. While reimbursable employment accounts for about 20 percent of total covered employment (and 23 percent of covered employment growth since 1985), their employees

account for only about 5 percent of weeks compensated. Between 1985 and 1994 their share of benefit payouts ranged from 3.1 percent to 6.7 percent of the total. For future years the model projects their share of benefits of the total at 5.0 percent. These payments do not affect the trust fund balance. Second, not all weeks claimed are actually compensated. The largest factor here is the state's one week waiting period. Disqualifications also reduce weeks compensated relative to weeks claimed. This ratio has varied widely in the past, e.g., from 0.814 to 0.930 between 1985 and 1994. In the model the ratio of weeks compensated to weeks claimed is projected at 0.90 for future years.

The determination of average weekly benefit amount (WBA) in the model incorporates the statutory provisions controlling changes in the maximum weekly benefit (MAXWBA) and estimates the replacement rate (the ratio of the average WBA to the average weekly wage) with a regression equation. The MAXWBA is indexed to 70 percent of the average weekly wage in covered earnings lagged two years, and it changes annually on July 1st. The model records the maximum for both halves of the year and derives an annual MAXWBA as a simple average of the two.

The ratio of the annual MAXWBA to the average weekly wage (MBAW) as a key determinant of the benefit replacement rate. The regression utilizes a nonlinear formulation with MBAW entering positively and the square of MBAW entering negatively. Both are highly significant indicting that as MAXWBA increases relative to the average weekly wage, the effect on the average WBA becomes smaller. The replacement rate regression also includes as explanatory variables the TUR and the growth rate in average weekly wages. The former controls for mix effects within the claimant caseload while the latter recognizes that periods of high inflation reduce the replacement rate, i.e., the ratio of lagged wages (the basis for average WBA) to current wages is lower in periods of high inflation than during low inflation.

The replacement rate regression was fitted for the years 1967 to 1994, and its fit is good as indicated by the adjusted R^2 of 0.954. Most significant are the two MBAW ratios, but all four

explanatory variables have expected signs. The weekly benefit amount (WBA) is then determined as the product of the replacement rate and the average weekly wage.

A final factor determining regular benefit payouts is a benefit adjustment that controls for all other influences. The WBA, for example, is measured for claimants receiving full weeks of UI benefits whereas weeks compensated includes partial as well as full weeks of benefits. Also, weeks compensated and the weekly benefit amount for reimbursable claims are not reported. Some error may be present as the model removes the effects of reimbursable claims only at the aggregate level. The net effect of all unmeasured factors is to make projected benefit payouts too high unless an adjustment is included. Between 1985 and 1994 the benefit adjustment ranged from 0.903 to 0.954. In future years this adjustment factor is projected to be 0.9284, the average for the 1985-1994 period.

Total payouts of regular benefits are then simply the product of the preceding factors that combine to determine weeks compensated for taxable employers, the weekly benefit amount and the benefit adjustment factor. Since the model has to explicitly recognize ABP benefit payments, the benefit payout relationship has the ability to remove ABP benefits from the total.[6] This is accomplished by having ABP benefits multiplied by a 0-1 dummy variable that subtracts ABP payouts if the ABP program is turned "off." Comparing simulations with ABP "on" and "off" allows one to estimate the effect of the ABP program on benefit payouts, the trust fund balance and other variables.

Federal-State Extended Benefits (EB) have constituted an important part of total UI benefit payouts in several past years. Weeks compensated in the EB program totaled 42.5 percent of regular program weeks in 1971. During 1993 and 1994 the comparable percentages were 5.8 percent and 11.3 percent respectively. Since only half of EB is financed by the state, however, the trust fund effects of EB are much smaller than suggested by its share of weeks compensated.

[6] The relationships that determine ABP benefit payments are described below.

EB is triggered "on" by the model when the state's insured unemployment rate (IUR, the ratio of regular UI weeks claimed to covered employment) reaches 4.0 percent.[7] A 4.0 percent annual IUR trigger is used in the model because of seasonal patterns in unemployment. The first quarter's IUR is typically about 25 percent higher than the annual average. Thus the IUR would be expected to reach 5.0 percent in the first quarter if the annual IUR were 4.0 percent.

The number of months EB is triggered "on" is also a function of the IUR. Successively higher IURs between 4.0 percent and 5.9 percent cause months of EB to increase in steps from 3 to 10. For IURs of 5.9 percent and higher the program is activated for the full year.
Historically EB has been "on" for widely differing proportions of the year. In the model, annualized weeks of EB are determined by a regression relationship based on twelve years of data: 1973-1978, 1980-1983, and 1993-1994. This variable is explained by annual weeks of regular UI benefits with a slope coefficient of 0.201 indicating that if EB is active for the full year, it will compensate about 20 percent of weeks compensated by regular UI. The regression explains two-thirds of the variation in annualized EB weeks compensated.

The WBA for EB recipients is determined as a function of the WBA for regular UI recipients. The slope in the relation is 0.9185 and the adjusted R^2 is 0.998. Weekly benefits for EB are closely tied to regular program weekly benefits but are about 8 percent lower. The lower benefit level is to be expected since EB recipients have an earlier base period compared to regular UI program recipients.

There is also a benefit adjustment factor for EB. It is based on 1994 and equals 0.966. Total EB is then the product of weeks of EB, the WBA for EB and the benefit adjustment factor. Half of

[7] The state "on" trigger is activated by either the IUR or the TUR in Washington. To activate the IUR trigger, the IUR for a thirteen week period must equal or exceed 5.0 percent and be at least 120 percent of the average for the same period over the past two years. To activate the TUR trigger, the TUR for three months must equal or exceed 6.5 percent and be at least 110 percent of the TUR for the same period in at least one of the past two years. The TUR trigger provision was implemented in 1993, and except for the period from October 1993 to February 1994 all "on" periods have been activated by the state's IUR.

this total is then projected as the state's share of EB payouts.

2.2.4 ABP Benefits

One can develop a model of ABP benefit payments more easily in Washington than in other states because of ready access to micro data on ABP applicants and recipients. The state continues to maintain the Continuous Wage Benefit History (CWBH) data base, a ten percent sample of covered workers and claimants. Tabulations of CWBH data were used in an earlier report,[8] and they were utilized in constructing the ABP section of the present model. Tabulations of the CWBH were useful for indicating numbers of applicants, numbers of beneficiaries, weekly benefits, total benefit entitlements and utilization of total entitlements.

The starting point is to estimate ABP applications. Tabulations for 1988 and 1992 showed that ABP applicants had an eligibility proportion of 0.749 compared to 0.908 for regular program applicants. Tabulations for 1988 through 1993 indicated that ABP claimants constituted 0.055 of regular UI beneficiaries. Given the lower eligibility rate of ABP claimants relative to regular base period (BP) claimants they represent a higher proportion of applicants than of beneficiaries. For the years starting in 1988 the model assumes ABP claimants represent 0.06629 of all applicants. Thus IU among ABP claimants is 0.06629 of total IU. Since the program was operative during just half of 1987, the ABP claimant proportion was 0.03315 for that year.

The translation of IU for ABP claimants into ABP weeks compensated considers three separate intervening factors: 1) their lower rate of monetary eligibility (estimated at 0.825 of regular BP claimants), 2) their higher rate of receiving a first payment among monetary eligibles (estimated at 1.029 of regular BP claimants) and 3), their lower weeks of benefit utilization (estimated at 0.854 of regular BP claimants). This third factor incorporates the effects of lower potential weeks in benefit status with a higher utilization rate of potential benefit entitlements among ABP claimants. The composite factor combining all three of the preceding equals 0.725 (=

[8] Wayne Vroman, "The Alternative Base Period in Unemployment Insurance: Final Report," Unemployment Insurance Occasional Paper 95-3, Washington, D.C.: U.S. Department of Labor, January 1995.

0.825*1.029*0.854).

Weeks of ABP benefits are then determined as the product of the following: 52 times IU for ABP claimants, the proportion of total weeks claimed arising from taxable employment, the ratio of weeks compensated to weeks claimed and the composite factor of 0.725 which reflects the differential ABP eligibility and utilization factors identified above.

Tabulations for 1990, 1993 and 1994 consistently show the WBA for ABP claimants is much lower than for regular base period claimants. Further, the WBA for ABP claimants has declined relative to the overall WBA in recent years as the maximum benefit has been set at a higher percentage of the lagged average weekly wage.[9] Thus at the beginning of the program the ABP weekly benefit was set at 0.742 of the average benefit. By 1994, the first full year when the maximum WBA was 70 percent of the lagged weekly wage, the WBA proportion was set at 0.673. It is projected to remain at this level in future years.

There is also a benefit adjustment factor for ABP claims. The model utilizes the same factor as for regular UI benefits. Total ABP payments are then determined as the product of weeks compensated, the WBA and the benefit adjustment factor. The simulated amount for 1988, the program's first full year of operation was $12.3 million or 3.4 percent of regular UI benefits.

2.2.5 UI Taxes

Washington uses benefit ratios (chargeable benefits as a proportion of payroll, each measured over a four year period) in setting tax rates for individual employers. However it uses an aggregate reserve ratio (the trust fund balance as a percent of covered wages for taxable employers) measured on June 30th to designate which of seven tax rate schedules will be used to set individual employer tax rates during the following year.

[9] The percentage was 55 percent until July 1989 when it increased to 60 percent. The percentage then increased to 70 in July 1993.

Two other features of Washington's tax system are noteworthy. Compared to most states it has a high taxable wage base. Taxable wages per employee are set at 80 percent of average annual wages lagged two years.[10] Consequently taxable wages have averaged about 60 percent of covered wages in recent years. Washington utilizes array allocations to set tax rates. Under this procedure employers are arranged in order according to their benefit ratio and divided into twenty groups with each group accounting for 5 percent of taxable wages. All employers in a given group are taxed at the same rate. Because each tax rate is known and the distribution of taxable wages is also known, the average tax rate can be determined with a high degree of precision before the start of the year. This feature makes taxes easier to forecast than in many other states.

In the model the taxable wage base is set at 80 percent of average annual wages lagged two years. The ratio of the tax base to average annual wages in the current year is a main determinant of the taxable wage proportion (TWP, the ratio of taxable wages to total wages). The regression that determines the taxable wage proportion has three explanatory variables: the ratio of the tax base to the average wage (TBAW), TBAW squared and a time trend. TBAW enters with a positive coefficient while TBAW squared has a negative coefficient and both coefficients are highly significant indicating the effect of TBAW on TWP is nonlinear. A series of equal increases in the tax base produces smaller and smaller responses of taxable wages. This is expected as successive tax base increases affect fewer and fewer high wage workers.

The most significant variable in the equation, however, is a negative time trend. This variable provides empirical support for the observation that the earnings distribution is becoming increasingly unequal with low wage workers realizing slower wage growth than high wage workers. The trend's coefficient (-0.00338) indicates that with a constant TBAW, TWP will decline by one full percentage point every three years. This is a negative factor in Washington's long run UI financing situation.

[10] Only two UI programs, Hawaii and Idaho, use a higher indexation percentage in setting the tax base, 100 percent of average annual wages in both. Like Washington, Montana and Oregon set the tax base at 80 percent of average annual wages.

The regression explaining TWP was fitted over the period 1967 to 1994. Its adjusted R^2 of 0.992 indicates a very good fit with the t ratios for the TBAW and time trend variables each exceeding 12.0. When TWP and TBAW are plotted on the same graph it is clear that TBAW has grown much more rapidly than TWP since the late 1960s.

Total wages of taxable covered employers are then the product of employment and the average annual wage. Taxable wages equal total wages multiplied by TWP.

The model also determines the shares of taxable wages paid in the first half of the year by determining tax accruals in the first quarter and the fourth quarter of the previous year. Accruals in both quarters depend on the TBAW ratio. When the tax base increases relative to average wages it raises the proportion of annual taxable wages that are earned in later quarters of the year. First quarter accruals are lower as TBAW is higher, but fourth quarter accruals depend positively on TBAW. Both regressions were fitted over a split sample period of 1967-1973 and 1978-1994. The TBAW ratio is highly significant in both regressions.

As noted, Washington utilizes the reserve ratio on June 30th to determine which of its seven tax rate schedules will be operative in the following year. Since the model is annual it is necessary to estimate the trust fund balance as of mid-year. This is accomplished in the model by adding to the start-of-year balance estimates of first half tax receipts and first half interest earnings and subtracting first half benefit payouts. First half benefits are estimated as 0.543 times annual benefits, a proportionality factor based on the ratio first half benefits to annual benefits for the years 1985 to 1994. First half tax receipts are the estimates of accruals from the first quarter and from the fourth quarter of the previous year. First half interest accruals are projected using an estimate of the fund balance on January 1st and June 30th. The latter is approximated by adding first half tax receipts to the start-of-year balance and subtracting first half benefit payouts. Thus the start-of-year trust fund balance plus all three flows needed to estimate the mid-year balance are estimated.

The reserve ratio then is merely the ratio of the mid-year trust fund balance expressed as a percentage of lagged annual covered wages of taxable employers. This ratio determines which of seven tax rate schedules (denoted AA, A, B, C, D, E, and F) will be operative starting in January of the next year.

Schedule AA, the schedule with the lowest tax rates, is activated when the June 30th reserve ratio is 2.9 percent or higher. The average tax rate under this schedule is 1.932 percent from 1994 to 1997 and 2.046 percent starting in 1998. Schedule F has the highest tax rates and is activated when the reserve ratio is 1.0 percent or less. Its average tax rate is 3.907 percent from 1994 to 1997 and then 4.021 percent from 1998. A different set of tax schedule triggers was operative between 1985 and 1993, a period when the state had six tax rate schedules. The model utilizes the tax rates and tax rate schedule triggers applicable in every year from 1985 to 2005.

Annual tax receipts are estimated as the sum of receipts from the first quarter, the second quarter and third plus fourth quarter receipts combined. For each of the sub-year periods, tax receipts are the triple product of annual taxable wages, the proportion applicable in that period and the average tax rate from the appropriate tax rate schedule. Note that first quarter receipts are based on accruals from the fourth quarter of the preceding year.

2.2.6 Trust fund interest

Interest earnings are simulated as the product of the interest rate times the average trust fund balance for the year. The latter is the average of the start-of-year balance and an estimate of the ending balance. The latter is derived by adding taxes to the start-of-year balance and subtracting benefit payments. This average is multiplied by 0.99 to recognize the seasonal pattern of drawdowns which lowers the balance most during the first quarter, thus reducing annual interest earnings.

2.2.7 The trust fund balance

This is merely an accounting identity. It updates last year's ending balance by adding annual taxes and interest and subtracting benefit payouts. The net balance and the gross balance are both estimated. The latter adds to the net balance all end-of-year outstanding debts to the U.S. Treasury. This block also has relations that estimate borrowing and debt repayment during periods when the trust fund is depleted.

2.2.8 Model use and output display

Table 2.1 shows the complete model and simulated variables for the twenty-one years 1985 to 2005. The individual blocks and the variables within the blocks appear in the order just described. As noted, the definitions of the variables and behavioral equations appear in Appendix 1.

Following the model's equations, Table 2.1 displays two panels that summarize model output for two multi-year periods: 1987 to 1995 and 1987 to 2005. These provide a short hand summary of main outputs without the need to examine individual year detail. Cumulative summaries are shown for the indicated periods for important flow variables like total benefits, ABP benefits, interest and taxes. Also shown are ending trust fund balances and reserve ratios along with averages for two important exogenous variables: the unemployment rate (TUR) and the rate of inflation. In addition to the period summaries, there are also deviation summaries that show deviations from the baseline for key outcome variables like benefits, taxes, interest and the ending trust fund balance.

Finally, the bottom of the table shows the ABP policy control dummy variable, ABP off. When "ABP off" equals 0 as shown in Table 2.1 the ABP program is active and model outcome variables include the effects of the ABP. When "ABP off" equals 1 the ABP program is not active and while ABP variables continue to be simulated their effects are zeroed out. Thus benefits and other important variables are computed as if there were no ABP program.

2.3 EFFECTS OF ALTERNATIVE BASE PERIOD BENEFITS

The model just described was utilized to assess the impact of ABP benefits on Washington's UI trust fund. Simulations were run that were identical in all respects except for the presence or absence of the ABP program.

As noted key exogenous variables in the model are the labor force growth rate, the rate of wage inflation, the interest rate and the unemployment rate (TUR). The baseline simulation assumed historic values for these variables through 1995. The labor force was then assumed to grow by 2.5 percent during 1996-1998 and by 2.0 percent thereafter. From 1996 onward the average weekly wage for both taxable and reimbursable employment was assumed to grow 4.0 percent per year. The TUR was assumed to remain at 6.5 percent from 1996 to 2005. Finally, the interest rate was assumed to be 2.0 percent in real terms starting in 1996 which implies a 6.0 percent nominal interest rate under a 4.0 percent assumed rate of wage growth.

2.3.1 The Main Findings

Table 2.2 summarizes the main results of the comparison. It shows cumulative summaries of five variables for the two periods 1987-1995 and 1987-2005. Results with and without the ABP program are displayed along with the differences attributable to the ABP.

Over the 1987-1995 period the ABP program is simulated to pay out $160 million in benefits. Total benefits are simulated to be increased by $160 million as well.[11] Taxes do not change and interest income is reduced by $51 million due to the ABP program. The increment to UI benefit payouts coupled with reduced interest income means the trust fund balance at the end of 1995 is lower by $211 million due to the ABP program.

Over the longer 1987-2005 period the results present some interesting contrasts. Cumulative

[11] The two differences need not be identical. Under some circumstances the presence of the ABP program could cause EB to be activated, causing more benefits to be paid to regular base period recipients. This did not occur in the present pair of simulations.

ABP benefits and total UI benefits both increase by $477 million due to the ABP program while interest income is lower by $130 million. However, UI taxes are now higher by $644 million. The explanation is that ABP benefit payouts reduce trust fund balances by enough to activate higher tax rates through experience rating. The response of experience-rated taxes is so large that the trust fund balance in 2005 is actually slightly higher under ABP "on" compared to ABP "off," $2109 million versus $2071 million.

The exact results of paired simulations as summarized in Table 2.2 would differ depending upon the particular values assumed for the exogenous variables. More important, however, is the qualitative result that the long run effects on the trust fund will be minimal due to the operation of experience rating. In this particular example experience rating could be said to overreact, i.e., the response of UI taxes exceeds the combined sum of higher benefit payouts and reduced interest income caused by the ABP program. More generally, the presence of ABP in a state would be expected to result in higher benefit payouts, higher taxes and lower interest income.[12] The exact outcomes depend on the assumptions underlying the particular simulations.

Table 2.3 provides an annual summary of the response of UI taxes. Because there is no tax response during the 1987-1995 period, the table focuses just on the ten years from 1996 to 2005. The left hand columns show which tax rate schedule is in effect in each year under the two simulations. For four years (1996, 2001, 2002 and 2003) the identical tax schedules are in effect. However in the other six years the presence of the ABP program causes a higher tax schedule to be in effect. In all six instances it is one tax schedule higher than the schedule that would have been operative in the absence of the ABP program.

The six years of higher tax schedules under the ABP cause cumulative taxes to be higher by $644 million. Note also that taxes in the year 2001 are somewhat higher ($16 million), a reflection of higher accruals from the fourth quarter of 2000 paid in 2001.

[12] Of course, the responses of all these variables to the creation of an ABP program will be smaller to the extent that an offsetting change in benefit availability is instituted at the same time the ABP program is created. If aggregate benefits are unchanged there will be no change in interest income, taxes and trust fund balances.

It should be emphasized that the tax response to higher benefit payouts caused by the ABP could occur much sooner than the ten year delay simulated in Washington. Recall that the program was operative only for six months in its first year 1987. Also, from Table 2.1 observe that ABP payouts did not reach $20 million until 1992. Thus, an earlier tax response could be observed under different circumstances.

To summarize, for the nineteen year period 1987-2005 the ABP program in Washington was simulated to pay a total of $477 million or 3.24 percent of total benefit payouts. During this same period ABP claimants represented 6.6 percent of insured unemployment. The higher representation of ABP claimants among IU compared to their share of benefit payouts is illustrative of their lower levels of covered earnings and benefit entitlements. The cumulative effect of the ABP program over this period was to reduce interest income by $130 million and to increase employer taxes by $644 million. There was practically no effect on the state's trust fund balance in the long run.

2.3.2 Other Findings

Washington's economy is extremely volatile reflecting many factors but especially the variation in demand for civilian and military airframe manufacturing and logging. The state's TUR was consistently much higher than 6.5 percent both in the early 1970s and again in the early 1980s. One alternative set of simulations subjected the state to a serious recessionary episode during the 1996-2005 period. Another exercise explored the consequences of higher inflation during these ten years.

Table 2.4 summarizes the results. Under the deep recession simulation the 6.5 percent TUR of 1995 increases to 8.0 percent in 1996, 10.0 percent in 1997 and 1998, 9.0 percent in 1999, 8.0 percent in 2000 and then returns to 6.5 percent from 2001 through 2005. Observe in the top half of Table 2.4 that ABP benefits total $536 million over the nineteen years, but the total increase in UI benefits is $576 million. The additional $40 million represents the state share of higher EB

payments. In both 1996 and 1999 EB was activated for more months due to the ABP program, and about $20 million of added EB payments flowed out of the state's trust fund in each year.

The presence of the ABP program causes interest earnings to be reduced by $122 million, but employer taxes are raised by $792 million. Employers are taxed under higher tax rate schedules in five separate years (1997, 1998, 2002, 2003 and 2004) when compared to the ABP "off" simulation. As a consequence of the large tax response, the ending trust fund balance is actually higher when the ABP program is "on.". This is another instance of experience rating "overreacting" to the drawdown in the trust fund caused by ABP benefits.

The bottom half of Table 2.4 traces the effects of higher inflation during 1996-2005, 6.0 percent annual wage inflation rather than the 4.0 percent of the baseline. Higher inflation leads to increased payouts of ABP as well as regular BP benefits. As a percentage of total benefit payouts, however, ABP benefits in the high inflation simulation are the same as in the baseline, 3.24 percent. In this simulation the combined effects of higher ABP payouts and reduced interest earnings considerably outweigh the tax response so the ending trust fund balance is lower by $327 million, $2247 million compared to $2574 million when there is no ABP program.

Note also that with higher inflation interest earnings constitute a larger share of trust fund receipts (taxes plus interest) than in the baseline. For the ABP "on" simulation of Table 2.2 the percentage is 11.4 percent ($1877 million of $16,515 million) compared to 13.1 percent under the higher inflation of Table 2.4 ($2434 million of $18,643 million). Higher inflation in a state like Washington that maintains a large trust fund balance enhances the share of trust fund receipts arising from interest earnings.

2.3.3 Summary

Based on the results from Tables 2.2, 2.3 and 2.4, four final observations are in order. 1) The ABP program makes only a small percentage addition to UI benefit payouts in Washington. The percentage addition for both the baseline and the high inflation simulations was 3.24 percent. The

percentage increase was also similar for the high unemployment simulation.[13] 2) Increases in ABP payouts cause UI taxes to increase in the long run through experience rating. 3) A second factor leading to increased UI taxes is the reduction in interest earnings caused by ABP payouts which initially act to lower the trust fund balance. 4) The long run effect of the ABP program on the UI trust fund balance is difficult to predict because UI taxes may "overreact" to trust fund drawdowns. In two of the three pairs of simulations examined here, the trust fund balance in 2005 was somewhat higher with ABP "on" than with ABP "off." The main point here is that the long run effect of increased benefits and reduced interest on the trust fund balance is offset through the operation of experience rated taxes. This offsetting tendency, however, is only approximate, not a precise dollar-for-dollar offset.

[13] The percentage increase in benefit payouts caused by ABP benefits alone was 3.16 percent but 3.39 percent when extra EB payouts due to the ABP are also considered.

2.4 TABLES 2.1 THROUGH 2.4:

Table 2.1. Baseline Simulation

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
LABOR MARKET																					
GRCLF	2.5	5.2	2.7	2.5	5.9	3.3	0.0	4.3	2.2	0.3	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CLF	2091	2199	2258	2315	2451	2533	2533	2643	2700	2708	2776	2845	2916	2975	3034	3095	3157	3220	3284	3350	3417
GRAWW	2.4	4.2	2.5	3.5	3.7	4.7	5.3	7.0	0.0	2.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
GRAWWREI	4.7	2.9	1.9	3.9	5.1	5.1	6.6	5.8	2.9	1.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
GRAWWTO	3.1	3.9	2.3	3.6	4.0	4.8	5.7	6.8	0.6	2.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
AWW	353	368	377	390	404	424	446	477	477	489	509	529	550	572	595	619	644	670	696	724	753
AWWREI	385	396	404	419	440	463	493	522	537	544	566	589	612	637	662	689	716	745	775	806	838
AWWTO	359	373	382	395	411	431	455	486	489	500	520	541	563	586	609	633	659	685	713	741	771
INTRATE	10.20	9.52	8.83	8.67	8.96	9.07	8.68	8.03	7.43	6.83	6.67	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
TUR	8.1	8.2	7.6	6.2	6.2	4.9	6.3	7.5	7.5	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
TU	169	180	172	144	152	124	160	198	203	173	180	185	190	193	197	201	205	209	213	218	222
ECPS	1922	2019	2086	2171	2299	2409	2373	2445	2498	2535	2595	2660	2727	2781	2837	2894	2951	3010	3071	3132	3195
T57	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ETAX	1289	1338	1406	1484	1581	1677	1674	1700	1735	1784	1831	1881	1932	1974	2017	2061	2105	2151	2197	2245	2293
EREI	306	318	335	350	367	388	409	427	439	448	462	477	492	504	517	530	543	557	571	585	599
ECOV	1595	1655	1741	1834	1948	2065	2083	2127	2174	2232	2292	2357	2424	2478	2534	2591	2649	2708	2768	2829	2892

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BENEFITS																					
IUTU	0.405	0.358	0.352	0.422	0.388	0.493	0.505	0.424	0.414	0.545	0.503	0.455	0.455	0.455	0.455	0.455	0.455	0.455	0.455	0.455	0.455
IU	69	64	60	60	59	61	80	84	84	94	90	84	86	88	90	91	93	95	97	99	101
IUR	4.3	3.9	3.5	3.3	3.0	3.0	3.9	3.9	3.9	4.2	3.9	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
IUTXIU	0.955	0.950	0.951	0.942	0.944	0.952	0.969	0.953	0.954	0.933	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
WPDWCL	0.898	0.838	0.814	0.827	0.846	0.855	0.881	0.924	0.930	0.927	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
WEEKSREG	3211	2812	2551	2596	2573	2718	3680	4033	4056	4549	4216	3934	4032	4113	4195	4279	4365	4452	4541	4632	4724
MAXWBAQ12	185	190	197	205	210	237	247	259	273	340	342	350	364	379	394	410	426	443	461	480	499
MAXWBAQ34	190	197	205	210	237	247	259	273	340	342	350	364	379	394	410	426	443	461	480	499	519
MAXWBA	188	194	201	208	224	242	253	266	307	341	346	357	372	387	402	418	435	452	471	490	509
MBAW	0.522	0.519	0.526	0.525	0.544	0.562	0.556	0.547	0.627	0.681	0.665	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
REPRATE	0.376	0.381	0.394	0.383	0.379	0.391	0.385	0.361	0.392	0.412	0.394	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
WBA	135.09	142.08	150.21	151.51	155.89	168.78	175.16	175.62	191.93	206.41	205.16	211.78	220.25	229.07	238.23	247.76	257.66	267.97	278.70	289.85	301.44
BENADJ	0.9361	0.9542	0.9396	0.9296	0.9067	0.9039	0.9114	0.9163	0.9483	0.9384	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928	0.928
BENREG	388	362	342	344	343	395	569	619	704	822	763	735	783	831	881	935	992	1052	1116	1184	1256
EBON	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
MOEB03	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
MOEB05	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
MOEB08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB	0	0	0	0	0	0	0	0	3	5	0	0	0	0	0	0	0	0	0	0	0
PYEBON	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WEEKSEBAR	0	0	0	0	0	0	0	0	949	1186	0	0	0	0	0	0	0	0	0	0	0
WEEKSEB	0	0	0	0	0	0	0	0	237	475	0	0	0	0	0	0	0	0	0	0	0
WBAEB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	181.21	190.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EBADJ	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.647	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
EBTOT	0	0	0	0	0	0	0	0	28	87	0	0	0	0	0	0	0	0	0	0	0
EBS	0	0	0	0	0	0	0	0	7	44	0	0	0	0	0	0	0	0	0	0	0
BENTOT	388	362	342	344	343	395	569	619	732	909	763	735	783	831	881	935	992	1052	1116	1184	1256
BENTF	388	362	342	344	343	395	569	619	712	866	763	735	783	831	881	935	992	1052	1116	1184	1256
ABP BENEFITS																					
IUABP	0	0	2.0	4.0	3.9	4.1	5.3	5.6	5.6	6.3	6.0	5.6	5.7	5.8	5.9	6.1	6.2	6.3	6.4	6.6	6.7
IURABP	0	0	0.11	0.22	0.20	0.20	0.26	0.26	0.26	0.28	0.26	0.24	0.24	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23
WEEKSABP	0	0	58	117	117	124	171	185	186	204	192	180	184	188	192	195	199	203	207	211	216
WBAABP	0	0	111.46	112.42	114.11	121.86	126.47	126.80	132.82	138.91	138.07	142.53	148.23	154.16	160.33	166.74	173.41	180.35	187.57	195.07	202.87
BENADJABP	0	0	0.9396	0.9296	0.9067	0.9039	0.9114	0.9163	0.9483	0.9384	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284	0.9284
BENABP	0	0	6.1	12.3	12.1	13.7	19.7	21.5	23.4	26.6	24.7	23.8	25.3	26.9	28.5	30.2	32.1	34.0	36.1	38.3	40.6

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TAXES																					
TXBASE	10000	11500	13200	15100	15600	16200	16800	17600	18500	19900	19900	20300	21100	22000	22800	23800	24700	25700	26700	27800	28900
TBAW	0.545	0.602	0.674	0.745	0.742	0.735	0.724	0.709	0.746	0.782	0.752	0.738	0.737	0.739	0.736	0.739	0.738	0.738	0.737	0.738	0.738
TWP	0.502	0.532	0.569	0.603	0.605	0.601	0.584	0.584	0.602	0.619	0.593	0.581	0.577	0.575	0.570	0.568	0.564	0.561	0.557	0.554	0.551
WSTAX	11879	13604	15682	18148	20119	22202	22686	24656	25916	28120	28705	30068	31923	33787	35598	37705	39761	42007	44326	46848	49451
WSTO	23662	25584	27555	30099	33272	36948	38850	42216	43029	45392	48445	51760	55298	58761	62439	66345	70493	74898	79575	84541	89815
PWSTXQ1	0.434	0.412	0.379	0.366	0.362	0.368	0.370	0.371	0.365	0.352	0.354	0.359	0.359	0.358	0.359	0.358	0.359	0.359	0.359	0.359	0.359
PWSTXQ4	0.1194	0.1256	0.1377	0.1413	0.1437	0.1377	0.1365	0.1347	0.1406	0.1428	0.1407	0.1394	0.1394	0.1395	0.1393	0.1396	0.1394	0.1394	0.1394	0.1395	0.1394
RESNL	77.3	163.7	353.6	654.5	1042.4	1364.3	1624.1	1707.6	1766.0	1743.2	1565.4	1453.2	1378.2	1340.1	1334.2	1423.0	1531.1	1641.9	1755.5	1871.0	1989.1
BENTFQ12	207.9	192.3	197.1	193.1	195.0	206.5	306.7	332.9	355.8	485.7	414.2	399.0	425.3	451.2	478.6	507.7	538.6	571.3	606.1	643.0	682.0
TAXQ12	262.4	282.2	307.9	330.0	280.7	257.5	257.2	274.9	287.2	273.1	274.1	286.4	325.2	366.7	433.2	472.9	500.0	527.7	557.3	588.4	621.5
RESNAVQ12	104.47	208.61	408.97	722.93	1085.2	1389.8	1599.4	1678.7	1731.7	1636.9	1495.4	1396.9	1328.1	1297.9	1311.5	1405.5	1511.8	1620.1	1731.1	1843.7	1958.8
RESNPBQ12	104.47	208.61	408.97	722.93	1085.2	1389.8	1599.4	1678.7	1731.7	1636.9	1495.4	1396.9	1328.1	1297.9	1311.5	1405.5	1511.8	1620.1	1731.1	1843.7	1958.8
INTQ12	3.5	8.3	17.2	30.2	46.6	61.3	69.3	68.3	63.9	56.2	49.4	42.0	39.9	39.0	39.4	42.2	45.4	48.7	52.0	55.4	58.8
Res630	115.0	239.3	456.7	813.7	1167.5	1472.2	1614.0	1706.3	1716.3	1601.3	1459.6	1382.6	1317.9	1294.6	1328.2	1430.3	1537.9	1646.9	1758.7	1871.8	1987.3
RRATIO630	0.15	0.58	1.06	1.82	2.96	3.90	4.42	4.42	4.40	4.16	3.72	3.22	2.85	2.55	2.34	2.26	2.29	2.32	2.34	2.35	2.35
TAXRATE	4.021	4.021	4.021	3.666	2.561	2.246	2.246	2.246	2.246	1.932	1.932	1.932	2.132	2.246	2.561	2.561	2.561	2.561	2.561	2.561	2.561
TXSCHEDAA										1.932	1.932	1.932	0	0	0	0	0	0	0	0	0
TXSCHEDA	0	0	0	0	0	2.246	2.246	2.246	2.246	0	0	0	2.132	2.246	0	0	0	0	0	0	0
TXSCHEDB	0	0	0	0	2.561	0	0	0	0	0	0	0	0	0	2.561	2.561	2.561	2.561	2.561	2.561	2.561
TXSCHEDC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TXSCHEDD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TXSCHEDE	0	0	0	3.666	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TXSCHEDF	4.021	4.021	4.021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EFFTAXRATE	4.020	3.913	3.895	3.652	2.796	2.341	2.328	2.243	2.225	2.047	1.930	1.922	2.089	2.213	2.502	2.540	2.543	2.542	2.543	2.542	2.542
TAXQ1	55	57	69	87	94	74	69	70	75	82	78	78	81	95	106	127	135	142	150	158	167
TAXQ2	207	225	239	243	187	184	189	205	213	191	197	208	244	272	327	346	365	386	407	430	454
TAXQ34	215	250	303	333	282	262	271	278	289	302	280	292	342	381	457	485	511	540	570	602	636
TAXTF	478	532	611	663	562	520	528	553	577	576	554	578	667	748	891	958	1011	1068	1127	1191	1257

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
INTEREST																					
INTRATE	10.20	9.52	8.83	8.67	8.96	9.07	8.68	8.03	7.43	6.83	6.67	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
RESNL	77	164	354	655	1042	1364	1624	1708	1766	1743	1565	1453	1378	1340	1334	1423	1531	1642	1756	1871	1989
RESNHAT	167	334	622	973	1261	1489	1583	1642	1631	1453	1357	1296	1262	1257	1343	1446	1550	1657	1766	1878	1990
RESNAV	121	246	483	806	1140	1412	1588	1658	1682	1582	1446	1361	1307	1286	1325	1420	1525	1633	1743	1856	1970
RESNPB	121	246	483	806	1140	1412	1588	1658	1682	1582	1446	1361	1307	1286	1325	1420	1525	1633	1743	1856	1970
INT	12	24	43	71	104	130	139	134	125	109	96	82	79	77	80	85	92	98	105	111	118

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FUND BALANCE																					
RESNL	77	164	354	655	1042	1364	1624	1708	1766	1743	1565	1453	1378	1340	1334	1423	1531	1642	1756	1871	1989
TAXTF	478	532	611	663	562	520	528	553	577	576	554	578	667	748	891	958	1011	1068	1127	1191	1257
INT	12	24	43	71	104	130	139	134	125	109	96	82	79	77	80	85	92	98	105	111	118
BENTF	388	362	342	344	343	395	569	619	712	866	763	735	783	831	881	935	992	1052	1116	1184	1256
RESN	164	354	655	1042	1364	1624	1708	1766	1743	1565	1453	1378	1340	1334	1423	1531	1642	1756	1871	1989	2109
DEBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RESG	164	354	655	1042	1364	1624	1708	1766	1743	1565	1453	1378	1340	1334	1423	1531	1642	1756	1871	1989	2109
TFDEBT																					
DEBTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOANS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REPAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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PERIOD SUMMARY: 1987 to 1995

TUR	INF	TAXAS	INT	BENTF	EBS	ABP	LOAN
6.6	3.7	5143	950	4953	51	160.05437	0

WSTAX	D.TUR	D.INFL	D.TAX	D.INT	D.BEN	R.R.95	RESN	D.RES
206233.8	1.1	-0.3	0	0	0	3.00	1453	0

PERIOD SUMMARY: 1987 to 2005

TUR	INF	TAXAS	INT	BENTF	EBS	ABP	LOAN	TWP
6.5	3.9	14638	1877	14719	51	475.92854	0	0.551

WSTAX	D.TUR	D.INF	D.TAX	D.INT	D.BEN	D.ABP	R.R.05	RESN	D.RES
597710	1.0	-0.1	0	0	0	0.0	2.35	2109	0

POLICY CONTROL

ABP Off	0	
MAXWBA % Trigg	0	0

HISTORICAL DATA

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
STUR-70s	9.2	10.1	9.5	7.9	7.2	9.5	8.7	8.8	6.9	6.8
STUR-80s	7.9	9.5	12.1	11.2	9.5	8.1	8.2	7.6	6.2	6.2
IUTU-70s	0.543	0.517	0.422	0.456	0.573	0.562	0.527	0.436	0.388	0.335
IUTU-80s	0.448	0.399	0.409	0.364	0.340	0.404	0.358	0.352	0.422	0.388
USTUR-70s	4.9	5.9	5.6	4.9	5.6	8.5	7.7	7.1	6.4	5.8
USTUR-80s	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5	5.3
GRAWW70s	4.0	4.0	4.8	6.5	7.6	9.6	7.3	6.8	7.1	9.5
GRAWW80s	9.2	9.0	4.0	1.3	1.9	3.1	3.9	2.3	3.6	4.0
BASETUR	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
BASEGRAWW	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
SIMVALUE	1	0								

Table 2.2. Estimated Effects of the ABP, Baseline Simulation

	ABP "Off"	ABP "On"	Effect of ABP
1987 to 1995			
ABP Benefits	0	160	160
Total UI Benefits	4793	4953	160
UI Taxes	5143	5143	0
Interest	1001	950	-51
Fund Balance, Dec. 31, 1987	1664	1453	-211
1987 to 2005			
ABP Benefits	0	477	477
Total UI Benefits	14242	14719	477
UI Taxes	13994	14638	644
Interest	2007	1877	-130
Fund Balance, Dec. 31, 2005	2071	2109	38

Source: Simulations with a trust fund model developed at the Urban Institute
All amounts measured in millions of dollars.

Table 2.3. Comparison of Tax Receipts by Year, 1996 to 2005

Year	Tax Schedule in Effect: ABP "Off"	ABP "On"	Effect of ABP	Total UI Taxes: ABP "Off"	ABP "On"	Effect of ABP
1996	AA	AA	0	578	578	0
1997	AA	A	1 Sched.	612	667	55
1998	AA	A	1 Sched.	681	748	67
1999	A	B	1 Sched.	785	891	106
2000	A	B	1 Sched.	840	958	118
2001	B	B	0	995	1011	16
2002	B	B	0	1068	1068	0
2003	B	B	0	1127	1127	0
2004	A	B	1 Sched.	1064	1191	127
2005	A	B	1 Sched.	1103	1256	153

Source: Simulations with a trust fund model developed at the Urban Institute.

All amounts measured in millions of dollars.

Table 2.4. Estimated Effects of Higher Unemployment and Higher Inflation

	ABP "Off"	ABP "On"	Effect of ABP
1987 to 2005: High Unemployment from 1996 to 2000			
ABP Benefits	0	536	536
Total UI Benefits	16404	16980	576
UI Taxes	16524	17316	792
Interest	1696	1574	-122
Fund Balance, Dec. 31, 2005	2128	2222	94
1987 to 2005: High Inflation from 1996 to 2005			
ABP Benefits	0	512	512
Total UI Benefits	15302	15814	512
UI Taxes	15145	15523	378
Interest	2419	2225	-194
Fund Balance Dec. 31, 2005	2574	2247	-327

Source: Simulations with a trust fund model developed at the Urban Institute

All amounts measured in millions of dollars. Unemployment rates from 1996 to 2000 of 9.0, 10.0, 10.0, 9.0, and 8.0 percent respectively. High inflation assumed to be 6.0 percent for each year 1996 to 2005.

3. THE UI TRUST FUND IN OHIO

3.1 THE ALTERNATIVE BASE PERIOD IN OHIO

Ohio first made alternative base period benefits available in October 1988. The ABP program's eligibility provisions have remained unchanged since its inception.

The decision to offer claimants an ABP was related to a basic change in the way the state made monetary eligibility determinations. Ohio switched from wage requests to wage records as the basis for acquiring information on the base period earnings of claimants. It was found that the changeover caused some to be ineligible under the new base period (the earliest four of the past five fully completed calendar quarters) who would have been eligible under the previous base period (the 52 weeks ending two weeks prior to filing the claim). Many of those ineligible under the new base period would become eligible under the ABP. The ABP in Ohio is the four most recent fully completed calendar quarters. Only persons ineligible under the regular base period may request an ABP eligibility determination.

Monetary eligibility for UI claimants in Ohio is determined from weeks worked in covered employment during the base period. A claimant must have 20 weeks or more of earnings where earnings in each individual week equals at least 27.5 percent of the state's average weekly wage. For most claimants, eligibility is achieved by weeks worked during the first four completed quarters of the past five fully completed quarters. However, about 7 percent of all claimants achieve eligibility based on the ABP. The requirement of having at least 20 creditable weeks is no different for ABP-eligibles, but more recent earnings are recognized in their monetary eligibility determinations.

The weekly benefit amount (WBA) in Ohio is determined as one half of the claimant's average

weekly wage from the base period. There is a statewide weekly benefit maximum which is indexed to changes in the statewide average weekly wage. Ohio also pays dependents' benefits. Thus in 1996 the maximum WBA ranges from $253 for a single claimant to $339 for a claimant with three or more dependents. About one quarter of recipients are paid a dependents' benefit. Potential benefit duration ranges from 20 to 26 weeks with most eligible for 26 weeks. In 1994, for example, average potential duration for those receiving a first payment was 25.6 weeks. In every year between 1974 and 1995 the average fell into the narrow range from 25.5 to 25.7 weeks.

In general, the personal and economic characteristics of ABP eligibles present clear contrasts with regular base period eligibles. On average, ABP eligibles are more likely to be young, from minority groups and persons with below-average educational attainment.[14] Each of these characteristics is associated with below-average levels of earnings. ABP claimants typically have an above-average representation from certain industries, e.g., agriculture, mining, construction, retail trade and services. ABP claimants also have higher representation from low-wage counties.

Because many ABP claimants are low wage workers, their UI benefit entitlements differ systematically from those of regular UI claimants. On average, their weekly benefits, potential benefit durations and total entitlements are all much lower than for other claimants. In Ohio, the WBA for ABP eligibles has averaged somewhat less than 80 percent of the WBA for regular claimants. Because the range of potential benefit durations is so restricted in Ohio (20 to 26 weeks) there is probably not much contrast between the potential durations of regular claimants and ABP claimants, perhaps two or three weeks less for ABP claimants. Thus the main reason for lower potential benefit entitlements among ABP claimants in Ohio is their lower WBA.

[14] Information on personal characteristics appears in Table 2 of Wayne Vroman, "The Alternative Base Period in Unemployment Insurance: Final Report," Unemployment Insurance Occasional Paper 95-3,(Washington, D.C.: U. S. Department of Labor, January 1995). Tables 3,5 and 6 of this same report summarize other dimensions of ABP eligibility to be discussed in the text.

The primary information source on ABP claimants in Ohio is a periodic tabulation of new allowed claims under the ABP. New allowed claims refer to claims that meet both monetary and nonmonetary eligibility criteria. Nearly all (about 95 percent) will receive a UI benefit payment. Included in the Ohio tabular data are numbers of new allowed claims, average weeks worked in the base period, average weekly earnings and the average WBA. The information is available statewide and for two digit industries.

Table 3.1 shows statewide totals for the years 1989 through 1995. For comparative purposes the table also displays annual information on average weekly earnings in taxable covered employment, the WBA for all UI eligibles and the number of first payments. Thus there are three series for making comparisons involving ABP eligibles. Note also that the ABP data for five of the seven years cover fewer than the full twelve months.

There are four noteworthy features of the data in Table 3.1. First, ABP eligibles are on average low wage workers. This is apparent in the data for average weekly wages and for the average weekly benefit amount. Second, when the ratios of the averages for ABP-eligibles to others are calculated, it is apparent ABP-eligibles have a higher relative position in their weekly benefit amount than in their average weekly wage. Third, over these seven years the ratios for both average weekly wages and average weekly UI benefits tend to decline indicating that with the passage of time ABP-eligibles are falling further behind others in relative terms. Fourth, the proportion of first payments going to ABP-eligibles fluctuated within a rather narrow range from .05 to .09 and averaged .07. ABP claimants account for a modest but measurable fraction of all UI claimants in Ohio. This caseload volume is large enough to have quantifiable effects on the state's UI trust fund, the focus of the present report.

As noted, the state-level data in Table 3.1 are supported by data for detailed (two digit) industries. When the industry distribution of ABP-eligibles was compared to that for all first payments, some clear differences were observed. ABP-eligibles had marked over-representation

in the agriculture, construction, and selected services industries. In contrast, they had below-average representation in durable manufacturing and financial services.

While the information in Table 3.1 helps to describe ABP-eligibles in Ohio, other aspects of these claimants' experiences are not documented. Among the crucial data elements for which information on ABP-eligibles is not available, the following may be the most important: average duration in benefit status, the total number of ABP applicants and the proportion who are ineligible on monetary and/or nonmonetary criteria. Absent this information, the modeling of the costs of the ABP to the Ohio UI trust fund is bound to have some margin of error.

3.2 THE OHIO SIMULATION MODEL

To estimate the impact of the Alternative Base Period (ABP) on UI benefit payouts and trust fund balances, a set of simulation models will be developed which embed ABP provisions within a full UI trust fund simulation model for each state of interest. The models are implemented as spreadsheets. Simulations will be run with the ABP program both "on" and "off." Comparisons of outcomes under "on" and "off" scenarios then provide the basis for estimating the impact of the ABP program. The first model to be developed was for Washington State. The model for Ohio is the second to be developed.

Each model will have five main sections or modules. The following pages describe the Ohio model while a complete listing with names, definitions and the exact behavioral or definitional relationship for each variable is given in Appendix 2. Readers may want to consult this appendix for added details not provided in the narrative text that follows.

3.2.1 Overview of the Ohio Model

The Ohio model has 108 equations that characterize the important relationships needed to simulate benefits, taxes, interest income and end-of-year trust fund balances. The model is annual covering the 21 years from 1985 to 2005. Since Ohio started to pay ABP benefits in October

1988 the model covers the state's full historical experience with the ABP program. For the years through 1995, historic levels of the variables are used but with the ability to alter important exogenous variables such as the state's unemployment rate. For the ten years 1996 to 2005 simulated outcomes are based on behavioral and definitional relations developed from historic data coupled with statutory provisions of the state's UI laws and projected time paths of important exogenous variables.

The logic of the model allows the user to modify important exogenous variables and trace the effects of each modification throughout the model. In the terminology of simulation analysis, the model yields deterministic solution paths. Identical sets of time paths for the exogenous variables yield identical output paths for all variables. Thus the user can obtain point estimates of the effects of a change in a single variable on all variables in the model.[15]

Each model has a recursive structure with five main modules or blocks: the labor market, benefits, taxes, interest income and the trust fund balance. These blocks determine important variables from the state's economy and the UI program. The blocks are grouped so that variables that have close logical relations are found in adjacent equations. The details of the individual blocks for the Ohio model are given below.[16]

3.2.2 The labor market

The labor market sets the main employment, unemployment and wage variables that are the important background factors determining benefit payouts, tax receipts and interest income. There are five key exogenous variables: 1) the growth rate in the civilian labor force, 2) the growth rate in average wages of taxable employers, 3) the growth rate in average wages of

[15] This contrasts with stochastic outcome paths where identical patterns for exogenous variables will yield different simulated outcomes due to the effects of random variation from disturbance terms and/or coefficients in one or more behavioral relationship within the model.

[16] Many details of the Ohio model are similar to those of the Washington State model described in an earlier report. However, since the reports may be read individually it was decided to make the present report for Ohio a stand-alone report that can be by itself without reference to the companion report for Washington.

reimbursable employers, 4) the interest rate paid on trust fund balances, and, most important, 5) the unemployment rate. The latter is the so called total unemployment rate or TUR, the ratio of unemployment to the labor force as measured by the monthly household labor force survey conducted for the U.S. Department of Labor by the Census Bureau (Current Population Survey or CPS). In Ohio CPS-based estimates of the TUR extend back to 1967.

The exogenous labor force growth rate combines with the level of last year's labor force to determine the labor force for the current year. The product of the labor force and the exogenous unemployment rate (TUR) is the level of total unemployment (TU). When TU is subtracted from the labor force it yields the level of employment as measured by the household survey (ECPS).

Between 1985 and 1994 the growth in total employment (ECPS) was similar to growth in employment covered by the UI program (ECOV). Employment growth during these years was 638,000 for ECPS and 730,000 for ECOV. Over this period taxable covered employment accounted for a 0.811 share of total employment growth while reimbursable employment accounted for the other 0.189 share. In the model the aggregates for ECPS and ECOV are assumed to grow identically after 1994 while the 1985-1994 employment growth shares between taxable and reimbursable employment are assumed to persist into the future.

Average weekly wages for both taxable and reimbursable employment are determined as the product of the lagged average weekly wage and an exogenous wage growth rate. The average weekly wage for total (taxable plus reimbursable) employment is then simply the employment-weighted average of the average weekly wage for the two types of employment.

Finally, the interest rate paid on trust fund balances is also treated as exogenous. For years through 1995 the model uses actual historic interest rates. The average real interest rate (the interest rate less the percentage rate of inflation) exceeded 4.5 percent during these years, but it is assumed to be lower in future years. Starting in 1996 the nominal interest rate is assumed to

represent a 3.0 percent real interest rate, i.e., the rate of wage inflation plus 3.0 percent.

3.2.3 UI benefits

For regular UI benefits, ABP benefits and benefits paid through the Federal-State Extended Benefits program, total benefit payouts are modeled as the product of the number of weeks compensated times the average weekly benefit. The average weekly benefit amount (WBA) in the regular UI program determines weekly benefits in the other two programs while weeks compensated in each of the three programs is modeled differently. The following descriptions reproduce the ordering of the three programs within the model.

Claims for benefits in Ohio's regular UI program can change sharply from one year to the next. Partly this reflects the underlying volatility of state's economy which has a substantial fraction of employment in the durable manufacturing sector. The state's unemployment rate (TUR) has changed sharply over the past thirty years and was significantly higher than the national average for the sustained period from 1980 to 1985. Additionally, the level of UI claims (insured unemployment or IU) has shown wide variation relative to the level of total unemployment (TU). Between 1967 and 1995 the IUTU ratio averaged 0.311, but it ranged from a low of 0.219 in 1969 to a high of 0.490 in 1980.

Several time series relationships were estimated in attempting to capture the volatility in the IUTU ratio. The one selected for the model explains about half of the variation in IUTU for the 1967-1995 period. The model determines IUTU with three explanatory variables which are standard for investigations of this ratio: the TUR, the TUR lagged and a dummy variable for the years starting in 1981. Each has the expected sign on its coefficient (positive for the TUR, negative for the TUR lagged and negative for the 1981 dummy variable), but the 1981 dummy has a small coefficient (-0.0188) and its t ratio is only 1.0. Unlike the situation in many other states the IUTU ratio in Ohio did not decrease much in the years after 1980.

This regression projects IUTU ratios in the 0.23-0.42 range for future years when the TUR varies

between 5.0 and 10.0 percent. It is important to note that year-to-year volatility in UI claims in Ohio arises both from variability in the underlying state unemployment rate (TUR) and from changes in the proportion of the unemployed who claim benefits, i.e., the IUTU ratio.

Two factors act to reduce the effect of a given volume of claims on the outflow of regular UI benefit payments from the trust fund. First, a small fraction of claims arise from reimbursable employment. While reimbursable employment accounts for 18-19 percent of total covered employment, their employees account for less than 4 percent of weeks compensated. Between 1985 and 1994 their share of benefit payouts ranged from 3.3 percent to 4.6 percent of the total. For future years the model projects their share of benefits of the total at 3.5 percent. These payments do not affect the trust fund balance. Second, not all weeks claimed are actually compensated. The largest factor here is the state's one week waiting period. Disqualifications also reduce weeks compensated relative to weeks claimed. This ratio has varied noticeably in the past, e.g., from 0.823 to 0.867 during 1985-1994. The ratio of weeks compensated to weeks claimed is projected to be 0.844 for future years.

The model determines the average weekly benefit amount (WBA) by incorporating the statutory provisions controlling changes in the maximum weekly benefit (MAXWBA) and estimating the replacement rate (the ratio of the average WBA to the average weekly wage) with a regression equation. The MAXWBA (for both single claimants and those with dependents) is indexed to the lagged percentage change in the average weekly wage in covered employment, and it changes annually on January 1st. The model constructs a composite MAXWBA as a weighted average of the maximums for single claimants and those with three dependents using weights of 0.75 and 0.25 respectively.

The ratio of the annual MAXWBA to the average weekly wage (MBAW) is a key determinant of the benefit replacement rate. The replacement rate regression also includes the TUR as an explanatory variables. The TUR controls for mix effects within the claimant caseload at different

stages of the business cycle. During recessions proportionately more high wage claimants draw UI benefits causing the replacement rate to be higher when the TUR is higher.

The replacement rate regression was fitted from 1967 to 1994 and yielded an adjusted R^2 of 0.888. Both explanatory variables have expected signs and are highly significant. The weekly benefit amount (WBA) is then determined as the product of the replacement rate and the average weekly wage.

A final factor determining regular benefit payouts is a benefit adjustment that controls for all other influences. The WBA, for example, is measured for claimants receiving full weeks of UI benefits whereas weeks compensated includes partial as well as full weeks of benefits. Also, weeks compensated and the weekly benefit amount for reimbursable claims are not reported. Some error may be present as the model removes the effects of reimbursable claims only at the aggregate level. The net effect of all unmeasured factors is to make projected benefit payouts too high unless an adjustment is included. Between 1985 and 1994 the benefit adjustment ranged from 0.871 to 0.987 but typically exceeded 0.960. In future years this adjustment factor is projected to be 0.981, the average for the 1990-1994 period.

Total payouts of regular benefits are then simply the product of the preceding factors that combine to determine weeks compensated for taxable employers, the weekly benefit amount and the benefit adjustment factor. Since the model has to explicitly recognize ABP benefit payments, the benefit payout relationship has the ability to remove ABP benefits from the total.[17] This is accomplished by having ABP benefits multiplied by a 0-1 dummy variable that subtracts ABP payouts if the ABP program is turned "off." Comparing simulations with ABP "on" and "off" allows one to estimate the effect of the ABP program on benefit payouts, the trust fund balance and other variables.

[17] The relationships that determine ABP benefit payments are described below.

In past years Federal-State Extended Benefits (EB) have sometimes constituted an important part of total UI benefit payouts. However, Ohio last paid EB in 1993. Given the state's generally low IUTU ratio it would be expected to activate EB only occasionally in the future.

EB is triggered "on" by the model when the state's insured unemployment rate (IUR, the ratio of regular UI weeks claimed to covered employment) reaches 4.0 percent. A 4.0 percent annual IUR trigger is used in the model because of seasonal patterns in unemployment. The first quarter's IUR is typically about 25 percent higher than the annual average. Thus the IUR would be expected to reach 5.0 percent (the EB trigger threshold) in the first quarter if the annual IUR were 4.0 percent.

The number of months EB is triggered "on" is also a function of the IUR. Successively higher IURs between 4.0 percent and 5.9 percent cause months of EB to increase in steps from 3 to 10. For IURs of 5.9 percent and higher EB is activated for the full year.

Historically EB has been "on" for widely differing proportions of the year. In the model, annualized weeks of EB are determined by a regression relationship based on nine years of data: 1972, 1975-1978 and 1980-1983. This variable is explained by annual weeks of regular UI benefits with a slope coefficient of 0.267 indicating that if EB is active for the full year, EB will compensate about 27 percent of weeks compensated by regular UI. The regression explains 61 percent of the variation in annualized EB weeks compensated.

The WBA for EB recipients is determined as a function of the WBA for regular UI recipients, but averaged for the current year and the previous year. The slope in the relation is 0.9736 and the adjusted R^2 is 0.985. Weekly benefits for EB are closely tied to regular program weekly benefits but are somewhat lower. The lower benefit level is to be expected since EB recipients have an earlier base period compared to regular UI program recipients.

There is also a benefit adjustment factor for EB. It is based on an average for the nine years 1972, 1975-1978 and 1980-1983 and equals 0.966. Total EB is then the product of weeks of EB, the WBA for EB and the benefit adjustment factor. Half of this total is then projected as the state's share of EB payouts.

3.2.4 ABP Benefits

As noted above, certain data on ABP benefits are available, but important ABP data elements are not available. The tabulations made available by the Ohio Bureau of Employment Services were useful for showing the numbers who were eligible, their average weekly benefits and average weekly earnings. Not available from these tabulations is information on the number of new initial ABP claims, potential benefit durations or actual benefit durations. Thus to estimate ABP payments the model makes certain assumptions.

The starting point is to estimate ABP applications. Given their lower eligibility rate relative to regular base period claimants,[18] ABP claimants would represent a higher proportion of applicants than of beneficiaries. For the period 1989 to 1995 first payments to ABP applicants averaged 0.0711 of all first payments with individual year variation in the proportion ranging from 0.0489 to 0.0881 (Table 3.1). The model assumes that on average ABP claimants represent 0.079 of all UI applicants. This proportion was derived from the average first payment ratio (0.0711) and assuming that ABP applicants were ten percent less likely to be eligible than other applicants, i.e., (0.0711/0.9). Application rates for the individual years 1989 to 1995 also were derived using a divisor of 0.9 applied to the first payment proportions displayed in Table 3.1.

Thus IU among ABP claimants is 0.0790 of total IU in the model for years starting in 1996. Between 1989 and 1995 the ABP shares of total IU were estimated to range from 0.0543 to 0.0979. Since the program was operative during just three months of 1988, the ABP claimant proportion was 0.0228 for that year.

[18] Direct evidence on this is not available from Ohio, but data from both Vermont and Washington indicate lower eligibility for ABP applicants relative to other UI claimants.

The translation of IU for ABP claimants into ABP weeks compensated considers three separate intervening factors: 1) their lower rate of monetary eligibility (estimated at 0.9 of regular claimants), 2) their higher rate of receiving a first payment among monetary eligibles (estimated at 1.05 of regular claimants) and 3), their lower average weeks of benefit utilization (estimated at 0.95 of regular BP claimants). This third factor incorporates the effects of lower potential weeks of benefits with a higher utilization rate of potential benefit entitlements among ABP claimants. The composite factor combining all three of the preceding equals 0.9 (= 0.9*1.05*0.95). Note this composite is constructed by assumption because the relevant historical data are not available.

Weeks of ABP benefits are then determined as the product of the following: 52 times IU for ABP claimants, the proportion of total weeks claimed arising from taxable employment, the ratio of weeks compensated to weeks claimed and the composite factor of 0.9 which reflects the differential ABP eligibility and utilization factors identified above.

As noted, tabulations of data for the years 1989 to 1995 consistently show that the WBA for ABP claimants is much lower than for regular base period claimants. Further, the WBA for ABP claimants has declined somewhat relative to the overall WBA in recent years (Table 3.1). Thus at the beginning of the program the WBA for ABP-eligibles was about 0.8 times the average weekly benefit for all eligible claimants. By 1995 the WBA proportion had declined to 0.765. In the model, it is projected to decline further in the years after 1995. The specific procedure is to assume that after 1995 the WBA for ABP claimants increases by 0.6 times the increase in the WBA for all claimants. The 0.6 is a factor derived from comparing growth in the two WBAs between 1989 and 1995.

The model also has a benefit adjustment factor for ABP claims, the same factor as for regular UI benefits. Total ABP payments are then determined as the product of weeks compensated, the WBA and the benefit adjustment factor. The simulated amount for 1989, the program's first full

year of operation, was $32.5 million or 6.4 percent of regular UI benefits.

3.2.5 UI Taxes

Ohio utilizes the reserve ratio method of experience rating to set employer tax rates. The individual employer's reserve ratio on June 30th (reserves in the employer's account as a percentage of taxable wages for the previous calendar year) determines the experience rated tax rate for the next year. This rate can vary from 0.1 percent to 6.7 percent.

Employers are subject to two other taxes. The mutualized tax is designed to cover UI benefit charges not assigned to the accounts of active employers. There are three main categories of such charges. 1) Noncharged benefits consist mainly of benefit payments to claimants where the employer is not assigned responsibility for the job separation, but the claimant is eligible for payments. These separations are both quits and discharges. 2) Writeoffs, also termed ineffective charges, refer to amounts employers with negative account balances are allowed to transfer to the mutualized account from their individual accounts. Ohio specifies conditions for writeoffs when reserve ratios exceed -10.0, -15.0 and -20.0 percent. These charges declined sharply in the mid 1980s when changes in the charging procedure sharply restricted eligibility for writeoffs.[19] 3) Benefit charges against inactive accounts are also the responsibility of the mutualized account. Accounts are declared inactive if no contributions have been received for five consecutive years. In recent years, noncharges have constituted the majority of charges against the mutualized account.

There is also a minimum safe level (MSL) tax which is collected when the state's reserves fall below an amount deemed to be the minimum safe level. Each year on June 30 a MSL ratio is computed, i.e., the ratio of the actual trust fund balance to the MSL balance. The associated MSL tax can have either a positive or a negative tax rate depending upon the MSL ratio. If the MSL

[19] Two important changes were instituted. 1) The negative reserve ratio range was extended. Previously writeoffs covered all negative balances that exceeded -5.0 percent. 2) The ability to take writeoffs in two or more consecutive years was curtailed.

ratio falls below 0.40 the highest MSL tax rate applies (roughly 0.6 percent) but if the ratio exceeds 1.3 the highest negative rate applies (-0.2 percent). Altogether there are six possible MSL tax rates. The MSL tax rate for individual employers depends upon their own reserve ratios. Those with higher reserve ratios pay MSL taxes at a lower rates than those with lower ratios.

The Ohio model has relationships that determine all three UI taxes. Total tax receipts for the year are derived as the product of the combined tax rate times taxable wages. Taxable wages, in turn, depend upon the share of covered wages that are taxable which is closely tied to the state's taxable wage base.

In the model the taxable wage base is an exogenous variable. It equals $9000 per covered employee per year and is slated to remain at $9000 for future years. The ratio of the tax base to average annual wages (TBAW) in the current year is a main determinant of the taxable wage proportion (TWP, the ratio of taxable wages to total wages).

In the model a regression determines the taxable wage proportion (TWP) using two explanatory variables: the ratio of the taxable wage base to the average wage (TBAW) and a linear time trend. The variable TBAW enters with a positive coefficient. When the tax base increases relative to the average wage it raises TWP. The time trend (T67) is expected to have a negative coefficient reflecting that the earnings distribution is becoming more unequal. Increasing earnings inequality implies that a larger proportion of earnings will be untaxed in later years because more accrues to those earning above the taxable wage base. In a regression for the years 1967-1994 both explanatory variables are highly significant indicating the effects of both TBAW and the time trend on TWP are large. The trend's coefficient (-0.00193) indicates that with a constant TBAW, the taxable wage proportion will decline by about one percentage point every five years. The regression explains over 97 percent of the variation in TWP over these 28 years.

Total wages of taxable covered employers are then the product of employment and the average annual wage. Taxable wages equal total wages multiplied by TWP.

The Ohio model has relationships to determine each of the three components of UI taxes. The experience rated tax rate is determined in a regression that uses two explanatory variables: the reserve ratio multiple on June 30th of the past year and the percentage of employers with negative account balances.

The reserve ratio multiple is a UI actuarial concept that is measured as the ratio of two ratios. The numerator ratio is trust fund reserves expressed as a percentage of total covered wages and salaries. The denominator is the highest historic payout rate over twelve consecutive months, also expressed as a percentage. Higher multiples indicate a more secure reserve position for a state. The reserve ratio multiple used in the model measures the trust fund balance on June 30th as a simple average of net reserves at the start and end of the year. This is expressed as a ratio to total wages and salaries for the past calendar year. The denominator ratio in Ohio is 3.09, the payout rate during the twelve months ending December 1982.

This reserve ratio multiple (RRM630P) is an important explanatory variable for two relationships in the model. It directly enters the determination of the experience rated tax rate (described below), and it also helps determine the percentage of employers with negative account balances.

The percentage of employers with negative balances is determined from a regression that uses two explanatory variables: the reserve ratio multiple on the preceding June 30th and the most negative reserve ratio percentage for writeoffs, -20.0 percent starting in 1988. Both variables enter the regression significantly. A larger percentage of employers have negative balances when the aggregate reserve ratio multiple is lower and when the allowable writeoff percentage is more negative.

The experience rated tax rate (TXRTEXP) is also determined by two variables: the percentage of employers with negative balances and the lagged reserve ratio multiple. Over 90 percent of the variation in TXRTEXP for the 1967-1994 period is explained by this regression. As would be expected a higher reserve ratio multiple reduces this tax rate while a larger percentage with negative balances raises the tax rate.

The mutualized tax rate (TXRTMUT) is determined by a series of relationships that cover all flows into and out of the state's mutualized account and update that account on June 30th of each year. There are three annual inflows (mutualized contributions, mutualized interest and other mutualized income) and one outflow (mutualized charges). Mutualized charges is the product of total benefit payment for the period ending June 30th and the ratio of mutualized charges as a percent of total benefit payments. The latter is determined by regression where the lagged reserve multiple and the maximum negative balance writeoff percentage both enter significantly. The mutualized tax rate is constrained to be nonnegative and not to exceed 0.5 percent.

The determination of the MSL tax rate (TXRTMSL) starts with the computation of the MSL ratio, the ratio of actual trust fund reserves to MSL reserves. The latter is to be two standard deviations above a constructed historic payout average derived from average actual weeks compensated between 1970 and the previous calendar year after all years are inflated by last year's WBA. The model approximates required MSL reserves as a triple product: 1.9133 times average actual weeks from 1970 times the lagged WBA.

The June 30th MSL ratio then falls into one of seven possible ranges of which four imply a positive MSL tax rate, two a negative tax rate and one (ratios from 0.85 to 1.15) a zero MSL rate. The model also constrains the calculated MSL ratio to fall into the 0.40 to 0.55 range for the June 30th calculation dates of 1993, 1994 and 1995.[20]

[20]This was a temporary feature of Ohio's UI tax statutes.

Total taxes are then the product of total wages and salaries of taxable covered employers, the taxable wage proportion and the combined tax rate from the three UI taxes.

3.2.6 Trust Fund Interest

Interest earnings are simulated as the product of the interest rate times the average trust fund balance for the year. The latter is the average of the start-of-year balance and an estimate of the ending balance. The latter is derived by adding taxes to the start-of-year balance and subtracting benefit payments. An add factor is included for each year in the 1985-1995 period to make the computed interest agree with historic data. An average add factor (about $2 billion) is added for years after 1995.

3.2.7 The Trust Fund Balance

This is merely an accounting identity. It updates last year's ending balance by adding annual taxes and interest and subtracting benefit payouts. The net balance and the gross balance are both estimated. The latter adds to the net balance all end-of-year outstanding debts to the U.S. Treasury. This block also has relations that estimate borrowing and debt repayment during periods when the trust fund is depleted.

3.2.8 Model Use and Output Display

Table 3.2 shows the complete model and simulated variables for the twenty-one years 1985 to 2005. The individual blocks and the variables within the blocks appear in the order just described. As noted, the definitions of the variables and behavioral equations appear in Appendix 2.

Displayed below the model's equations in Table 3.2 are panels that summarize model output for two multi-year periods: 1988 to 1995 and 1988 to 2005. These provide a short hand summary of main outputs without the need to examine individual year detail. Cumulative summaries are shown for the indicated periods for important flow variables like total benefits, ABP benefits, interest and taxes. Also shown are ending trust fund balances and reserve ratios along with

averages for two important exogenous variables: the unemployment rate (TUR) and the rate of wage inflation (INFL). In addition to the period summaries, there are also deviation summaries that show deviations from the baseline for key outcome variables like benefits, taxes, interest and the ending trust fund balance.

Finally, the bottom of the table shows the ABP policy control dummy variable, ABP OFF. When ABP OFF equals 0 as shown in Table 3.2 the ABP program is active and model outcome variables include the effects of the ABP. When ABP OFF equals 1 the ABP program is not active and while ABP variables continue to be simulated their effects are zeroed out.[21] Thus benefits and other important variables that affect net trust fund reserves are computed as if there were no ABP program.

3.3 THE EFFECTS OF ALTERNATIVE BASE PERIOD BENEFITS

The model just described was utilized to assess the impact of ABP benefits on Ohio's UI trust fund. Simulations were run that were identical in all respects except for the presence or absence of benefit payments from the ABP program.

As noted, key exogenous variables in the model are the labor force growth rate, the rate of wage inflation, the interest rate and the unemployment rate (TUR). The baseline simulation assumed historic values for these variables through 1995. The labor force was then assumed to grow by 0.64 percent per year (the average for 1992-1994) during 1996-2005. From 1996 onward the average weekly wage for both taxable and reimbursable employment was assumed to grow 4.0 percent per year. The TUR was assumed to be 5.0 percent in 1996 (the average for the first half of the year) and then to remain at 5.5 percent from 1997 to 2005. Finally, the interest rate was assumed to be 3.0 percent in real terms starting in 1996 which implies a 7.0 percent nominal interest rate under a 4.0 percent annual rate of wage inflation.

[21] The exclusion is accomplished by removing ABP payments from the equation that defines trust fund benefits (BENTF).

3.3.1 The Main Findings

Table 3.3 summarizes the main results of the comparison. It shows cumulative summaries of five variables for the two periods 1988-1995 and 1988-2005. Results with and without the ABP program are displayed along with the differences attributable to the ABP.

Over the 1988-1995 period the ABP program is simulated to pay out $293 million in benefits. Total benefits are simulated to be increased by $293 million as well.[22] Taxes are raised by $253 million and interest income is reduced by $51 million due to the ABP program. The increment to UI benefit payouts coupled with reduced interest income exceed the increment to taxes so that the trust fund balance at the end of 1995 is lower by $91 million due to the ABP program.

Over the longer 1988-2005 period the results present some interesting contrasts. Cumulative ABP benefits and total UI benefits both increase by $790 million due to the ABP program while interest income is lower by $171 million. Combined, these two incremental flows act to reduce the trust fund by $961 million in 2005. Cumulative UI taxes during the same eighteen years are higher by only $659 million. Thus compared to the ABP "Off" simulation the net effects of ABP payments, reduced interest flows and increased taxes reduce the trust fund by $301 million at the end of 2005. In the baseline, taxes do not respond sufficiently to offset the effects of the other trust fund flows.

The exact results of paired simulations as summarized in Table 3.3 would differ depending upon the particular values assumed for the exogenous variables. Most important, however, is the qualitative result that the long run effect of ABP benefits on Ohio's trust fund is measurable despite experience rating. In this particular example taxes respond to the trust fund drawdown caused by ABP benefit payouts but only partially. The response of UI taxes is measurably smaller than the combined sum of higher benefit payouts and reduced interest income ($659

[22] The two differences need not be identical. Under some circumstances the presence of the ABP program could cause EB to be activated, causing more benefits to be paid to regular base period recipients. This did not occur in the present pair of simulations.

million of added taxes but $961 million of added benefits plus reduced interest income). The added taxes recover only about two thirds of the effect on the trust fund of the added benefit payments and associated reductions in trust fund interest.

More generally, the presence of ABP in a state would be expected to result in higher benefit payouts, higher taxes and lower interest income.[23] The net effect on the trust fund depends on the assumptions underlying a given simulation and UI tax statutes. In similar paired simulations for Washington State, the tax response to the trust fund drawdowns was stronger causing the trust fund balance at the end of 2005 to actually be slightly higher when the ABP program was "On" than when it was "Off,"

One of the interesting features of the results in Tables 3.2 and 3.3 is the post-1996 downtrend in net reserves in Ohio. At least two factor related to tax payments contribute to this outcome. First, note in Table 3.2 that the taxable wage base remains at $9000 after 1995. With a fixed tax base, the taxable wage proportion (TWP) declines steadily from 0.340 in 1995 to 0.238 in 2005, and taxable wages only grow from $37.3 billion in 1995 to $40.7 billion in 2005. This inhibits the growth in tax receipts. Second, recall that the mutualized account receives all interest earnings. In Table 3.2 observe that the mutualized account balance remains positive in all years after 1996. As a consequence, the mutualized tax rate remains zero between 1996 and 2005. These two factors play a large role in explaining why total taxes only increase from $811 million in 1996 to $932 million in 2005. For these same two years, note in Table 3.2 that total benefits equal $659 million and $1088 million respectively.

Thus two major findings emerge from the paired baseline simulations as summarized in Tables 3.2 and 3.3: 1) Taxes do not respond fully to the effects of ABP benefit payments which act to increase total benefit payments and reduce trust fund interest. These simulation results suggest

[23] Of course, the responses of all these variables to the creation of an ABP program will be smaller to the extent that an offsetting change in benefit availability is instituted at the same time the ABP program is created. If aggregate benefits are unchanged there will be no change in interest income, taxes and trust fund balances.

that the response of increased taxes covers about two thirds of the combined flows of increased benefits and reduced interest caused by the ABP program. 2) The revenue side of Ohio's program appears to be inelastic to growth in the state's economy over the decade from 1996 to 2005. With the ABP program "On" net reserves decrease by almost exactly $1.0 billion between December 31, 1995 and December 31, 2005 (from $1601 million to $631 million). Even if there were no ABP program the baseline simulation suggests that net trust fund reserves would decrease by about $760 million (from $1692 million to $932 million) during this ten year time period.

3.3.2 Other Findings

To provide a more complete assessment of the effects of the ABP program in Ohio, some additional simulations were undertaken. The simulation model was used to explore the effects of higher unemployment and higher inflation. One set of simulations subjected the state to a serious recessionary episode during the 1996-2005 period. Another exercise examined the consequences of higher inflation during these ten years.

Table 3.4 summarizes the results. Under the deep recession simulation the 4.76 percent TUR of 1995 increased to 9.0 percent in 1996, 10.0 percent in 1997 and 1998, 9.0 percent in 1999, 8.0 percent in 2000 and then returned to 5.5 percent from 2001 through 2005. Observe in the top half of Table 3.4 that ABP benefits total $994 million over the nineteen years, but the total increase in UI benefits is $1053 million. The additional $59 million represents the state share of higher EB payments. In 1997 EB was activated for three months due ABP program whereas it was not activated when ABP was "Off." About $59 million of added EB payments flowed out of the state's trust fund in that year because ABP was "On."

The presence of the ABP program causes interest earnings to be reduced by $72 million, and employer taxes are raised by $820 million. As a consequence of the tax response being rather modest, the ending trust fund balance is actually negative both when the ABP program is "On" and when it is "Off." Also note that borrowing is almost $400 million higher when the ABP

program is "On." As in the baseline simulation, the tax response is smaller than the combined flows of increased benefits and reduced interest income. The trust fund balance is negative at the end of 2005 in both simulations summarized in the top half of Table 3.4.

The bottom half of Table 3.4 traces the effects of higher inflation during 1996-2005, 6.0 percent annual wage inflation rather than the 4.0 percent of the baseline. Higher inflation leads to increased payouts of ABP as well as regular UI benefits. As a percentage of total benefit payouts, however, ABP benefits in the high inflation simulation are the same as in the baseline, 5.2 percent. In this simulation the combined effects of higher ABP payouts and reduced interest earnings considerably outweigh the tax response reducing the ending trust fund balance by $430 million, $329 million versus to $759 million with ABP "Off."

Note also that with higher inflation interest earnings constitute a larger share of trust fund receipts (taxes plus interest) than in the baseline. For the ABP "On" simulation of Table 3.4 the percentage is 9.0 percent ($1410 million of $15,611 million) compared to 10.2 percent under the higher inflation of Table 3.4 ($1652 million of $16,271 million). Higher inflation increases interest earnings as a share of trust fund receipts.

3.3.3 Summary

Based on the results from Tables 3.2, 3.3 and 3.4, four final observations are in order. 1) The ABP program makes only a modest percentage addition to UI benefit payouts in Ohio. The percentage addition was about 5.2 percent in all simulations. 2) Increases in ABP payouts cause UI taxes to increase in the long run through experience rating. In Ohio, taxes respond only partially to the increased benefit payouts caused by the ABP program. 3) A second factor leading to increased UI taxes is the reduction in interest earnings caused by ABP payouts which initially act to lower the trust fund balance. 4) In general, the long run effect of the ABP program on the UI trust fund balance is difficult to predict because UI taxes may "overreact" to trust fund drawdowns. In Ohio, however, the simulations consistently showed that the increment to taxes was much smaller than the combined increase in benefits and decrease in trust fund interest

income caused by the ABP program, i.e., about two thirds to three quarters of their combined incremental flows. The effect of increased benefits and reduced interest on the trust fund balance is not fully offset by the operation of experience rated taxes in Ohio.

The simulations also strongly suggested that under its present statutes Ohio has a long run UI financing problem. In all simulations the trust fund balance at the end 2005 was considerably lower than at the end of 1995. The decline in the trust fund is even more pronounced when the fund balance is measured relative to the scale of Ohio's economy over the 1996-2005 decade. In this situation, the presence of ABP benefit payments adds to financing problems for the state.

3.4 TABLES 3.1 THROUGH 3.4:

Table 3.1. Comparison of ABP Eligibles and Regular UI Eligibles in Ohio

Year	Average Weekly Wage: Taxable Covered Employ.	ABP Eligibles	Ratio	UI Weekly Benefit Amount: All UI Eligibles	ABP Eligibles	Ratio	First Payments of UI Benefits: All UI Eligibles	ABP Eligibles	ABP Fraction
1989	422.93	288.97	0.683	162.04	128.02	0.790	305,056	23,891	0.0783
1990	438.12	308.46	0.704	170.94	136.85	0.801	337,797	23,891	0.0707
1991	451.59	318.01	0.704	178.16	142.73	0.801	404,871	19,804	0.0489
1992	475.75	304.15	0.639	181.85	140.82	0.774	357,797	17,643	0.0493
1993	484.42	311.55	0.643	186.09	145.23	0.780	264,731	23,083	0.0872
1994	499.45	318.86	0.638	194.45	147.76	0.760	254,573	17,834	0.0701
1995	524.42	331.11	0.631	200.29	153.24	0.765	259,354	22,859	0.0881

Source: Data on the average weekly wage in taxable covered employment, the average weekly benefit amount and the number of first payments among UI eligibles from the U.S. Department of Labor, "Unemployment Insurance Financial Data Handbook," ET Handbook 394, (Washington, D.C.: U.S. Department of Labor, 1995). Data on ABP eligibles supplied by the Ohio Bureau of Employment Services.

a - Data from Ohio are incomplete for five of the seven years. The number of included months for each year are as follows: 1989-10, 1990-12, 1991-12, 1992-9, 1993-11, 1994-5, and 1995-11. Numbers of first payments made to ABP eligibles estimated at the Urban Institute. The number of new allowed claims for reported months were annualized and multiplied by 0.95.

Table 3.2 Baseline Simulation in Ohio with ABP Program "On"

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
LABOR MKT.																					
GRCLF	0.90	1.89	0.42	1.29	1.82	-0.18	0.54	1.07	-0.09	0.91	0.78	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
GRAWW	3.10	2.06	3.07	4.39	2.01	3.59	3.07	5.35	1.82	3.10	2.88	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
GRAWWREI	5.13	4.78	4.70	5.68	3.31	5.04	4.13	4.63	2.39	3.12	3.07	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
GRAWWTO	3.47	2.52	3.35	4.62	2.24	3.84	3.26	5.21	1.93	3.11	2.92	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
INTRATE	10.46	9.81	8.90	8.04	8.78	8.71	8.17	7.42	7.22	6.59	6.95	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
TUR	8.86	8.12	6.99	6.01	5.54	5.73	6.44	7.30	6.56	5.54	4.76	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
CLF	5135	5232	5254	5322	5419	5409	5438	5496	5491	5541	5584	5620	5656	5692	5728	5765	5802	5839	5876	5914	5952
TU	455	425	367	320	300	310	350	401	360	307	266	281	311	313	315	317	319	321	323	325	327
ECPS	4680	4807	4886	5002	5119	5099	5088	5095	5131	5234	5318	5339	5345	5379	5413	5448	5483	5518	5553	5589	5624
ETAX	3396	3477	3571	3675	3770	3809	3728	3743	3817	3968	4096	4112	4117	4143	4169	4196	4223	4250	4277	4305	4332
EREI	765	780	800	824	843	864	881	897	913	922	932	935	936	942	948	954	959	965	971	977	983
ECOV	4161	4257	4371	4499	4614	4672	4609	4640	4730	4891	5028	5047	5053	5085	5117	5150	5182	5215	5249	5282	5315
AWW	378	385	397	415	423	438	452	476	484	499	514	534	556	578	601	625	650	676	703	731	761
AWWREI	342	358	375	396	409	430	448	469	480	495	510	530	552	574	597	620	645	671	698	726	755
AWWTO	371	380	393	411	420	437	451	474	484	499	513	534	555	577	600	624	649	675	702	730	760

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BENEFITS																					
IUTU	0.269	0.278	0.283	0.279	0.287	0.318	0.377	0.318	0.268	0.284	0.304	0.297	0.306	0.294	0.294	0.294	0.294	0.294	0.294	0.294	0.294
IU	122	118	104	89	86	99	132	127	96	87	81	83	95	92	93	93	94	94	95	96	96
IUR	2.94	2.77	2.37	1.99	1.86	2.11	2.87	2.75	2.04	1.79	1.61	1.65	1.89	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
IUTXIU	0.973	0.976	0.973	0.972	0.967	0.973	0.975	0.967	0.958	0.954	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
WPDWCL	0.823	0.825	0.825	0.835	0.844	0.851	0.867	0.831	0.822	0.850	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844
WEEKSR	5.236	5.063	4.451	3.881	3.776	4.366	5.954	5.507	4.115	3.861	3.545	3.663	4.183	4.036	4.062	4.088	4.114	4.141	4.167	4.194	4.221
AWWTO630L	350	365	376	387	402	416	429	444	463	479	491	506	523	544	566	589	612	637	662	689	716
MAXWBAS	147	147	147	157	169	184	196	211	228	238	245	253	262	272	283	294	306	318	331	344	358
MAXWBAF	233	233	233	248	268	291	291	294	306	319	328	339	351	364	379	394	410	426	444	461	480
MAXWBA	169	169	169	180	194	211	220	232	248	258	266	275	284	295	307	319	332	345	359	373	389
MBAWWTO	0.454	0.443	0.429	0.437	0.461	0.483	0.487	0.489	0.512	0.518	0.518	0.514	0.512	0.511	0.511	0.511	0.511	0.511	0.512	0.511	0.512
REPRATE	0.394	0.392	0.380	0.373	0.382	0.388	0.392	0.379	0.379	0.383	0.384	0.377	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
WBA	146	149	149	153	161	170	177	180	183	191	197	201	210	218	227	236	245	255	265	276	287
BENADJ	0.971	0.968	0.965	0.960	0.871	0.977	0.987	0.978	0.983	0.982	0.962	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
BENREG	723	712	624	555	511	703	1011	937	710	690	648	697	832	833	873	913	956	1000	1047	1096	1147
IURADJ	2.94	2.77	2.37	1.99	1.86	2.11	2.87	2.75	2.04	1.79	1.61	1.65	1.89	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
EBON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOEB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PYEBON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEEKSEBAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEEKSEB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBAEB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBADJ	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
EBTOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBS	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
BENTOT	723	712	624	555	511	703	1011	937	710	690	648	697	832	833	873	913	956	1000	1047	1096	1147
BENTF	723	712	624	555	511	703	1011	937	710	690	648	697	832	833	873	913	956	1000	1047	1096	1147
ABP BENEFITS																					
IUABP	0.0	0.0	0.0	2.0	7.5	8.3	7.2	7.0	9.3	6.8	7.9	6.6	7.5	7.3	7.3	7.4	7.4	7.5	7.5	7.5	7.6
IURABP	0.00	0.00	0.00	0.05	0.16	0.18	0.16	0.15	0.20	0.14	0.16	0.13	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
WEEKSABP	0.000	0.000	0.000	0.077	0.286	0.323	0.284	0.262	0.344	0.258	0.301	0.251	0.287	0.277	0.279	0.281	0.282	0.284	0.286	0.288	0.290
WBAABP	0	0	0	125	131	137	143	141	145	148	153	156	161	166	171	177	182	188	194	201	207
BENADJ	0.971	0.968	0.965	0.960	0.871	0.977	0.987	0.978	0.983	0.982	0.974	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
BENABP	0.0	0.0	0.0	9.3	32.5	43.1	40.0	36.1	49.1	37.5	45.0	38.4	45.4	45.1	46.8	48.6	50.5	52.5	54.6	56.7	58.9

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TAXES																					
TXBASE	8000	8000	8000	8000	8000	8000	8000	8250	8500	8750	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
TBAW	0.407	0.399	0.387	0.371	0.364	0.351	0.341	0.333	0.337	0.337	0.337	0.324	0.311	0.299	0.288	0.277	0.266	0.256	0.246	0.237	0.228
T67	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
TWP	0.398	0.390	0.380	0.367	0.362	0.351	0.350	0.338	0.340	0.342	0.340	0.326	0.315	0.304	0.294	0.284	0.274	0.264	0.255	0.246	0.238
WSTAX	26.5	27.2	28.0	29.0	30.0	30.5	30.6	31.3	32.7	35.3	37.3	37.2	37.5	37.9	38.3	38.7	39.1	39.5	39.9	40.3	40.7
WSTO	66.7	69.7	73.8	79.2	82.9	86.8	87.5	92.6	96.1	103.1	109.4	114.3	119.0	124.5	130.3	136.4	142.8	149.4	156.4	163.7	171.3
RESN630P	-1211	-750	-155	329	611	833	767	625	724	1006	1384	1760	1867	1762	1641	1490	1326	1147	971	839	707
RRM630P	-0.63	-0.36	-0.07	0.14	0.25	0.32	0.29	0.23	0.25	0.34	0.43	0.52	0.53	0.48	0.43	0.37	0.31	0.26	0.21	0.17	0.14
NGBALWRT	-5	-5	-15	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
NGBALERPCT	18.5	14.7	13.4	11.7	10.8	9.8	9.3	10.6	12.1	11.6	11.0	10.6	10.1	10.0	10.3	10.6	11.0	11.4	11.7	12.0	12.2
TXRTEXPRT	2.31	2.01	1.87	1.86	1.61	1.34	1.65	1.68	1.79	1.77	1.71	1.66	1.60	1.60	1.63	1.66	1.70	1.73	1.77	1.80	1.82
BENTF630	680.9	717.5	668.4	589.9	533.4	607.4	857.4	974.1	823.5	700.2	668.9	672.6	764.5	832.5	853.0	892.7	934.3	977.9	1023.7	1071.5	1121.5
MUTCHGPCT	32.4	31.2	16.6	14.9	16.1	17.2	12.4	11.8	18.4	18.9	19.0	16.4	15.4	15.3	15.9	16.5	17.1	17.8	18.4	19.0	19.4
MUTCHG630	220.6	223.8	-446.4	87.6	86.1	104.4	106.1	114.7	151.9	132.4	127.2	110.3	117.9	127.6	135.6	147.3	160.2	173.8	188.4	203.2	217.4
UTCONTRIB	269.3	277.4	284.8	173.5	140.8	142.8	175.4	224.5	231.8	239.6	254.0	195.6	41.9	0.0	0.0	0.0	14.7	19.7	49.9	90.6	101.6
MUTINT	0.0	0.0	0.0	0.0	0.0	104.4	72.3	52.2	47.0	58.4	79.0	108.6	124.6	124.7	117.1	107.9	97.2	85.6	73.6	63.2	54.3
OTHMUTINC	0.0	0.0	0.0	9.2	12.5	11.5	10.4	15.5	23.4	23.7	18.1	19.0	19.8	20.7	21.7	22.7	23.7	24.8	26.0	27.2	28.5
MUTACC630L	-2106	-2057	-2004	-1272	-1177	-1110	-956	-804	-626	-476	-287	-63	150	219	236	240	223	198	155	116	94
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
MUTACC630	-2057	-2004	-1272	-1177	-1110	-956	-804	-626	-476	-287	-63	150	219	236	240	223	198	155	116	94	61
WSTAX630	24.1	26.1	27.0	27.6	29.0	29.9	30.2	30.5	30.9	32.3	34.0	36.3	37.3	37.3	37.7	38.1	38.5	38.9	39.3	39.7	40.1
EXCHGPCT	8.5	7.7	4.7	4.3	3.8	3.2	2.7	2.1	1.5	0.9	0.2	-0.4	-0.6	-0.6	-0.6	-0.6	-0.5	-0.4	-0.3	-0.2	-0.2
TXRTMUTRAW	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	-0.4	-0.6	-0.6	-0.6	-0.6	-0.5	-0.4	-0.3	-0.2
TXRTMUT	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RESN630M	-859	-419	159	496	830	1017	896	800	966	1229	1667	2043	1760	1867	1762	1641	1490	1326	1147	971	839
RESMSL630	2037	2168	2265	2398	2576	1567	1667	1744	1727	1732	1783	1818	1839	1912	1975	2046	2118	2195	2275	2361	2447
MSLRATIO	-0.42	-0.19	0.07	0.21	0.32	0.65	0.54	0.46	0.50	0.50	0.50	1.12	0.96	0.98	0.89	0.80	0.70	0.60	0.50	0.41	0.34

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TRMSL40	0.5	0.5	0.5	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRMSL4055	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
TRMSL5570	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
TRMSL7085	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
TRMSL85115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRMSL11530	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRMSL130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TXRTMSL	0.5	0.5	0.5	0.6	0.6	0.6	0.3	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.5
TXRTTOT	3.91	3.61	3.89	2.62	2.72	2.41	2.32	2.73	2.75	2.71	2.64	2.40	1.60	1.60	1.63	1.66	1.80	1.83	2.07	2.30	2.32
TRSMIN	1.80	1.80	1.80	0.80	0.80	0.80	0.68	0.73	0.73	0.70	0.70	0.40	0.10								
TRSMAX	7.00	7.00	7.00	7.80	7.80	7.80	7.18	8.33	8.43	8.60	8.50	8.20	6.50								
TAX	1034	980	1090	761	816	735	710	852	898	956	983	893	601	606	624	643	703	724	825	926	945
INTEREST																					
INTRAT	10.46	9.81	8.90	8.04	8.78	8.71	8.17	7.42	7.22	6.59	6.95	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
RESNL	-1446	-976	-523	214	444	778	887	647	602	845	1167	1601	1918	1815	1709	1573	1407	1245	1049	894	783
RESNHT			-57	419	748	810	586	563	790	1111	1502	1797	1687	1588	1460	1304	1154	969	826	725	581
RESNAV			-290	316	596	794	737	605	696	978	1335	1699	1802	1702	1585	1439	1280	1107	938	809	682
RESNPB			0	316	596	794	737	605	696	978	1335	1699	1802	1702	1585	1439	1280	1107	938	809	682
INT	0	0	5	26	54	72	63	46	52	66	96	121	128	121	113	103	92	80	68	59	50
FUND BAL.																					
RESNL	-1446	-976	-523	214	444	778	887	647	602	845	1167	1601	1918	1815	1709	1573	1407	1245	1049	894	783
TAX	1034	980	1090	761	816	735	710	852	898	956	983	893	601	606	624	643	703	724	825	926	945
INT	0	0	5	26	54	72	63	46	52	66	96	121	128	121	113	103	92	80	68	59	50
BENTF	723	712	624	555	511	703	1011	937	710	690	648	697	832	833	873	913	956	1000	1047	1096	1147
RESN	-976	-523	214	444	778	887	647	602	845	1167	1601	1918	1815	1709	1573	1407	1245	1049	894	783	631
DEBTINT	328	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RESGROSS	0	0	214	444	778	887	647	602	845	1167	1601	1918	1815	1709	1573	1407	1245	1049	894	783	631
DEBTINTL	636	328	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOANINT	476	430	196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REPAY	784	697	258	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEBTINT	328	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUMMARY																					
RESRATIO	-1.46	-0.75	0.29	0.56	0.94	1.02	0.74	0.65	0.88	1.13	1.46	1.68	1.53	1.37	1.21	1.03	0.87	0.70	0.57	0.48	0.37
RRMULT	-0.47	-0.24	0.09	0.18	0.30	0.33	0.24	0.21	0.28	0.37	0.47	0.54	0.49	0.44	0.39	0.33	0.28	0.23	0.18	0.15	0.12

PERIOD SUMMARY: 1988 to 1995

TUR	INFL	TAXES	INT	BENTF	EBS	ABP	LOAN
6.0	3.4	6711	476	5766	0	293	0

WSTAX	D.TUR	D.INFL	D.TAX	D.INT	D.BEN	R.R.95	RESN	D.RES
256628	0.0	0.0	0	0	0	1.46	1601	0

PERIOD SUMMARY: 1988 to 2005

TUR	INFL	TAXES	INT	BENTF	EBS	ABP	LOAN
5.7	3.7	14201	1410	15160	0	790	0

WSTAX	D.TUR	D.INFL	D.TAX	D.INT	D.BEN	R.R.95	RESN	D.RES
645792	0.0	0.0	0	0	0	0.37	631	0

POLICY CONTROL

ABP OFF	0

The 1970s	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
The 1980s	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
STUR- 70S	5.4	6.5	5.5	4.3	4.8	9.1	7.8	6.5	5.4	5.9
STUR- 80S	5.9	8.4	9.6	12.5	12.2	9.4	8.9	8.1	7.0	6.0
USTUR- 70S	4.9	5.9	5.6	4.9	5.6	8.5	7.7	7.1	6.1	5.8
USTUR- 80S	5.8	7.1	7.6	9.7	9.6	7.5	7.2	7.0	6.2	5.5
GRAWW- 70S	3.6	5.5	4.4	6.6	6.8	6.5	8.9	7.9	7.6	8.0
GRAWW- 80S	8.0	7.4	8.6	4.3	4.3	4.5	3.1	2.1	3.1	4.0

Table 3.3. Estimated Effects of the ABP in Ohio, Baseline Simulation

	ABP "Off"	ABP "On"	Effect of ABP
1988 to 1995			
ABP Benefits	0	293	293
Total UI Benefits	5474	5766	293
UI Taxes	6458	6711	253
Interest	527	476	-51
Fund Balance, Dec. 31, 1995	1692	1601	-91
1988 to 2005			
ABP Benefits	0	790	790
Total UI Benefits	14370	15160	790
UI Taxes	13542	14201	659
Interest	1581	1410	-171
Fund Balance, Dec. 31, 2005	932	631	-301

Source: Simulations with a trust fund model developed at the Urban Institute
All amounts measured in millions of dollars.

Table 3.4. Estimated Effects of Higher Unemployment and Higher Inflation in Ohio

	ABP "Off"	ABP "On"	Effect of ABP
1988 to 2005: High Unemployment from 1996 to 2000			
ABP Benefits	0	994	994
Total UI Benefits	18050	19103	1053
UI Taxes	17082	17902	820
Interest	627	555	-72
Loans	1259	1657	398
Fund Balance , Dec. 31, 2005	-161	-466	-305
1988 to 2005: High Inflation from 1996 to 2005			
ABP Benefits	0	831	831
Total UI Benefits	15291	16122	831
UI Taxes	13990	14619	629
Interest	1879	1652	-227
Fund Balance , Dec. 31, 2005	759	329	-430

Source: Simulations with a trust fund model developed at the Urban Institute
All amounts measured in millions of dollars. Unemployment rates from 1996 to 2000 of 9.0, 10.0, 10.0, 9.0, and 8.0 percent respectively. High inflation assumed to be 6.0 percent for each year 1996 to 2005.

4. THE UI TRUST FUND IN VERMONT

4.1 THE ALTERNATIVE BASE PERIOD IN VERMONT

Vermont first made alternative base period benefits available in January 1989. The ABP program's eligibility provisions have remained unchanged since its inception.

The decision to offer claimants an ABP was related to a basic change in the way the state made monetary eligibility determinations. In the late 1980s Vermont switched from wage requests to wage records as the basis for acquiring information on the base period earnings of claimants. An analysis of claims found that the changeover caused some to be ineligible under the new base period (the earliest four of the past five fully completed calendar quarters) who had been eligible under the previous base period (the 52 weeks ending two weeks prior to filing the claim).

Vermont permits the claimant to have two ABP eligibility determinations when she or he is deemed monetarily ineligible under the regular base period. The first ABP determination is based on earnings during the four most recent fully completed calendar quarters. This base period will be referred to as ABP1 in the remainder of the report. If a claimant is monetarily ineligible under ABP1, a second determination is made using as the base period the three most recent fully completed quarters plus those weeks worked in the same quarter before the claim was filed. This will be referred to as ABP2. Only persons ineligible under the regular base period may request these alternative monetary eligibility determinations. Determinations under ABP2 are available only to persons who are ineligible both under the regular base period and under ABP1.

Monetary eligibility in Vermont in January 1997 requires the claimant to have at least $1231 of earnings in the highest quarter of the base period and $1728 for the full base period. The same dollar thresholds are used for ABP1 and ABP2 as for the regular base period. The only

differences are the timing of the earnings used in these monetary eligibility determinations.

The weekly benefit amount (WBA) in Vermont is set at one forty-fifth of the claimant's earnings from the highest two quarters of the base period.[24] The weekly benefit maximum is indexed to changes in the statewide average weekly wage with increases occurring on July 1. The weekly benefit maximum is frozen in years when the state's trust fund balance is negative on January 1st. Thus the maximum was $146 from July 1982 to June 1986. On January 1, 1997, the maximum was $217. All claimants who satisfy monetary and nonmonetary eligibility conditions are entitled to 26 weeks of benefits. In the 1990s average benefit duration has varied from 14 to 17 weeks.

The personal and economic characteristics of ABP eligibles show clear contrasts with regular base period eligibles. On average, ABP eligibles are more likely to be young, from minority groups and persons with below-average schooling.[25] Each of these characteristics is associated with below-average levels of earnings. ABP claimants typically have an above-average representation from certain industries, e.g., agriculture, mining, construction, retail trade and services. ABP claimants also have higher representation from low-wage counties. These contrasts were all observed in 1993 micro data from Vermont.

Table 3.1 provides summary data on Vermont's experiences with the ABP from the second half of 1989 when separate data were first available. The table emphasizes two features: counts of eligible claimants and average weekly benefit amounts. The table identifies three types of

[24] In effect, the statutory benefit replacement rate is 57.8 percent when the weekly benefit is compared to weekly earnings during these two quarters. Someone who earned $5200 in these two quarters ($200 per week) would have a weekly benefit of $115.56

[25] Information on personal characteristics of ABP claimants appears in Table 2 of Wayne Vroman, "The Alternative Base Period in Unemployment Insurance: Final Report," Unemployment Insurance Occasional Paper 95-3,(Washington, D.C.: U. S. Department of Labor, January 1995). The table displays data from Washington and Maine as well as Vermont. Tables 3, 5 and 6 of this same report summarize other dimensions of ABP eligibility to be discussed in the text.

eligible claimants: regular base period eligibles as well as ABP1 and ABP2 eligibles. Because many ABP claimants are low wage workers, their weekly benefits and total UI entitlements are all much lower than for other claimants in Vermont. Since it is a uniform duration state, total potential entitlements are accurately reflected in weekly benefit amounts shown in Table 3.1, i.e., for each group the average potential entitlement is simply 26 times its weekly benefit amount.

There are several noteworthy features of the data in Table 3.1. First, as noted above ABP eligibles are low wage workers on average. This is apparent in the data for the average weekly benefit amount (WBA). For the years 1990 to 1996 the WBA of ABP1 eligibles averaged 0.769 of the WBA for all eligible claimants. The ratio for ABP2 eligibles was even lower, 0.694 during 1990-1996. Thus the closer the claimant's base period is to the present, the lower the average WBA.

Second, over these same years the average WBA for ABP eligibles declined somewhat relative to the average WBA for all eligible claimants. Most of the decline, however, occurred between 1989 and 1990 when the ABP program was just beginning. For ABP1 eligibles, for example, the relative WBA (their WBA as a proportion of the overall WBA) was 0.848 in 1989, 0.784 in 1990 and 0.777 in 1996. The corresponding ratios for ABP2 eligibles were 0.743, 0.719 and 0.712 for these same three years. This situation presents a contrast to both Washington and Ohio where there has been a more consistent downtrend in the relative WBA for ABP claimants since the inception of their ABP programs.

Third, from the time series showing counts of eligibles it is clear that alternative base period eligibles constituted a measurable share of all eligibles from the beginning of the ABP program. Respectively ABP1 and ABP2 claimants represented 6.87 percent and 3.34 percent of all claimants during 1989 III-IV, the initial six months of ABP. During the next seven years 1990-1996 these percentages averaged 6.80 percent and 3.31 percent respectively. Thus ABP claimants consistently have represented about 10 percent of all claimants. Roughly two-thirds of ABP

eligibles were eligible under ABP1 and one-third under ABP2.

Fourth, because of lower ABP benefit payment levels, the cost implications of paying these benefits are smaller than suggested by their representation in the overall beneficiary caseload. Roughly, ABP eligibles represent about 10.0 percent of the claimant caseload but only about 7.5 percent of benefits.[26]

This ABP caseload volume in Vermont is large enough to have quantifiable effects on the state's UI trust fund, the focus of the present report. Also of interest in Vermont is its two options for ABP eligibility. Data from this state may prove useful to other states in considering the costs to the UI trust fund of different definitions of the alternative base period.

The information in Table 4.1 helps to describe ABP-eligibles in Vermont and their numbers relative to regular base period claimants. A tabulation of micro data from 1993 was also useful for showing their personal characteristics. Other aspects of these claimants' experiences have not been thoroughly documented. Among the data elements for which only limited information is available is their average duration in benefit status. Also not known is the proportion of ABP-eligibles who are ineligible on nonmonetary criteria. Absent this information, modeling the costs of the ABP to Vermont's UI trust fund is bound to have some margin of error. However enough information is known to develop a model and to estimate effects on the trust fund.

4.2 THE VERMONT SIMULATION MODEL

To estimate the impact of the Alternative Base Period (ABP) on UI benefit payouts and trust fund balances, models have been developed which embed ABP provisions within a full UI trust

[26] The calculation assumed beneficiary proportions of 0.8989, 0.0680 and 0.0331 respectively for regular base period eligibles, ABP1 eligibles and ABP2 eligibles. The corresponding WBA relatives for these same three groups were assumed to be 1.000, 0.753 and 0.676. The respective cost shares for the three groups under these assumptions are 0.924, 0.053 and 0.023. The ABP cost shares would be even lower if Vermont had a variable potential benefit duration.

fund simulation model for each state of interest. The models are implemented as spreadsheets. Simulations are run with the ABP program both "On," and "off." Comparisons of outcomes under "On," and "Off" scenarios then provide the basis for estimating the impact of the ABP program. Models have now been developed for Washington and Ohio as well as the present model for Vermont.

Each model has five main sections or modules. The following pages describe the Vermont model while a complete listing with names, definitions and the exact behavioral or definitional relationship for each variable is given in Appendix 3. Readers may want to consult the appendix for added details not provided in the narrative text that follows.

4.2.1 Overview of the Vermont Model

The Vermont model has 106 equations that simulate benefits, taxes, interest income and end-of-year trust fund balances. The model is annual covering the 21 years from 1985 to 2005. Since ABP benefits were first paid in January 1988, the model covers the state's full historical experience with the ABP program. For years through 1995, historic levels of the variables are used but with the ability to alter important exogenous variables such as the state's unemployment rate. For the ten years 1996 to 2005 simulated outcomes are based on behavioral and definitional relations developed from historic data coupled with statutory provisions of the state's UI laws and the projected time paths of important exogenous variables.

The model's structure allows the user to modify important exogenous variables and trace the effects of each modification throughout the model. In the terminology of simulation analysis, the model yields deterministic solution paths. Identical time paths for the exogenous variables yield identical paths for all variables. Thus one obtains point estimates of the effects of a change in a single variable on all variables in the model.[27]

[27] This contrasts with stochastic outcome paths where identical patterns for exogenous variables will yield different simulated outcomes due to the effects of random variation from disturbance terms and/or coefficients in one or more behavioral relationship within the model.

Each model has a recursive structure with five main modules or blocks: the labor market, benefits, taxes, interest income and the trust fund balance. These blocks determine important variables from the state's economy and the UI program. The blocks are grouped so that variables that have close logical relations are found in adjacent equations. The details of the individual blocks for the Vermont model are given below.[28]

4.2.2 The Labor Market

The labor market sets the main employment, unemployment and wage variables that are the important background factors determining benefit payouts, tax receipts and interest income. There are five key exogenous variables: 1) the growth rate in the civilian labor force, 2) the growth rate in average wages of taxable employers, 3) the growth rate in average wages of reimbursable employers, 4) the interest rate paid on trust fund balances, and, most important, 5) the unemployment rate. The latter is the so called total unemployment rate or TUR, the ratio of unemployment to the labor force as measured by the monthly household labor force survey conducted for the U.S. Department of Labor by the Census Bureau (Current Population Survey or CPS). In Vermont CPS-based estimates of the TUR extend back to 1976.

The exogenous labor force growth rate combines with the level of last year's labor force to determine the labor force for the current year. The product of the labor force and the exogenous unemployment rate (TUR) is the level of total unemployment (TU). When TU is subtracted from the labor force it yields the level of employment as measured by the household survey (ECPS). Between 1985 and 1995 the growth in total employment (ECPS) was similar to growth in employment covered by the UI program (ECOV). Employment growth during these years was 41,000 for ECPS and 48,000 for ECOV. Over this period taxable covered employment accounted for a 0.769 share of total employment growth while reimbursable employment accounted for the

[28] Many details of the Vermont model are similar to those of the Washington and Ohio models described in earlier reports. However, it was decided to make each report a stand-alone report that can be read by itself without reference to the other reports since some readers could be interested in just a single state.

other 0.231 share. In the model the aggregates for ECPS and ECOV are assumed to grow identically after 1995, and the 1985-1995 employment growth shares between taxable and reimbursable employment are assumed to persist into the future.

Average weekly wages for both taxable and reimbursable employment are determined as the product of the lagged average weekly wage and an exogenous wage growth rate. The average weekly wage for total (taxable plus reimbursable) employment is then simply the employment-weighted average of the average weekly wage for the two types of employment.

Finally, the interest rate paid on trust fund balances is also treated as exogenous. For years through 1995 the model uses actual historic interest rates. The average real interest rate (the interest rate less the percentage rate of inflation) exceeded 4.5 percent during these years, but it is assumed to be lower in future years. Starting in 1996 the nominal interest rate is assumed to represent a 3.0 percent real interest rate, i.e., the rate of wage inflation plus 3.0 percent.

4.2.3 UI Benefits

For regular UI benefits, ABP benefits and benefits paid through the Federal-State Extended Benefits program, total benefit payouts are modeled as the product of the number of weeks compensated times the average weekly benefit. The average weekly benefit amount (WBA) in the regular UI program determines weekly benefits in the other two programs while weeks compensated in each of these programs is modeled differently. The following descriptions mimic the order of the three programs in the model.

Claims for benefits in Vermont's regular UI program can change sharply from one year to the next. During the periods 1969-1971 and 1989-1991 total benefit payouts roughly tripled. While the state's unemployment rate (TUR) and UI benefit payouts have changed sharply over the past thirty years, the state's average unemployment rate has been significantly lower than the national average. Between 1967 and 1995 Vermont's average TUR was 5.3 percent compared to the U.S.

average TUR of 6.3 percent.

Also important in the state's UI benefit experiences, however, is the comparatively high level of claims (termed insured unemployment or IU) relative to total unemployment (TU). Between 1967 and 1995 Vermont's IUTU ratio averaged 0.488 compared to the national average of 0.365. This above-average IUTU ratio largely offsets the effects of the below-average TUR.

Additionally, the level of UI claims (insured unemployment or IU) has shown wide variation relative to the level of total unemployment (TU). As noted the state's the IUTU ratio averaged 0.488 during 1967-1995, but it ranged from a high of 0.598 in 1975 to a low of 0.379 in 1986.

Several time series relationships were estimated in attempting to capture the volatility in the UI claims. The one selected for the model explains about 90 percent of the variation in IU for the 1967-1995 period. The model determines IU with two explanatory variables which are standard: TU and TU lagged one year. Both explanatory variables have the expected sign on their coefficients (positive for TU and negative for TU lagged). The coefficient on TU is 0.616 with a t ratio of 11.9 and the coefficient on TU lagged is -0.139 with a t ratio of 2.9. Unlike the situation in many other states IU in Vermont did not decrease significantly relative to TU in the years after 1980.

Two factors act to reduce the effect of a given volume of claims on the outflow of regular UI benefit payments from the trust fund. First, a small fraction of claims arise from reimbursable employment. While reimbursable employment accounts for 23 percent of total covered employment, their employees accounted for only 6.2 percent of weeks compensated between 1991 and 1995. For future years the model projects their share of benefits of the total at 6.2 percent. These payments do not affect the trust fund balance. Second, not all weeks claimed are actually compensated. The largest factor here is the state's one week waiting period. Disqualifications also reduce weeks compensated relative to weeks claimed. The ratio of weeks

compensated to weeks claimed has varied only modestly in recent years, e.g., from 0.842 to 0.895 during 1985-1995. The ratio in the model is projected to be 0.880 in future years.

The model determines the average weekly benefit amount (WBA) by incorporating the statutory provisions controlling changes in the maximum weekly benefit (MAXWBA) and estimating the replacement rate (the ratio of the average WBA to the average weekly wage) with a regression equation. The MAXWBA is indexed to the lagged percentage change in the average weekly wage in covered employment. It changes annually on July 1st by the same percentage as the percentage increase in the lagged average weekly wage. However, in years when net reserves are negative on January 1st, the maximum remains unchanged on July 1st.

The model constructs a composite MAXWBA as a simple average of the maximums for the two halves of the year. The ratio of the composite MAXWBA to the average weekly wage (MBAW) is a key determinant of the benefit replacement rate. It is highly significant in a regression fitted from 1967 to 1995. The regression has an adjusted R^2 of 0.767. The weekly benefit amount (WBA) is then determined as the product of the replacement rate and the average weekly wage.

A final factor determining regular benefit payouts is a benefit adjustment that controls for all other influences. The WBA, for example, is measured for claimants receiving full weeks of UI benefits whereas weeks compensated includes partial as well as full weeks of benefits. Also, weeks compensated and the weekly benefit amount for reimbursable claims are not reported. Some error may be present as the model removes the effects of reimbursable claims only at the aggregate level. The net effect of all unmeasured factors is to make projected benefit payouts too high unless an adjustment is included. Between 1985 and 1995 the benefit adjustment ranged from 0.925 to 0.970. For future years this adjustment factor is projected to be 0.946, the average for the 1991-1995 period.

Total payouts of regular benefits are then simply the product of the preceding factors that

combine to determine weeks compensated for taxable employers, the weekly benefit amount and the benefit adjustment factor.

Since the model explicitly recognize ABP benefit payments, the aggregate benefit payout relationship has the ability to remove ABP benefits from the total.[29] This is accomplished by having ABP benefits under one or both definitions of the ABP multiplied by 0-1 dummy variables that subtracts ABP payouts if one or both ABPs is turned "off." Comparing simulations with ABP "On," and "Off" allows one to estimate the effect of the ABP program on benefit payouts, the trust fund balance and other variables. As described below, the model also separately estimates payouts under ABP1 and ABP2.

In past years Federal-State Extended Benefits (EB) have sometimes constituted an important part of total UI benefit payouts. However, Vermont last paid EB in 1991. Given the state's generally low TUR it would be expected to activate EB only occasionally in the future.

EB is triggered "On," by the model when the state's insured unemployment rate (IUR, the ratio of regular UI weeks claimed to covered employment) reaches 4.0 percent. A 4.0 percent annual IUR trigger is used in the model because of seasonal patterns in unemployment. The first quarter's IUR is typically about 25 percent higher than the annual average. Thus the IUR would be expected to reach 5.0 percent (the EB trigger threshold) in the first quarter if the annual IUR were 4.0 percent.

The number of months EB is triggered "On," is also a function of the IUR. Successively higher IURs between 4.0 percent and 5.9 percent cause months of EB to increase in steps from 3 to 10. For IURs of 5.9 percent and higher EB is activated for the full year.

[29] The relationships that determine ABP benefit payments are described below.

Historically EB has been "On," for widely differing proportions of the year. In the model, annualized weeks of EB are determined by a regression relationship based on 12 years of data: 1971-72, 1974-1978, 1980-1983 and 1991. This variable is explained by the annual TU for the same year with a slope coefficient of 5.092. The regression explains about half of the variation in annualized weeks of EB.

The WBA for EB recipients is determined by the WBA for regular UI recipients for the current year. The slope of the relation is 0.936 and the adjusted R^2 is 0.993. Weekly benefits for EB are closely tied to regular program weekly benefits.

There is also a benefit adjustment factor for EB. It is based on an average for the twelve years 1971-72, 1974-78, 1980-83 and 1991 and equals 0.959. For EB payments in 1991 this factor was lowered to 0.912. Total EB is then the product of weeks of EB, the WBA for EB and the benefit adjustment factor. Half of this total is then projected as the state's share of EB payouts.

4.2.4 ABP Benefits

As shown in Table 4.1, Vermont has good data since mid 1989 on counts and the WBAs of ABP eligibles. These data distinguish persons eligible under the two definitions of the alternative base period. The model recognizes both ABP1 and ABP2. Thus it can show how much is paid out under each ABP and how much is added to total payments by ABP2, the option that credits earnings in earlier weeks of quarter when the claim for benefits is filed.

The model estimates insured unemployment and weeks compensated under ABP1 and ABP2. Both IU and weeks compensated are estimated as proportions of their respective annual statewide totals. The proportions are based on the counts of claimants shown in Table 4.1. Historic proportions are used for each year 1990 to 1996, and averages for these seven years are then used for years starting in 1997, i.e., 0.0680 for ABP1 and 0.0331 for ABP2. For 1988 and 1989 where data were unavailable, the assumed ratios were 0.0660 for ABP1 and 0.330 for ABP2.

Combined, the two ABPs are projected to equal about 10 percent of both weeks claimed and weeks compensated in all years.

The Table 4.1 data for the years 1989 to 1996 consistently show that the weekly benefit amount (WBA) for ABP claimants is much lower than for regular base period claimants. Further, the WBA for ABP1 claimants is higher than for ABP2 claimants. In the model relative proportions are used project the WBA for both types of ABP claimants. The two proportions are 0.7687 for ABP1 eligibles and 0.6935 for ABP2 eligibles.

The model also has a benefit adjustment factor for ABP claims, the same factor as for regular UI benefits. Total ABP payments are then determined as the product of weeks compensated, the WBA and the benefit adjustment factor. The simulated amounts for 1990 and 1996 respectively were $3.24 million and $4.26 million or 6.6 percent and 9.4 percent of regular UI benefits.

4.2.5 UI Taxes

Vermont utilizes the benefit ratio method of experience rating to set employer tax rates. It has five tax rate schedules. The schedule active for a given twelve month period is determined by level of reserves relative to recent benefit cost experiences.

A novel feature of its tax system is the use of array allocations to set individual employer rates along a given tax schedule. Employers are ranked by their three year benefit ratios (benefits as a percent of taxable wages for three years ending December 31 of the previous year) and divided into twenty-one groups. One group, with zero benefit ratios, is assigned the minimum tax rate. Typically this group accounts for some 15 to 20 percent of taxable wages. Other employers are divided into twenty groups, each representing 20 percent of the remaining taxable wages. By using arrays Vermont assures predictability in its average overall tax rate for a given year. Tax rate schedules and individual employer tax rates change on July 1 of each year.

Vermont has had the same taxable wage base since 1983, $8,000 per employee. In the model the taxable wage base is an exogenous variable. The model determines the proportion of wages that are taxable (TWP) using a regression that has three explanatory variables: the ratio of the tax base to the average annual wage (TBAW), a time trend and the state's TUR. The TBAW variable has a positive coefficient indicating that a higher tax base to average wage ratio raises TWP. Both the time trend and the TUR are expected to have negative coefficients, respectively indicating a trend towards increased earnings inequality and higher earnings inequality in periods of high unemployment. Increasing earnings inequality implies that a larger proportion of earnings will be untaxed in later years because more accrues to those earning above the taxable wage base.

The regression for the years 1967 to 1995 explained 99.9 percent of the variation in TWP and all three explanatory variables were highly significant. The trend indicated that even if TBAW remains constant TWP trends downward at a pace that lowers TWP by about a full percentage point every four years.

Total wages of taxable covered employers are then the product of employment and the average annual wage. Taxable wages equal total wages multiplied by TWP.

In determining which of the five tax schedules to activate on July 1st, Vermont relies on three important ratios each of which is present in the model. The first is last year's end-of-year trust fund balance expressed as a percent of last year's covered wages (FUNDRATIOL). The second is the highest twelve month benefit payout rate over the past ten years and expressed as a percent of total covered wages (BCOSTRTL10). The third is the lagged fund ratio expressed as a ratio to the highest ten-year benefit cost ratio (TSCHRATIO = FUNDRATIOL/BCOSTRTL10). When TSCHRATIO exceeds 2.5 the lowest tax schedule is activated. The highest schedule is activated when TSCHRATIO falls below 1.0.

Under array allocations the set of 20 tax rates in each tax schedule combine to determine the average statutory tax rate. The actual effective, tax rate, about 85 percent of the average statutory rate, is determined with a regression. In a time series regression covering the years 1978 to 1995 the slope on the statutory rate is 0.8742 with a highly significant t ratio and an adjusted R^2 above 0.92. The model changes tax rates on July 1st of each year.

Actual tax collections are modeled on a quarterly basis. Each quarter's receipts are the product of the effective tax rate and taxable wages. Taxable wages per quarter are determined from annual taxable wages and the average proportion paid by quarter. Estimated collections also recognize the one quarter lag between accruals and collections. Add factors are used to fine tune annual collections for the period 1985 to 1995.

4.2.6 Trust Fund Interest

Interest earnings are simulated as the product of the interest rate times the average trust fund balance for the year. The latter is the average of the start-of-year balance and an estimate of the ending balance. The end-of-year estimate is derived by adding taxes to the start-of-year balance and subtracting benefit payments. An add factor is included for each year in the 1985-1995 period to make the computed interest agree with historic data. For years after 1995 an add factor based on the average for the years 1992-95 (about $0.46 million) is added.

4.2.7 The Trust Fund Balance

This is merely an accounting identity. It updates last year's ending balance by adding annual taxes and interest and subtracting benefit payouts. The net balance and the gross balance are both estimated. The latter adds to the net balance all end-of-year outstanding debts to the U.S. Treasury. This block also has relations that estimate borrowing and debt repayment during periods when the trust fund is depleted.

4.2.8 Model Use and Output Display

Table 4.2 shows the complete model and simulated variables for the twenty-one years 1985 to 2005. The individual blocks and the variables within the blocks appear in the order just described. The table is divided into three pages of model display. As noted, the definitions of the variables and behavioral equations appear in Appendix 3.

Displayed below the model's equations in Panel 3 of Table 4.2 are brief summaries of model output for two multi-year periods: 1988 to 1995 and 1988 to 2005. These provide a short hand summary of main outputs without the need to examine individual year detail. Cumulative summaries are shown for the indicated periods for important flow variables like total benefits, ABP benefits, interest and taxes. Also shown are ending trust fund balances and reserve ratios along with averages for two important exogenous variables: the unemployment rate (TUR) and the rate of wage inflation (INFL). In addition to the period summaries, there are also deviation summaries that show deviations from the baseline for key outcome variables like benefits, taxes, interest and the ending trust fund balance.

Next, Panel 3 of Table 4.2 shows the ABP policy control dummy variables, ABP1OFF and ABP2OFF. When ABP1OFF and ABP2OFF both equal 0 as shown in Table 4.2, Vermont's ABP program is fully active and model outcome variables include the effects of both alternative base periods. When ABP1OFF equals 0 but ABP2OFF equals 1 the ABP program is active using just the last four completed quarters as the alternative base period. This is the ABP used in Maine, Ohio, Rhode Island and Washington. Thus with ABP2OFF equal to 1, the model's output suggests how Vermont would perform if ABP1 were the only alternative base period. With both policy controls equal to 1 the ABP variables continue to be simulated, but their effects are zeroed out.[30] Thus, benefits and other important variables that affect net trust fund reserves are computed as if there were no ABP program.

[30] The exclusion is accomplished by removing ABP payments from the equation in the model that defines trust fund benefit payments (BENTF).

4.3 THE EFFECTS OF ALTERNATIVE BASE PERIOD BENEFITS

The model just described was utilized to assess the impact of ABP benefits on Vermont's UI trust fund. Simulations were run that were identical in all respects except for the presence or absence of benefit payments from the ABP program. The effects of both ABP1 and ABP2 were simulated.

As noted, key exogenous variables in the model are the labor force growth rate, the rate of wage inflation, the interest rate and the unemployment rate (TUR). The baseline simulation assumed historic values for these variables through 1995. The labor force was then assumed to grow by 1.0 percent per year (the average for 1989-1995) during 1996-2005. From 1996 onward the average weekly wage for both taxable and reimbursable employment was assumed to grow 4.0 percent per year. The TUR was assumed to be 4.4 percent in 1996 (the average for the first eleven months) and then to increase, to 5.0 percent in 1997 and to 5.5 percent from 1998 through 2005. Finally, the real interest rate was assumed to be 3.0 percent starting in 1996 which implies a 7.0 percent nominal interest rate under a 4.0 percent annual rate of wage inflation.

4.3.1 Baseline results

Table 4.3 summarizes the main results of the baseline simulations. It shows cumulative summaries of five variables for the two periods 1988-1995 and 1988-2005. Results with and without the ABP program are displayed along with the differences attributable to each component of ABP, i.e., ABP1 and ABP2.

Over the 1988-1995 period the ABP program is simulated to pay out $29.8 million in benefits. Total benefits are simulated to increase by $29.8 million as well.[31] Taxes are raised by $16.1 million and interest income is reduced by $7.6 million due to the ABP program. The increment

[31] The two differences need not be identical. Under some circumstances the presence of the ABP program could cause EB to be activated, causing more benefits to be paid to regular base period recipients. Because the unemployment rate was low in the baseline, this did not occur in the Table 3 simulations.

to UI benefit payouts coupled with reduced interest income exceed the increment to taxes so that the trust fund balance at the end of 1995 is lower by $21.3 million due to the ABP program.

Over the longer period from 1988 to 2005 the reduction in the ending trust fund balance due to the ABP program is $21.7 million, only $0.4 million larger than for the 1988-1995 period. The three trust fund flows (benefits, taxes and interest income) are each much larger over the longer period.

However under all three simulations note that the fund balance in 2005 averages about half of the balance at the end of 1995. Thus if the state were to have a persistent unemployment rate (TUR) of 5.5 percent starting in 1997, the ten year prospect is for the fund balance to decline substantially. Since average wages and employment are both simulated to grow during these years the decline in trust fund adequacy is even more serious when a standard actuarial measure (the reserve ratio multiple) is followed.[32] This measure declined by more than two thirds in the baseline simulation with the ABP program turned "On," e.g., from 1.42 at the end of 1995 to 0.40 at the end of 2005.

When individual year data are examined in Table 4.2, i.e., the baseline simulation with ABP "On," note that the average tax rate trends upward after 1995. Tax rate schedule II is in effect during 1996-1999, but then schedule III applies during 2000-2003 and schedule IV during 2004-2005. The associated average effective tax rate on taxable wages increases from 2.7 percent in 1995 to 3.7 percent in 2005.

With its tax base fixed at $8000 over these years observe also that the taxable wage proportion (TWP) decreases from 0.364 in 1995 to 0.263 in 2005. Of the total decline in TWP of 10.1

[32] The reserve ratio multiple expresses the size of the trust fund as years of benefits if benefits were paid out at the historically highest rate. A multiple of 1.0 would indicate the trust fund represented one full year of such benefit payments.

percentage points, the model attributes 7.0 percentage points to the decrease in the tax base relative to the average wage (TBAW), 2.7 percentage points to the trend towards increased earnings inequality and 0.3 percentage points to an increased TUR.

Total tax receipts increase from $44.0 million in 1995 to $72.1 million in 2005 or by 62 percent. Over these same years total wages of taxable employers (WSTOT) increase from $4585 million to $7517 million or by 64 percent. Thus taxes as a percent of total wages are remarkably stable during this period, 0.96 percent in 1995 and 0.96 percent in 2005. The combined effects of the increase in the average tax rate and the decrease in TWP are almost perfectly offsetting, and taxes as a percentage of total wages did not change.

As expected, most of the added benefit outflow attributable to the ABP program was due to payments to those eligible under ABP1. During 1988-1995 ABP1 eligibles accounted for 69 percent of all ABP benefits ($20.7 million of $29.8 million). Over the longer 1988-2005 period ABP1 also accounted for 69 percent of all simulated ABP payments ($64.9 million of $93.6 million). Benefits paid under ABP1 and ABP2 combined constituted 7.8 percent of all UI benefits during 1988-1995 and 8.0 percent during 1988-2005. ABP payouts as a percent of the total were quite similar for the two summary periods.[33]

The exact results of parallel simulations as summarized in Table 4.3 would differ depending upon the particular values assumed for the exogenous variables. Most important, however, is the qualitative result that the long run effect of ABP benefits on Vermont's trust fund is measurable despite experience rating. In the three baseline simulations of Table 4.3, taxes respond to the trust fund drawdown caused by ABP benefit payouts, but not fully. The response of UI taxes is measurably smaller than the combined sum of higher benefit payouts and reduced interest

[33] The reader is reminded that data on ABP benefits were not available from January 1988 through June 1989. Thus it is even possible that ABP benefits as a percent of total benefits were no different between 1988-1995 and 1988-2005.

income. During 1988-1995 there was an added outflow of $29.8 million caused by the ABP program. The added inflows into the trust fund totaled only $8.5 million, the difference between $16.1 million of added taxes and $7.6 million of reduced interest income. During 1988-2005 the added benefit outflow was $93.6 million while the added net inflow was only $72.0 million, i.e., $93.3 million of added taxes less $21.3 million of reduced interest. Over the 1988-2005 period, added UI taxes offset 81 percent of the combined effects of added UI benefits plus reduced interest income flows in Vermont. Consequently the ending trust fund balance was reduced by $21.7 million as a result of paying ABP benefits.

Three major findings emerge from the baseline simulations as summarized in Tables 2 and 3. 1) Taxes do not respond fully to the effects of ABP benefit payments which act to increase total benefit payments and reduce trust fund interest. These simulation results suggest that the response of increased taxes covers about 80 percent of the combined flows of increased benefits and reduced interest caused by the ABP program over the 1988-2005 period. 2) The revenue side of Vermont's program appears to be inelastic to growth in the state's economy over the decade from 1996 to 2005. With the ABP program "On" net reserves decrease by $112 million between December 31, 1995 and December 31, 2005 (from $206.7 million to $94.5 million). Even if there were no ABP program the baseline simulation suggests that net trust fund reserves would decrease by about $112 million (from $228.0 million to $116 million) during these ten years. 3) About 70 percent of added benefit payments caused by the ABP program in Vermont is paid to those eligible under ABP1 and only about 30 percent to those eligible under ABP2. A state wishing to implement an ABP program using the past four completed quarters as the alternative to the regular base period should find the results in Table 4.3 with just ABP1 "On" to be most relevant.

4.3.2 Other findings

Additional simulations were conducted to provide a more complete assessment of the effects of the ABP program in Vermont. Specifically, the model was used to examine the effects of higher

unemployment and higher inflation. One set of simulations subjected the state to a very serious recessionary episode during the 1996-2000 period. Another exercise examined the consequences of higher inflation during the ten years 1996-2005.

Table 4.4 summarizes the results. Under the deep recession simulation the 4.4 percent TUR of 1995 increases to 9.0 percent in 1996, 10.0 percent in 1997 and 1998, 9.0 percent in 1999, 8.0 percent in 2000 and then returns to 5.5 percent during 2001-2005.

Before examining the effects of ABP benefits, it is instructive to note results from the ABP-Fully-"Off" simulation. Over the eighteen years 1988 to 2005 cumulative benefit payouts total $1308.2 million while cumulative tax receipts total only $1005.9 million. Net trust fund reserves decline from $228.0 million at the end of 1995 reaching a low of -$55.0 million at the end of 2000 and only recovering to -$39.5 million at the end of 2005. In effect, the state's large fund balance at the start of this episode provides a cushion that finances much of the increment to benefit payouts during 1996-2000.

A surprising aspect of this simulation is the failure of the trust fund to recover after the year 2000. The drawdown from the recession causes the tax system to move to tax rate schedule IV in 1997 and then to schedule V in 1998 where it remains for the remainder of the simulation. Even taxing employers at the maximum rate for eight consecutive years does not generate sufficient revenues to restore the trust fund balance to zero much less to accumulate a substantial reserve. During the five years 2001-2005 when the TUR has returned to 5.5 percent, cumulative benefits and taxes are nearly the same, e.g., benefits total $377.6 million while taxes total $392.9 million. Under Vermont's present tax statute, a 5.5 percent TUR during 2001-2005 causes benefit outflows that equal the state's capacity to generate UI taxes under its current statute.

With the preceding as background it is not surprising that adding ABP benefits only deepens the trust fund drawdown during 1996-2000 and then further hampers the trust fund's recovery. With

just ABP1 "On" the recession-related low point is reached at the end of the year 2000 (-$118.4 million). There is no important recovery, and by the end of 2005 the balance is -$118.7 million. The added benefits attributable to ABP1 total $76.1 million while the added taxes total only $7.5 million. Interestingly, the added taxes are paid during 1993 and when tax rate schedule III applied rather than schedule II under the ABP-Fully-"Off" simulation. Consequently, the ending trust fund balance is lower by $79.2 million which almost matches the $76.1 million of ABP1 payouts. There simply is no more taxing capacity to offset the added ABP1 payouts once the recession draws down the trust fund.

The inclusion of ABP2 payouts only adds to the size of the trust fund drawdown and lack of recovery after the year 2000. Combined ABP1 and ABP2 benefits total $109.7 million and the ending balance is -$132.6 million after reaching a recession-related low of -$122.4 million at the end of the year 2000.

As noted earlier, Vermont has a provision that freezes the maximum WBA in years when net trust fund reserves are negative. Thus all three simulations in Table 4.4 have benefits frozen after reserves turn negative. The average maximum WBA in 2005 is $238 or $247 in these simulations compared to $307 in the baseline simulations. Thus growth in weekly benefits is significantly restrained by this provision that overrides automatic indexation, but the savings on benefit payments do not affect the qualitative nature of the findings displayed in Table 4.4. For the TURs used in these simulations the state cannot generate sufficient revenues to cause a large recovery in the trust fund balance.

The series of TURs for this high unemployment scenario exceed that ever experienced during a five year period in Vermont. To test the sensitivity of results to this set of unemployment rates, an alternative high unemployment scenario was studied. Here the state's actual TURs from 1970 to 1979 were utilized from 1996 to 2005.[34] Under this alternative, the highest TURs of 8.6 and

[34] These TURs appear at the bottom of Panel 3 in Table 4.2.

8.8 percent were assumed to occur in 2001 and 2002 respectively, and the average TUR for 1996-2005 was 5.3 percent. This ten year average is 1.0 percentage points above the average in the baseline compared to 2.1 percentage points above the baseline for the high unemployment series underlying Table 4.4.

The results using this second series of "high" unemployment rates were qualitatively similar to those shown in Table 4.4. The increments to UI benefit payments were smaller, but the trust fund experienced a severe drawdown with ABP fully "Off," as well as with ABP partly or fully "On." ABP payments from 1988 to 2005 totaled $103.4 million with ABP fully "On," and $71.8 million with just ABP1 "On." The increase in UI taxes represented about half of the added UI benefits plus reduced interest income with ABP fully "On," with just ABP1 "On," and with ABP fully "Off." Under these same three simulations the ending trust fund balances were $6.0 million, -$43.3 million and -$58.5 million. Under the latter two, state borrowing during 1996-2005 totaled $47.7 million and $60.9 million respectively. Thus ABP payments also added to Vermont's trust fund drawdowns and financing problems under this alternative pattern of high unemployment rates.

The bottom half of Table 4.4 traces the effects of higher inflation during 1996-2005, 6.0 percent annual wage inflation rather than the 4.0 percent of the baseline. Higher inflation leads to increased ABP payouts as well as other regular UI and EB benefits. As a percentage of total benefit payouts during 1989-2005, however, ABP benefits in the high inflation simulation are the same as in the baseline, i.e., 8.0 percent. In this simulation the combined effects of higher ABP payouts and reduced interest earnings considerably outweigh the tax response reducing the ending trust fund balance by $44.3 million, i.e., $76.1 million with ABP "On" versus $120.4 million with ABP "Off."

The trio of high inflation simulations in Table 4.4 again illustrate the limited taxing capacity of Vermont's program. Compared to their baseline counterparts under 4.0 percent inflation, the trust

fund balances at the end of 2005 are uniformly lower. For example, with ABP fully "On" the ending balance is $76.1 million in Table 4.4 compared to $94.5 million in Table 4.3. Thus high inflation as well as high unemployment has a negative effect on the state's trust fund balance. Note in Table 4.4 that with higher inflation interest earnings are raised. However, they constitute only a slightly larger share of trust fund receipts (taxes plus interest) vis-à-vis the baseline. For the ABP-Fully-"On" simulation of Table 4.3 the percentage is 20.6 percent ($236.9 million of $1148.8 million) compared to 22.5 percent under the higher inflation of Table 4.4 ($272.8 million of $1214.7 million). Higher inflation increases both interest earning and (indexed) benefits. Tax revenues also keep pace in these simulations because tax rates increase to offset the effects of slow growth in the taxable wages and the associated decrease in TWP. By 2005 TWP has declined to 0.238 but tax rate Schedule V is in effect. Further extension of the model past 2005 would show a slower growth in taxes since the highest tax schedule is already in place. Measured as a percent of total wages, taxes would trend downward in later years as the fixed tax base would continue to reduce the taxable wage proportion (TWP).

4.3.3 Summary

Based on the results from Tables 4.2, 4.3 and 4.4, four final observations are in order. 1) The ABP program makes a measurable percentage addition to UI benefit payouts in Vermont. For the years 1988-2005 the ABP share of total benefits was 8.0 percent in the baseline simulation, 7.7 percent in the high unemployment simulation and 8.0 percent in the high inflation simulation. Added payouts from state's share of EB are responsible for the smaller percentage in the high unemployment simulation. In a typical nonrecession year, ABP would be expected to make up about 8.1 percent to Vermont's benefit outlays.

2) Increases in ABP payouts cause UI taxes to increase in the long run through experience rating. However, taxes respond only partially to the increased benefit payouts caused by the ABP program. In the baseline, the response of taxes represented about 80 percent of the added benefit flow. The percentage response was much lower in the high unemployment simulations.

3) Compared to Washington and Ohio where ABP payouts represent about 5.0-5.2 percent of total benefit payments, the ABP program is more expensive in Vermont at 8.1 percent of total benefits. Two factors contribute to the higher expense in Vermont. The most important factor is the presence of two alternative base periods. Under ABP1 alone, which corresponds to the alternative base period used in both Washington and Ohio, the added cost would be about 5.7 percent, i.e., 0.70 of 8.1 percent. However, since Vermont is a uniform potential benefit duration state, this too is a factor that adds to its ABP costs.

4) In general, the long run effect of the ABP program on the UI trust fund balance is difficult to predict because UI taxes may "overreact" to trust fund drawdowns. In Vermont, however, the simulations consistently showed that the increment to taxes was smaller than the combined increase in benefits plus the decrease in trust fund interest income caused by the full ABP program and by the ABP1 component alone. Added taxes represent from 50 percent to 80 percent of added benefits plus reduced interest.

The simulations also suggested that under its present statutes Vermont has a long run UI financing problem. In all simulations the trust fund balance at the end 2005 was considerably lower than at the end of 1995. The decline in the trust fund is even more pronounced when the fund balance is measured relative to the scale of Vermont's economy over the 1996-2005 decade. In such a situation, the presence of ABP benefit payments adds to financing problems for the state.

4.4 TABLES 4.1 THROUGH 4.4

Table 4.1. Counts and Average Weekly Benefits of UI Claimants in Vermont

Time Period	Counts of Eligibles				Average Weekly Benefits			
	Regular	ABP1	ABP2	Total	Regular	ABP1	ABP2	Total
1989 III+IV	11521	881	428	12830	151	125	110	148
1990 I+II	14387	894	349	15630	151	119	105	148
1990 III+IV	14827	845	510	16182	155	115	109	151
1991 I+II	17280	1004	394	18679	153	112	105	149
1991 III+IV	14296	1052	622	15970	158	115	110	153
1992 I+II	15280	1177	521	16978	154	115	106	150
1992 III+IV	10862	801	658	12321	162	122	100	156
1993 I+II	12461	1050	429	13940	164	121	98	158
1993 III+IV	11339	1000	590	12929	166	123	111	160
1994 I+II	13974	1111	381	15466	165	126	103	160
1994 III+IV	10277	854	454	11585	168	120	120	162
1995 I+II	13512	1110	385	15007	168	127	113	164
1995 III+IV	11898	897	401	13196	173	130	117	168
1996 I+II	11695	1011	443	13149	162	123	112	158
1996 III+IV	10583	860	529	11972	173	130	119	167

Source: Data based on counts of eligibles by five dollar weekly benefit intervals. Tabulations conducted by the Vermont Department of Employment and Training.

TUR	Total unemployment rate, percent	Exogenous variable
TU	Total unemployment	= CLF*TUR/100
ECPS	Total employment	= CLF - TU
T57	Time trend starting in 1957	1957 = 1, ..., 1995 = 39, etc.
ETAX	Employment of taxable covered employers, thousands	$= ETAX_{-1} + .771*(ECPS - ECPS_{-1})$
EREI	Employment of reimbursable employers, thousands	$= EREI_{-1} + .229*(ECPS - ECPS_{-1})$
ECOV	Employment covered by the UI program, thousands	= ETAX + EREI
BLOCK2 BENEFITS		
IUTU	Ratio of insured to total unemployment	= 0.4641 + 0.0135*TUR (9.2) (1.7) - 0.0135*TUR_{-1} - 0.0825*D81 (1.6) (3.3) + 0.0709*D90 (2.0) Adj R^2 = 0.355 S.E. = 0.0542 D.W. = 1.22 Sample period 1967 to 1993 D81 = 1.0 from 1981 and 0 earlier, D90 = 1.0 from 1990 and 0 earlier Intercept adjustment = 0.1047 for 1994 and 0.0473 for 1995.
IU	Insured unemployment, thousands	= IUTU*TU

TAXQ2	Taxes paid in the second quarter of the year, millions	= TAXRATE*PWSTXQ1*WSTAX/100
TAXQ34	Taxes paid in the third and fourth quarters of the year, millions	= TAXRATE*(1-PWSTXQ1-PWSTXQ4) *WSTAX/100, TAXQ34 includes an adjustment to reconcile the sum of TAXQ1, TAXQ2 and TAXQ34 with historic tax receipts
TAXTF	Annual tax receipts, millions	= TAXQ1 + TAXQ2 + TAXQ34

BLOCK4
INTEREST

INTRATE	Interest rate on trust fund balances	Historic rate 1985-1995, = GRAWWTO + 2 percent from 1996
RESNL	Lagged trust fund balance	Net balance on December 31 of past year
RESNHAT	Projected trust fund balance for end of year	= RESNL + TAXTF - BENTF
RESNAV	Average trust fund balance for the year	= 0.99*(RESNL + RESNHAT)/2
RESNPB	Average trust fund balance, positive balance	= RESNAV if RESNAV >= 0, otherwise = 0
INT	Interest income, millions reconcile INT with historic	= (INTRATE/100)*RESNPB, includes an add factor to interest earnings

BLOCK5
FUND BALANCE

RESNL	Net reserves lagged, millions	Predetermined variable
TAXTF	Trust fund tax receipts, millions	From Block 3
INT	Trust fund interest income, millions	From Block 4
BENTF	Trust fund benefit outflows, millions	From Block 2
RESN	Net trust fund reserves, end of year, millions	= RESNL + TAXTF + INT - BENTF
DEBT	Trust fund debt to the U.S. Treasury, millions	Determined below
RESG	Gross trust fund reserves, millions	= RESN + DEBT

TRUST FUND DEBT

DEBTL	Debt at end of last year, millions	Predetermined variable
LOANS	Borrowing by state during the year, millions	Maximum of (BENTF - TAXTF - INT - RESNL) or 0
REPAY	Repayment of trust fund debts, millions	If (TAXTF + INT - BENTF)>0, then minimum of ((DEBTL + LOAN),(TAXTF + INT - BENTF), 0)
DEBT	Debt at end of year	= DEBTL + LOANS - REPAY

7. APPENDIX 2: OHIO MODEL EQUATIONS

BLOCK 1
LABOR MARKET

GRCLF	Growth rate in the civilian labor force, percent	Exogenous variable
GRAWW	Growth rate in the average weekly wage, taxable employers, percent	Exogenous variable
GRAWWREI	Growth rate in the average weekly wage, reimbursable employers, percent	Exogenous variable
GRAWWTO	Growth rate in the average weekly wage, all covered employers, percent	= 100*((AWWTO/AWWTO$_{-1}$)-1), AWWTO defined below
INTRATE	Interest rate on trust fund balances, percent	Historic data to 1995, = GRAWWTO + 3.0 from 1996
TUR	Total unemployment rate, percent	Exogenous variable
CLF	Labor force, thousands	= CLF$_{-1}$*(1 + GRCLF/100)
TU	Total unemployment	= CLF*TUR/100
ECPS	Total employment	= CLF - TU
ETAX	Employment of taxable covered employers, thousands	= Historic data to 1995, = ETAX$_{-1}$ + .811*(ECPS-ECPS95) and ECPS95 = ECPS in 1995

EREI	Employment of reimbursable employers, thousands	= Historic data to 1995, = $EREI_{-1}$ + .189*(ECPS-ECPS95)
ECOV	Employment covered by the UI program, thousands	= ETAX + EREI
AWW	Average weekly wage of taxable employers	= (1 + GRAWW/100)*AWW_{-1}
AWWREI	Average weekly wage of reimbursable employers	= (1 + GRAWWREI/100)*$AWWREI_{-1}$
AWWTO	Average weekly wage of all covered employers	= ((ETAX*AWW)+(EREI*AWWREI))/ (ETAX +EREI)

BLOCK2
BENEFITS

IUTU	Ratio of insured to total unemployment	= 0.2822 + 0.0308*TUR (10.7) (5.3) - 0.0253*TUR_{-1} - 0.0188*D81 (4.1) (1.0) Adj R^2 = 0.491 S.E. = 0.0432 D.W. = 0.86 Sample period 1967 to 1995 D81 = 1.0 from 1981 and 0 earlier,
IU	Insured unemployment, thousands	= IUTU*TU
IUR	Insured unemployment rate	= 100*IU/ECOV
IUTXIU	Ratio of IU of taxable employers to total IU	Exogenous variable, = 0.965, 1990-1994 average

WPDWCL	Ratio of weeks paid to weeks claimed	Exogenous variable, = 0.844, 1990-1994 average
WEEKSR	Weeks of regular UI benefits paid in the year, thousands	= IU*WPDWCL*52
AWWTO630L	Average weekly wage in covered employment for the year ending June of last year	= $(AWWTO_{-1} + AWWTO_{-2})/2$
MAXWBAS	Maximum WBA, single claimant	= $MAXWBAS_{-1}$ * $(AWWTO630L/AWWTO630L_{-1})$
MAXWBAF	Maximum WBA, claimant with 3+ dependents	= 1.34*MAXWBAS
MAXWBA	Maximum weekly benefit + (.25*MAXWBAF)	= (.75*MAXWBAS)
MBAWWTO	Ratio of the maximum weekly benefit to the average weekly wage	= MAXWBA/AWWTO
REPRATE	Benefit replacement rate, ratio of average weekly benefit to average weekly wage	= 0.1395 + 0.4554*MBAWWTO (7.8) (10.1) + 0.00488*TUR (4.1) Adj R^2 = 0.888 S.E. = 0.0123 D.W. = 0.89 Sample period 1967 to 1994 Add factor = -0.02102, average error from 1992-1994
WBA	Average weekly benefit amount	= REPRATE*AWWTO

BENADJ	Benefit adjustment ratio to make estimate of benefits agree with program totals	Exogenous variable, = .981, 1990-1994 average
BENREG	Regular UI program benefits, millions	= (IU*IUTXIU*WPDWCL*WBA* *BENADJ*(0.052)) - (BENABP*ABPOFF), BENABP is ABP payouts as defined below, and ABPOFF is a dummy variable that turns "OFF" the ABP program
IURADJ	Adjusted IUR, includes or excludes weeks compensated ABP by the ABP program	= IUR - (IURABP*ABPOFF) where IURABP is defined below
EBON	Extended benefits triggered "ON" during the year	= 1.0 if IURADJ >= 4.0, otherwise = 0
MOEB03	EB triggered on for 3 months	= 1 if 4.0 <= IURADJ < 5.0, otherwise = 0
MOEB05	EB triggered on for 5 months	= 1 if 5.0 <= IURADJ < 5.25, otherwise = 0
MOEB08	EB triggered on for 8 months	= 1 if 5.25 <= IURADJ < 5.4, otherwise = 0
MOEB10	EB triggered on for 10 months	= 1 if 5.4 <= IURADJ < 5.9, otherwise = 0
MOEB12	EB triggered on for 12 months	= 1 if 5.9 <= IURADJ, otherwise = 0
MOEB	Number of months EB triggered "ON"	= MOEB3 + MOEB5 + MOEB8 + MOEB10 + MOEB12
PYEBON	Proportion of the year EB is "ON"	= MOEB/12

WEEKSEBAR	Weeks of EB paid at an annual rate, thousands	= 0.2674*WEEKSR (10.7) Adj R^2 = 0.610 S.E. = 525.891 D.W. = 1.84 Sample period: 1972,1975-1978, 1980-1983, 9 years, Nonzero when EBON = 1
WEEKSEB	Weeks of EB paid	= PYEBON*WEEKSEBAR
WBAEB	Average weekly benefit for EB	= 0.9736*((WBA + WBA_{-1})/2) (79.8) Adj. R^2 = 0.985 S.E. = 3.885 D.W. = 1.04 Sample period: 1972,1975-1978, 1980-1983, 9 years
EBADJ	Benefit adjustment ratio to make model estimates agree with EB published totals	= 0.984, average for 1972, 1975-1978 and 1980-1983
EBTOT	Total EB payments, millions	= WEEKSEB*WBAEB*EBADJ
EBS	State share of EB costs	= 0.50*EBTOT
BENTOT	Total benefits paid to claimants	= BENREG + EBTOT
BENTF	Benefits paid from state trust fund, millions	= BENREG + EBS -(ABPOFF* BENABP), where ABPOFF is a dummy variable that turns "off" the ABP program and BENABP is ABP benefits as defined below

ABP BENEFITS

IUABP	Insured unemployment among ABP claimants, thousands	= 0.0790*IU from 1996, = estimated ratios of IUABP to IU from 1988 to 1995 based on data for new allowed claims = 0 before 1988
IURABP	Insured unemployment rate for ABP claimants, percent	= 100* IUABP/ECOV
WEEKSABP	Weeks compensated for ABP claimants, millions	= IUABP*IUTXIU*WPDWCL*(0.900) *(.052), where 0.900 is a composite factor reflecting below-average eligibility among ABP claimants
WBAABP	Average weekly benefit for ABP claimants	= $WBAABP_{-1}$ + 0.6*(WBA - WBA_{-1}) = historic WBAABP through 1995
BENADJABP	Benefit adjustment factor for ABP claims	= BENADJ from above
BENABP	Total ABP benefit payments, millions	= WEEKSABP*WBAABP*BENADJABP
BLOCK3 TAXES		
TXBASE	UI taxable wage base	Exogenous variable
TBAW	Ratio of the tax base to the average wage	= TXBASE/(52*AWW)
T67	Time trend starting in 1967	1967 = 1, 1968 = 2, etc.
TWP	Ratio of taxable wages to total wages	= 0.1397 + 0.7343*TBAW (7.5) (17.3) -0.00193*T67 (9.1)

		Adj R^2 = 0.971 S.E. = 0.0072 D.W. = 1.38 Sample period: 1967 to 1994 Add factor = 0.006145, average error from 1991-1994
WSTAX	Taxable wages, billions	= ETAX*AWW*(.052/1000)*TWP
WSTO	Total wages, billions	= ETAX*AWW*(0.052/1000)
RESN630P	Trust fund reserves on June 30, estimated as end of year average, millions	= (RESNL + RESN)/2, (variables from Trust Fund block of model)
RRM630P	Reserve ratio multiple based on estimated trust fund reserves on June 30	= (100*RESN630P/1000*$WSTO_{-1}$)/ 3.09, where 3.09 is the highest cost twelve month period ending December 1982
NGBALWRT	Negative balance writeoff percentage	Exogenous variable, = -5.0 through 1986 = -15.0 in 1987 = -20.0 from 1988
NGBALERPCT	Percentage of rated employers with negative trust fund account balances	= 15.267 - 6.323*$RRM630P_{-1}$ (26.6) (13.8) +0.167*NGBALWRT (3.5) Adj R^2 = 0.876 S.E. = 1.612 D.W. = 1.22 Sample period 1967 to 1994 Add factor = 1.423, average error from 1993-1994
TXRTEXPRT	Average tax rate from the experience rating tax schedule	= 1.130 + 0.0507*NGBALERPCT (6.1) (3.8) - 0.297*$RRM630P_{-1}$ (3.3)

		Adj R^2 = 0.912 S.E. = 0.132 D.W. = 1.13 Sample period 1967 to 1994 Add factor = 0.1196, average error from 1991-1994
BENTF630	Trust fund benefit payouts during the twelve months ending June 30th	= (BENTF + $BENTF_{-1}$)/2
MUTCHGPCT	Percentage of benefits charged to the mutualized account for the period ending June 30	= 37.029 - 11.431*$RRM630P_{-1}$ (13.6) (5.3) + 1.001*NGBALWRT (4.5) Adj R^2 = 0.587 S.E. = 7.635 D.W. = 1.03 Sample period = 1967 1994 Add factor = 4.363, average error for 1993-1994
MUTCHG	Mutualized charges for the twelve months ending June 30, millions	= BENTF630*MUTCHGPCT/100
MUTCONTRIB	Mutualized contributions, millions	= [0.75*WSTAX*(TXRTMUT + (TXRTMSL/2))/100)] + [0.25*$WSTAX_{-1}$*($TXRTMUT_{-1}$ + ($TXRTMSL_{-1}$/2))/100] where TXRTMUT and TXRTMSL are defined below. Add factors included for years through 1994
MUTINT	Interest earnings credited to the mutualized account, millions	= (INT + INT_{-1})/2, where INT is interest income as determined in Block 4. Add factors included for years through 1994

OTHMUTINC	Other income to the mutualized account, millions	= 0.17*(WSTO + $WSTO_{-1}$)/2, where 0.17 is the average ratio for the years 1988-1994 Add factors included for the years through 1994
MUTACC630L	Mutualized account balance on June 30 of past year, millions	= -2106 in 1985
MUTACC630	Mutualized account balance on June 30, millions	= MUTACC630L + MUTCONTRIB + MUTINT + OTHMUTINC - MUTCHG
WSTAX630	Taxable wages for twelve months ending June 30, billions	= (WSTAX + $WSTAX_{-1}$)/2
EXCHGPCT	Excess charges to the mutualized account, percentage	= - 100*MUTACC630/ (1000*WSTAX630)
TXRTMUTRAW	Raw mutualized tax rate, percent	=Maximum(EXCHGPCT, 0.5), rounded to the nearest .1
TXRTMUT	Mutualized tax rate, percent	= TXRTMUTRAW if TXRTMUTRAW >0, otherwise = 0
RESN630M	Net reserves used to calculate the minimum safe level (MSL) ratio on June 30	= (RESNL + RESN)/2 + adjustments to reflect crediting tax payments from the second quarter, adjustments are exogenous
RESMSL630	Minimum safe level reserves, approximated by a formula involving average weeks compensated, millions	= (AVGWEEKSR)*1.9133*WBA_{-1} where AVGWEEKSR is the average for years from 1970 to the past year and 1.9133 is an approximation for two standard deviations above AVGWEEKSR

MSLRATIO	MSL ratio used to determine the MSL tax rate for the next year	= RESN630M/RESMSL630
TRMSL40	MSL tax rate when the lagged MSL ratio is less than or equal to 0.40	= 0.6 for this range of ratios, otherwise = 0
TRMSL4055	MSL tax rate when the lagged MSL ratio falls between 0.40 and 0.55	= 0.5 for this range of ratios, otherwise = 0
TRMSL5570	MSL tax rate when the lagged MSL ratio falls between 0.55 and 0.70	= 0.3 for this range of ratios, otherwise = 0
TRMSL7085	MSL tax rate when the lagged MSL ratio falls between 0.70 and 0.85	= 0.1 for this range of ratios, otherwise = 0
TRMSL85115	MSL tax rate when the lagged MSL ratio falls between 0.40 and 0.55	= 0.0 for this range of ratios, otherwise = 0
TRMSL11530	MSL tax rate when the lagged MSL ratio falls between 1.15 and 1.30	= -0.1 for this range of ratios, otherwise = 0
TRMSL130	MSL tax rate when the lagged MSL ratio equals or exceeds 1.30	= -0.2 for this range of ratios, otherwise = 0
TXRTMSL	MSL tax rate for the year	= TRMSL40 + TRMSL4055 + TRMSL5570 + TRMSL7085 + TRMSL85115 + TRMSL11530 + TRMSL130
TXRTTOT	Total UI tax rate for the year, percent	= TXRTEXPRT + TXRTMUT + TXRTMSL

TAX	Annual tax receipts, millions	= 1000*WSTO*TWP*TXRTTOT/100
BLOCK4 INTEREST		
INTRATE	Interest rate on trust fund balances	Historic rate 1985-1995, = GRAWWTO + 3.0 percent from 1996
RESNL	Lagged trust fund balance, millions	Net balance on December 31 of past year RESNL determined in Block 5
RESNHAT	Projected trust fund balance for end of year	= RESNL + TAXTF - BENTF
RESNAV	Average trust fund balance for the year	= (RESNL + RESNHAT)/2
RESNPB	Average trust fund balance, positive balance, millions	= RESNAV if RESNAV >= 0, otherwise = 0
INT	Interest income, millions reconcile INT with historic	= (INTRATE/100)*RESNPB, includes an add factor to interest earnings
BLOCK5 FUND BALANCE		
RESNL	Net reserves lagged, millions	Predetermined variable
TAX	Trust fund tax receipts, millions	From Block 3
INT	Trust fund interest income, millions	From Block 4

BENTF	Trust fund benefit outflows, millions	From Block 2
RESN	Net end of year trust fund reserves, millions	= RESNL + TAXTF + INT - BENTF
DEBTINT	Interest bearing trust fund debt to the U.S. Treasury, millions	Exogenous variable, nonzero values only in 1985 and 1986
RESG	Gross trust fund reserves, millions	= RESN + DEBTINT + DEBTNINT where DEBTNINT is non-interest bearing debt for 1985 and 1986

8. APPENDIX 3: VERMONT MODEL EQUATIONS

BLOCK 1
LABOR MARKET

GRCLF	Growth rate in the civilian labor force, percent	Exogenous variable
GRAWW	Growth rate in the average weekly wage, taxable employers, percent	Exogenous variable
GRAWWREI	Growth rate in the average weekly wage, reimbursable employers, percent	Exogenous variable
GRAWWTO	Growth rate in the average weekly wage, all covered employers, percent	= 100*((AWWTO/AWWTO$_{-1}$)-1), AWWTO defined below
INTRATE	Interest rate on trust fund balances, percent	Historic data to 1995, = GRAWWTO + 3.0 from 1996
TUR	Total unemployment rate, percent	Exogenous variable
CLF	Labor force, thousands	= CLF$_{-1}$*(1 + GRCLF/100)
TU	Total unemployment	= CLF*TUR/100
ECPS	Total employment	= CLF - TU
ETAX	Employment of taxable covered employers, thousands	= ETAX$_{-1}$ + 0.7686*(ECPS-ECPS$_{-1}$)

EREI	Employment of reimbursable employers, thousands	= $EREI_{-1}$ + 0.2314*(ECPS-$ECPS_{-1}$)
ECOV	Employment covered by the UI program, thousands	= ETAX + EREI
AWW	Average weekly wage of taxable employers	= AWW_{-1}*(1 + GRAWW/100)
AWWREI	Average weekly wage of reimbursable employers	= $AWWREI_{-1}$*(1 + GRAWWREI/100)
AWWTO	Average weekly wage of all covered employers	= ((ETAX*AWW)+(EREI*AWWREI))/ (ETAX +EREI)
BLOCK2 BENEFITS		
IU	Insured unemployment, thousands	= 0.0978 + 0.6161*TU (0.2) (11.9) - 0.1394*TU_{-1} (2.9) Adj R^2 = 0.913 S.E. = 0.674 D.W. = 2.24 Sample period 1967 to 1995. Intercept adjustment = 0.558, average error for 1993-95.
IUR	Insured unemployment rate	= 100*IU/ECOV
IUTXIU	Ratio of IU of taxable employers to total IU	Exogenous variable, = 0.938, average for 1991-95.

WPDWCL	Ratio of weeks paid to weeks claimed	Exogenous variable, = 0.880, average for 1991-95.
WEEKSREG	Weeks of regular UI benefits paid in the year, thousands	= IU*WPDWCL*52
AWWTO630L	Average weekly wage for 12 months ending June 30 of past year	= $(AWWTO_{-1} + AWWTO_{-2})/2$
MAXWBAQ12	Maximum weekly benefit from January to June	= $MAXWBAQ34_{-1}$, MAXWBAQ34 defined below
MAXWBAQ34	Maximum weekly benefit from July to December	= $MAXWBAQ34_{-1}$*(AWWTO630L/ $AWWTO630L_{-1}$) if RESNL >=0, otherwise = $MAXWBA34_{-1}$
MAXWBA	Maximum weekly benefit for the year	= (MAXWBAQ12 + MAXWBAQ34)/2
MBAWTO	Ratio of the maximum weekly benefit to the average weekly wage	= MAXWBA/AWWTO
REPRATE	Benefit replacement rate, ratio of average weekly benefit to average weekly wage D.W. = 0.70	= 0.1925 + 0.3978*MBAWTO (9.2) (9.5) Adj R^2 = 0.767 S.E. = 0.0085 Sample period 1967 to 1995 with 1972 omitted Intercept adjustment =-.00806, average error for 1993-95.
WBA	Average weekly benefit amount	= REPRATE*AWWTO
BENADJ	Benefit adjustment ratio to make estimate of benefits agree with program totals	= 0.9459, average for 1991-95.

BENREG	Regular UI program benefits, millions	= (IU*IUTXIU*WPDWCL*WBA* *BENADJ*(0.052))
IURADJ	IUR adjusted to remove effects of ABP weeks when ABP1 and/or ABP2 benefits are "Off"	= IUR - ABP1OFF*PWEEKSABP1*IUR - ABP2OFF*PWEEKSABP2*IUR, ABP1, ABP1OFF, PWEEKSABP1, ABP2, ABP2OFF and PWEEKSABP2 are all defined below.
EBON	Extended benefits triggered "ON" during the year	= 1.0 if IUR >= 4.0, otherwise = 0
MOEB03	EB triggered on for 3 months	= 1 if 4.0 <= IUR < 5.0, otherwise = 0
MOEB05	EB triggered on for 5 months	= 1 if 5.0 <= IUR < 5.25, otherwise = 0
MOEB08	EB triggered on for 8 months	= 1 if 5.25 <= IUR < 5.4, otherwise = 0
MOEB10	EB triggered on for 10 months	= 1 if 5.4 <= IUR < 5.9, otherwise = 0
MOEB12	EB triggered on for 12 months	= 1 if 5.9 <= IUR, otherwise = 0
MOEB	Number of months EB triggered "ON"	= MOEB3 + MOEB5 + MOEB8 + MOEB10 + MOEB12
PYEBON	Proportion of the year EB is "ON"	= MOEB/12
WEEKSEBAR	Weeks of EB paid at an annual rate, thousands	= -8.541 +5.092*TU (0.3) (3.2) Adj R^2 = 0.452 S.E. = 14.714 D.W. = 2.73 Sample period:1971-72,1974-78, 1980-83 and 1991, 12 years.

WEEKSEB	Weeks of EB paid	= PYEBON*WEEKSEBAR
WBAEB	Average weekly benefit for EB	= 0.9736*WBA (124.2) Adj R^2 = 0.993 S.E. = 2.422 D.W. = 1.27 Sample period: 1971-72, 1974-78,1980-83 and 1991, 12 years.
EBADJ	Benefit adjustment ratio to make model estimates agree with EB benefit totals	= 0.959, based 12 years of EB "On" experiences.
EBTOT	Total EB payments, millions	= WEEKSEB*WBAEB*EBADJ/1000
EBS	State share of EB costs	= 0.50*EBTOT
BENTOT	Total benefits paid to claimants	= BENREG + EBTOT -(ABP1OFF* BENABP1) - (ABP2OFF*BENABP2), ABP variables defined below.
BENTF	Benefits paid from state trust fund	= BENREG + EBS - (ABP1OFF* BENABP1) - (ABP2OFF*BENABP2)
ABP Benefits		
IUABP	Insured unemployment among ABP claimants, thousands	= (PWEEKSABP1+PWEEKSABP2)*IU, PWEEKSABP1 and PWEEKSABP2 defined below.
IURABP	Insured unemployment rate for ABP claimants, percent	= 100* IUABP/ECOV
PWEEKSABP1	Proportion of regular UI benefits paid under the last four quarters definition of the ABP, or ABP1	Exogenous variable, = 0.0660 in 1988-89, = historic values 1990-96, = 0.0680 from 1997, where 0.0680 is the 1990-96 avg.

WEEKSABP1	Weeks of benefits paid under ABP1, thousands	= PWEEKSABP1*WEEKSREG
PWEEKSABP2	Proportion of regular UI benefits paid under last three quarters plus current quarter definition of the ABP, or ABP2	Exogenous variable, = 0.0330 in 1988-89, = historic values 1990-96, = 0.331 from 1997, where 0.0331 is the 1990-96 avg.
WEEKSABP2	Weeks of benefits paid under ABP2, thousands	= PWEEKSABP2*WEEKSREG
PWEEKSABP	Proportion of regular UI benefits paid under the ABP program	= PWEEKSABP1 + PWEEKSABP2
WEEKSABP	Weeks compensated for ABP claimants, thousands	= PWEEKSABP*WEEKSREG
RELWBAABP1	Relative average weekly benefit for ABP1 recipients	= 0.800 for 1988-89, = historic values for 1990-96, = 0.7687 from 1997, where 0.7687 is the 1990-96 average.
WBAABP1	Weekly benefit for ABP1 recipients	= RELWBAABP1*WBA
RELWBAABP2	Relative average weekly benefit for ABP2 recipients	= 0.720 for 1988-89, = historic values for 1990-96, = 0.6935 from 1997, where 0.6935 is the 1990-96 average.
WBAABP2	Weekly benefit for ABP2 recipients	= RELWBAABP2*WBA
WBAABP	Average weekly benefit for ABP claimants	= ((RELWBAABP1*WEEKSABP1) + (RELWBAABP2*WEEKSABP2))/ (WEEKAABP1 + WEEKSABP2)

BENADJABP	Benefit adjustment factor for ABP claims	= BENADJ from above
BENABP1	Total benefits paid under ABP1, millions	= WEEKSABP1*WBAABP1 *BENADJABP/1000
BENABP2	Total benefits paid under ABP2, millions	= WEEKSABP2*WBAABP2 *BENADJABP/1000
BENABP	Total ABP benefit payments, millions	= BENABP1 + BENABP2
BLOCK3 TAXES		
TXBASE	UI taxable wage base	Exogenous variable, = $8000 from 1984 to present
TBAW	Ratio of the tax base to the average wage	= TXBASE/(52*AWW)
T67	Linear time trend	1967 = 1, 1968 = 2, etc.
TWP	Ratio of taxable wages to total wages	= 0.2405 + 0.6183*TBAW (33.0) (56.8) -0.00273*T67 -.00308*TUR (23.8) (10.2) Adj R^2 = 0.999 S.E. = 0.0026 D.W. = 2.15 Sample period: 1967 to 1995
WSTAX	Taxable wages, millions	= ETAX*AWW*TWP*(.052)
WSTOT	Total wages, millions	= ETAX*AWW*(.052)

FUNDRATIOL	Trust fund ratio, end-of-year trust fund balance as a percent of lagged covered wages	= 100*RESNL/$WSTOT_{-1}$, where RESNL is the lagged trust fund balance.
BCOSTRTL10	Highest benefit cost rate (benefits as a percent of covered wages) over the past ten years, percent	= MAX($(BENTF/WSTOT)_{t-I}$), I = 1,2,...,10.
TSCHRATIO	Lagged fund ratio as a ratio to the highest benefit cost rate over the past ten years	= FUNDRATIOL/BCOSTRTL10
TXSCHDI	Tax rate schedule I in effect, average tax rate, percent	= 2.580 if TSCHRATIO >= 2.5, = 0 otherwise
TXSCHDII	Tax rate schedule II in effect, average tax rate, percent	= 3.105 if 2.5>TSCHRATIO>= 2.0 = 0 otherwise
TXSCHDIII	Tax rate schedule III in effect, average tax rate, percent	= 3.665 if 2.0>TSCHRATIO>= 1.5 = 0 otherwise
TXSCHDIV	Tax rate schedule IV in effect, average tax rate, percent	= 4.180 if 1.5>TSCHRATIO>= 1.0 = 0 otherwise
TXSCHDV	Tax rate schedule V in effect, average tax rate, percent	= 4.740 if 1.0 > TSCHRATIO, = 0 otherwise
TXRTSCH34	Scheduled tax rate from July 1 to Dec. 31, percent	= TXSCHDI + TXSCHDII + TXSCHDIII + TXSCHDIV + TXSCHDV

TXRTSCH12	Scheduled tax rate from Jan. 1 to June 30, percent	= $TXRTSCH34_{-1}$
EFFTXRT34	Effective tax rate from July to Dec. 31, percent	= 0.8742*TXRTSCH34, where the coefficient 0.8742 is from a regression using annual data. EFFTXRT = 0.8742*TXRTSCH (97.3) Adj R^2 = 0.927 S.E. = 0.1424 D.W. = 0.25 Sample period: 1978-95
EFFTXRT12	Effective tax rate from Jan. 1 to June 30, percent	= 0.8742*TXRTSCH12
TAXQ1	Tax receipts for first qtr., millions	=0.1438*$WSTAX_{-1}$*$EFFTXRT34_{-1}$/100 0.1438 is the fourth quarter proportion of taxable wages.
TAXQ2	Tax receipts for second qtr., millions	= 0.4532*WSTAX*EFFTXRT12/100, 0.4532 is the first quarter proportion of taxable wages.
TAXQ3	Tax receipts for third qtr., millions	= 0.2386*WSTAX*EFFTXRT12/100, 0.2386 is the second quarter proportion of taxable wages.
TAXQ4	Tax receipts for fourth qtr., millions	= 0.1644*WSTAX*EFFTXRT34/100, 0.1644 is the third quarter proportion of taxable wages.
TAX	Annual tax receipts, millions	= TAXQ1 + TAXQ2 + TAXQ3 + TAXQ4, small add factors used to make model estimates agree with Handbook totals.

BLOCK4
INTEREST

INTRATE	Interest rate on trust fund balances	Historic rate 1985-1995, = GRAWWTO + 3.0 percent from 1996
RESNL	Lagged trust fund balance	Net balance on December 31 of past year
RESNHAT	Projected trust fund balance for end of year	= RESNL + TAXTF - BENTF
RESNAV	Average trust fund balance for the year	= (RESNL + RESNHAT)/2
RESNPB	Average trust fund balance, positive balance	= RESNAV if RESNAV >= 0, otherwise = 0
INT	Interest income, millions	= (INTRATE/100)*RESNPB, includes an add factor to reconcile model estimates with Handbook totals. Add factor = 0.463, the average add factor for 1992-95.

BLOCK5
FUND BALANCE

RESNL	Net reserves lagged, millions	Predetermined variable
TAXTF	Trust fund tax receipts, millions	From Block 3
INT	Trust fund interest income, millions	From Block 4
BENTF	Trust fund benefit outflows, millions	From Block 2
RESN	Net trust fund reserves, end of year, millions	= RESNL + TAXTF + INT - BENTF

RESRATIO	Reserve ratio, end of year net reserves as a percent of total wages	= 100* RESN/WSTOT
RRMULT	Reserve ratio multiple, the reserve ratio divided by the highest cost twelve months	= RESRATIO/3.18 where 3.18 is the highest cost past period, the twelve months of 1975.
DEBT	Trust fund debt to the U.S. Treasury, millions	Determined below
RESGROSS	Gross trust fund reserves, millions	= RESN + DEBT

TRUST FUND DEBT

DEBTL	Debt at end of last year, millions	Predetermined variable
LOANS	Borrowing by state during the year, millions	Maximum of (BENTF - TAXTF - INT - RESNL) or 0 when RESNL > 0, otherwise = Maximum of (BENTF - TAXTF - INT) or 0.
REPAY	Repayment of trust fund debts, millions	If (TAXTF + INT - BENTF)>0, then minimum of ((DEBTL + LOAN),(TAXTF + INT - BENTF), 0)
DEBT	Debt at end of year	= DEBTL + LOANS - REPAY