A MICROANALYTIC MODEL FOR SIMULATION OF CHANGES IN STATE INDIVIDUAL INCOME TAX CODES

By

JAYADEV GAVINI

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Indian Institute of Technology
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Name: Jayadev Gavini Date of Degree: December, 1981

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Scope and Method of Study: The objective of this study is to develop a generalized microanalytic simulation model, which is capable of simulating the aggregate and distributional impact of alterations to federal tax code or any state tax code. Such simulations require a microdata base containing information from individual income tax returns and computer programs to simulate alternative tax structures. The microdata bases used in this study were, the Statistics of Income file, which is a sample of individual tax returns filed with the Internal Revenue Service, for the tax year 1975, giving Oklahoma as the place of residence, and the Survey of Income and Education database, which is a household file complete with records for the household, each family in the household, and person records for each person in the household selected in the sample. The aggregate and distributional impact, of changes in the dividend and interest exclusion limit at the federal level, and a change in the federal tax deduction limit at the state level were simulated for the State of Oklahoma. The same database was used to compute the state tax liability using Kansas, New Mexico and Oklahoma state tax codes. The average state tax liability, aggregate and by income class were examined.

Findings and Conclusions: The increase in the federal interest and dividend exclusion limit reduces the state tax liability of taxpayers in the lower income classes, marginally. The change in the federal tax deduction limit at the state level reduced the aggregate state tax revenue substantially. The average tax liability of people earning more than $5000 reduced substantially. The comparison of the state tax codes of Kansas, New Mexico and Oklahoma, showed that the average state tax liability under the Oklahoma state tax code was the lowest for most of the classes.

ADVISER'S APPROVAL J. Scott Turner

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INCOME TAX CODES

Report Approved:

Adviser

Director of Graduate Studies

Head, Department of Management

PREFACE

I wish to express my gratitude and appreciation to my adviser, Dr. J. Scott Turner, for all the assistance and support extended by him, in writing this report.

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INTRODUCTION

In recent years state individual income taxes have been the nation's fastest growing major source of income taxation (5). Such income depends to a great extent, on the state of the economy. It has been established that a change in income will be accompanied by a change in tax yield which is more than proportionate to the income change. One of the fiscal concerns of the state governments has been to determine the responsiveness of revenues to statutory tax rate changes and certain other factors.

In the past considerable attention has been given to the characteristics of the federal individual income tax, including many estimates of yield to income change. Comparable interest has not been shown in the individual income taxes levied by the states. But, ever since the state individual income tax became an impressive revenue producer it has stimulated interest in such studies.

In the earlier studies most of the analyses of state income taxes had laid emphasis on measuring growth of tax collections using regression techniques. They involved mathematical models which were used to measure the rate revenue elasticity coefficients. Several assumptions were made in these studies which limited their flexibility. These models were restricted in their forecasting, to a few variables and also they could not forecast impact by income class (distributional).

Simulation techniques using the computer could forecast both aggregate and distributional impact of proposed modifications to the state tax codes. Such computer tax modeling requires observations on a large number of tax-payers and computer programs which would be capable of simulating current and proposed changes in the tax law. This technique has been used since the 1960's for such purposes at the federal level, but few states have utilized such models for performing policy analysis.

Objectives

The objective of this study is to develop a micro-simulation model that would provide aggregate and distributional analyses of proposed changes in the income tax code. These changes include both the federal tax code and state tax code.

The specific enhancement of this model over models developed earlier, is that, it is flexible enough to be used with any state tax code with minimal program modification. Also, it is not restricted to a few variables. All variables in the state tax code could be taken into consideration. The other advantage is that, it could provide the impact on state tax revenue with a change in federal tax code, since most of the state tax codes are based on the federal adjusted gross income. The microdata bases which are the input to the simulator need not be restricted to one, in this model. Any microdata base could be used as input with minor program modifications.

This model would be a versatile tool for a state's elected representatives for tax and policy analysis. It could be used to project the state tax revenue, whenever changes are proposed in the state income tax code. The impact of a particular change in the tax code on taxpayers in different income classes could also be estimated.

LITERATURE REVIEW

The earlier models used in economic analyses of state income taxes involved attempts to measure growth of collections and had relied on regression analyses. The present study involves an entirely different model based on microsimulation. A brief review of the literature on the earlier regres-sion studies is necessary to appreciate the advantages of microsimulation.

The pioneering study in this area was done by Groves and Kahn (4). This study involved the responsiveness of state tax revenue sources to changes in personal income. These authors limited their analyses to states in which no rate changes had occurred.

Wilford (25) criticized Groves and Kahn for not including the estimates of rate-revenue elasticity when appropriate. It is difficult to estimate the rate revenue elasticity for individual income tax in most states due to the dearth of data on distribution of tax payments by income level. Even when the data are available for an extended time period, they may not be consistent with the current tax law.

To deal with such statutory changes on prior years' collection, Singer (22) introduced the use of dummy variables. This method may be satisfactory in dealing with a few statutory changes but problems develop when there are numerous changes in the tax code.

Harris (5) was one of the first to establish a synthetic tax series. For the database, Harris used the federal statistics on income. The tax for the mean income in each class for single and joint returns was computed for ten years in this study. The computation was based on statutory rates, exemption levels and standard deductions as of January 1, 1965.

Harris calculated the synthetic series by applying the computed effective rates to the reported distribution of federal adjusted gross income. The synthetic series was then used to estimate a consistent tax law elasticity coefficient which was used to estimate collections. One of the shortcomings of this study was the assumption that all taxpayers claimed standard deductions. This was because of the absence of state specific data.

Norman and Russell (10) noted that since the legal rates were not included as variables in the models, they could not be used to forecast state income tax revenue when legal rates are to be altered. They then developed a model capable of simulating aggregate individual income tax revenues under alternative tax structures. They estimated the total taxable income. These estimates were used to compute an average effective tax rate which when multiplied by new forecast taxable income, gave an aggregate collections estimate. There were two shortcomings in this study. They assumed that taxable income was the same for all returns within each AGI bracket. This shortcoming limits the capability of the model to capture the impact of rate changes. The second shortcoming was, their approach was limited to alterations in the rate structures.

McLaren modified the model developed by Norman and Russell to include some more variables in the model. But, as in the previous model only an aggregate forecast was made. The techniques employed in all these models to forecast revenues and study the impact of variation in state tax codes were limited to regression analysis. These techniques could not forecast the impact by income class. Also, the analyses involved a limited number of policy variables.

The advent of the high speed computer has brought about dramatic changes in the tax analysis. The techniques using the computer are called microsimulation techniques. They are capable of forecasting the impacts on income tax both in aggregate and also by income class. The number of variables that could be included in such techniques is unlimited. This technique has been used at the federal level extensively since the early 1960's, but at the state level its use has been rather limited. In recent times there have been several models developed at the subnational level.

In the next part of this chapter the computer models at the federal level will be reviewed. In the following section, the development of state models will be reviewed.

Simulation Models at the National Level

Pechman (17) developed the first tax model for personal income tax simulations. As a data source, he used 100,000 individual income tax returns filed with the Internal Revenue Service for 1960. Such a database is called a microdata base. Given a particular estimate of the rate of change of income, the tax model could provide reliable estimates of individual income tax collections. Pechman assumed that the rate of change of income was the same at all income levels. But, he explained that using differential changes in income using income classes or other variables would not be much more difficult. Pechman emphasized that the greatest advantage of the model was the capability of allowing for several changes in the tax code at the same time with considerable speed. This aspect of the model would be particularly advantageous during the legislative process.

In subsequent work (18,19,20), Pechman demonstrated the flexibility of the microdata base. Further tax analysis of the income tax file was done in these studies. Also, data from different sources was merged to form a common microdata base. This provided information collected by separate agencies.

Pechman and Okner (19) used the MERGE database to study the impact of tax preferences on individual income tax. The usage of a microdata base enabled the consideration of the possibility of an individual or a family receiving tax benefits from several of the tax preferences. Also, an analysis by income class could be carried out.

Pechman (18) estimated the responsiveness of individual income tax to changes in income and compared the tax file methodology to the regression analysis of earlier studies. He concluded that the tax file provided better estimates.

Pechman and Okner (19) studied the incidence of taxation using the MERGE data files. They prepared estimates of taxes as the basis for eight sets of incidence assumptions. This illustrated the flexibility of the simulation model.

Wyscarver (26,27) has described the tax models used in simulating the federal personal income tax. He stated that the two essential components of a simulation model are the income tax return sample and the tax model program. The 1975 data base was extrapolated to reflect 1978 tax law and income levels. The algorithm for extrapolating the sample consisted of three stages:

(a) defining and developing a set of targets.

(b) generating a pre-sample.

(c) generating the extrapolated sample.

In the extrapolation time series techniques were used. The variables that were extrapolated were number of returns, number and types of exemptions, adjusted gross income, pension payments, net capital gains, investment credit and earned income credit.

Simulation models developed, based on microdata files are much more advanced at the national level than at the subnational level. One of the reasons is that the cost of enlarging or merging data bases mounts rapidly once one goes beyond the documents available within a given agency.

Simulation Models at the State Level

The pioneering work in state tax simulation models was done by Perry (21) in 1973. He described the development of an income tax simulation model for Iowa. He also gave a survey of states using simulation models. He indicated that with the exception of New York state, all the states used models to determine the impact of changes only in the sample year. Most of the simulators employed databases comprised of hundreds of thousands of returns, which was very expensive in terms of computer time.

Several others used the databases prepared by Internal Revenue Service. These federal magnetic tapes are very useful for audit procedures but they contain very little state specific data.

Perry (21) attempted to design a simulation model which would be useful for both policy and audit purposes. This model was expected to be flexible enough to be used by other states.

The Iowa sample that Perry used contained information from 10,776 returns which had been stratified into 23 adjusted gross income classes. The sampling proportion for each class was 1 percent plus 25 returns. The accuracy of the estimate of the population by the sample was not mentioned.

Olson (16) pointed out that Perry had erred in his sample design. He pointed out that the sampling fraction may range from less than 1 percent in the middle income brackets to 75 percent or more at the top, open ended bracket.

One of the basic purposes of a tax simulator is to forecast future revenues. Perry's simulator was unable to project revenue for future years. According to Wasson (24) this was because he based future projections on number of returns in each stratum rather than incrementing income and moving the individual returns through the marginal tax brackets.

Perry (21) noted that his approach was unable to handle any changes in the federal tax code. This was a major drawback since most states allow for federal tax deduction and this model failed to show the impact of a change in the federal tax code, on the state tax revenues. Perry failed to collect sufficient data to forecast federal liability. Wasson suggested that Perry should have forecast liability for each return in his sample by incrementing income and recalculating liability.

In spite of all the weaknesses, Perry's study had resulted in the development of samples for prior years, which was crucial. The model was also capable of making prior years collections consistent with current law.

Fromm (3) developed a computer tax model for the state of Ohio to estimate income tax revenues, in 1974. This model improvized over previous models in several respects. But, it was not capable of computing revenue impacts by income class. The sample used for this model consisted of all returns with adjusted gross income of $40,000 or more and 1 percent of all other returns. The accuracy of the sample year collections by the sample was not mentioned.

The model estimated total fiscal year collections, estimates of total tax liability, total taxes withheld and total estimated tax payments. This simulator was capable of estimating the rate of growth of federal adjusted gross income. The assumption that, the federal adjusted gross income grew at the same rate as aggregate state personal income, was made. The state personal income was estimated with an equation regressing state personal income on a forecasted national personal income.

Fromm also estimated the responsiveness of Ohio's income tax collection to growth in income and returns. The model was used to forecast only for one year and the model was used to estimate the revenues one year backwards. The projections were within 1 percent of the actual values.

In recent years considerable attention has been given to the impact of indexing the individual income tax structures both at the federal and state levels. The aggregate and distributional impacts of indexation of Colorado and Virginia personal income tax structures have been simulated. The Virginia study (1) defined partial indexation to include tying only the exemption value and the standard deducdeduction to the price index while full indexation, also indexed marginal tax brackets. The Virginia study estimated the impacts of both partial and full indexation while the Colorado study (2) estimated the impact of full indexation only.

The impact of partial vs. full indexation was studied on a stratified sample of Virginia taxpayers. The analysis also included the impact of allowing for a lag in the indexation factor.

Several conclusions were drawn with respect to the alternative simulation schemes. In the aggregate analysis, it was found that the second year revenue loss was much larger than the loss during the first year. This was because indexation during the second year was based on a compound rate of growth of the CPI. The rate of increase of the CPI in 1974 was much more than in 1973. The second aggregate result was that partial indexation accounted for less than half of the revenue loss resulting from full indexation.

The final result compared the lagged simulation to the no lag simulations. It was found that when inflation was rising a lagged indexing mechanism provided smaller tax reduction than a mechanism with no lag. When the inflation rate was declining, the lagged mechanism provided larger tax reductions than a current year index.

Analysis of the distributional impacts showed that the tax structure would become slightly more progressive with indexation.

In Dale Wasson's study (24) he summarized information from individual income tax returns for Oklahoma for two consecutive years. He developed a computer tax model which provided aggregate and distributional analyses of proposed changes in the Oklahoma individual income tax code. He used the state specific database as the input to the model. He also used the model to evaluate proposed changes in the Oklahoma individual income tax code.

The database developed by him was found to be within 5 percent margin of error. Impact analyses were performed for variations in the value of exemptions and the standard deductions. The revenue loss, of increasing the exemption value from $750 to $1000 was estimated. The reduction in overall effective tax rate was computed to be from 1.68 percent to 1.5 percent. The impact by income classes was also computed. The model was used to predict fiscal 1979 collections. The simulated forecast exceeded reported collections by 4.3 percent.

Wasson mentioned some improvements that could be made on his model. He suggested the incorporation of a federal database with the state specific data used by him. He also suggested that equations similar to those used by the U.S. Treasury could be developed for Oklahoma to age the state files (databases) which would facilitate forecasting.

Summary

The literature reveals that the computer simulation models are being used extensively at the federal level. The development of such models at the state level is still in the initial stages. The key factors in their growth at the state level are analyst time and computer usage. The models developed for state should involve minimal costs and substantial relevant output.

MICRODATA BASE

In a microsimulation study, in order to simulate alternative tax structures, data on a large number of microunits (taxpayers) are required. The data used in this study allowed for changes in standard and itemized deduction values, exemption values and rate structures both at federal and state level.

The data used in this study came from the Internal Revenue Service, Statistics of Income File of 1975. The Statistics of Income File (SOI) is a sample of individual tax returns filed for the tax year 1975 giving Oklahoma as the place of residence. This is a part of a database comprising income tax returns filed by U.S. citizens and residents during 1975 from all over the U.S. A separate set of rates for each of five groups of states was prescribed for selection of the basic sample. It consists of 2,087 records with 193 variables in each record. Sampling weights were obtained by dividing the number of returns filed per sample stratum by the number of sample returns actually received for the stratum. These 2,087 records represent a total of 1,011,211 returns.

The other database used in this model is the Survey of Income and Education database. It is a household file complete with records for the household, each family in the household, and person records for each person in the household selected in the sample. This data had been converted to relevant tax variables in an earlier study (9).

This file consists of 2,702 records which represent a total of 1,390,000 returns.

These files had been spot checked for internal consistence and for consistency with each other. The results of the tests applied indicated that the files are valid for Oklahoma (23). However, many of the data items were found to have too small a sample population to be representative of the full population.

A statistical analysis of the two microdata files showed that the difference between the Statistics of Income file and the Survey of Income and Education file was not statistically significant (7). Hence data from one of the files could be used in conjunction with the other to make inferences on the effects of tax policies.

The microdata bases explained in this chapter were used in simulating the impact of certain changes in Oklahoma state tax code, made in the last few years, which are explained in the next chapter.

OKLAHOMA INDIVIDUAL INCOME TAX LAW AND COLLECTIONS

The major provisions of the current individual income tax law were enacted in 1971 (11). The 1971 law and the changes since then are mentioned below. The starting point in arriving at Oklahoma taxable income is federal adjusted gross income. The federal AGI is the gross income reduced by ordinary and necessary business and trade expenses incurred by professional individuals and unincorporated businesses.

Oklahoma adjusted gross income is based on federal AGI and is used in calculating the Oklahoma standard deduction. The major adjustments to federal AGI are shown in Table I.

TABLE I

ADJUSTMENTS TO FEDERAL ADJUSTED GROSS INCOME IN ARRIVING AT OKLAHOMA ADJUSTED GROSS INCOME

Federal AGI		
	Plus	1. State and local interest.
		2. Out-of-state losses.
		3. Employee business expenses deducted 100 percent on the federal form but not totally applicable to Oklahoma.
	Minus	1. Exempt interest income.
		2. Out-of-state income from real or tangible property.
		3. Non-taxable income.
		4. Oil and gas depletion allowance.
	Equals	
Oklahoma AGI		

The items subtracted from Okahoma AGI in calculating Oklahoma taxable income are shown in Table II. In calculating the exemptions, the taxpayer is allowed a $750 personal exemption. Additional exemptions of $750 each are allowed.

TABLE II

SUMMARY OF DEVIATION OF OKLAHOMA TAXABLE INCOME FROM OKLAHOMA ADJUSTED GROSS INCOME

Oklahoma AGI	
Minus exclusion of a portion of:	1. Interest income. 2. Military pay. 3. Political contributions.
Equals	
Oklahoma Income after adjustments	
Minus prorated value of:	1. Exemptions. 2. Deductions. A. Standard or B. Itemized. 3. Federal tax deduction.
Equals	
Oklahoma Taxable Income	

The Oklahoma taxpayer has the option of itemizing his deductions or claiming a standard deduction. If standard deduction was claimed in the federal return the same should be used in Oklahoma return too.

TABLE III

TAX SCHEDULES UNDER METHOD ONE

Single and married separate returns: Taxable Income	Single and married separate returns: Marginal Rate	Joint and surviving spouse returns: Taxable Income	Joint and surviving spouse returns: Marginal Rate
$ 0 - 1,000	1/2%	$ 0 - 2,000	1/2%
1,000 - 2,500	1	2,000 - 5,000	1
2,500 - 3,750	2	5,000 - 7,500	2
3,750 - 5,000	3	7,500 - 10,000	3
5,000 - 6,250	4	10,000 - 12,500	4
6,250 - 7,500	5	12,500 - 15,000	5
7,500 and above	6	15,000 and above	6

Source: 68 O.S. Supp. 1979, Sec. 2355.

TABLE IV

TAX SCHEDULES UNDER METHOD TWO

Single and married separate returns: Taxable Income	Single and married separate returns: Marginal Rate	Joint, head-of-household and surviving spouse returns: Taxable Income	Joint, head-of-household and surviving spouse returns: Marginal Rate
$ 0 - 1,000	1/2%	$ 0 - 2,000	1/2%
1,000 - 2,500	1	2,000 - 5,000	1
2,500 - 3,750	2	5,000 - 7,500	2
3,750 - 5,000	3	7,500 - 9,000	3
5,000 - 6,250	4	9,000 - 10,500	4
6,250 - 7,500	5	10,500 - 12,000	5
7,500 - 9,250	6	12,000 - 13,500	6
9,250 - 11,250	7	13,500 - 15,000	7
11,250 - 13,250	8	15,000 - 17,000	8
13,250 - 15,250	9	17,000 - 23,000	9
15,250 - 17,500	10	23,000 - 29,000	10
17,500 - 21,000	11	29,000 - 38,000	11
21,000 - 27,000	12	38,000 - 48,000	12
27,000 - 33,000	13	48,000 - 58,000	13
33,000 - 39,000	14	58,000 - 69,000	14
39,000 - 43,000	15	69,000 - 81,000	15
43,000 - 49,000	16	81,000 - 94,000	16
49,000 and above	17	94,000 and above	17

Source: 68 O.S. Supp. 1979, Sec. 2355.

Prior to 1971, Oklahoma law allowed for full deductibility of federal tax. During the period 1971 to 1975 no portion of federal liability was deductible. From 1975 through 1978, the federal tax deduction was the first $500 plus 5 percent of the excess of this amount with a maximum of $1700 (14). The 1979 law provided taxpayers with the option of full deductibility and one set of tax tables or zero deductibility and the pre 1979 tables (12). The two tables are shown in Tables III and IV.

The sum of the exemptions and deductions plus the federal tax deduction is subtracted from Oklahoma income after adjustments to yield Oklahoma taxable income. This taxable income amount is used to determine Oklahoma tax liability from the tax tables.

On the 1979 income tax form there were a total of eight tax credits. Of these credits only two are refundable when the credit exceeds the amount of liability. The property tax credit (January 1, 1975) was refundable regardless of liability (13). The other refundable credit was the conservation excise tax credit (15).

Oklahoma Individual Income Tax Collections

The steady increase in individual income tax collections as a percentage of total state tax collections is shown in Table V. It had increased from 5.9 percent in 1950 to 21.9 percent in 1978.

This increase has been attributed to the fact that individual income tax is a progressive tax and hence they are more responsive to income growth. Also, the total revision of the income tax code for the tax years ending December 31, 1970 is another reason.

TABLE V

THE CHANGING ROLE OF INDIVIDUAL INCOME TAX COLLECTIONS SELECTED YEARS (DOLLARS IN MILLIONS)

Fiscal Year	Collections From All Taxes	Individual Income Tax Collections	Individual As % of All Taxes
1978	$1,167.4	$225.3	21.9%
1975	779.3	151.7	19.5
1970	427.7	50.6	11.8
1965	301.5	26.7	8.9
1960	230.6	16.4	7.1
1955	178.2	10.6	5.9
1950	135.3	7.7	5.7

Source: Robert L. Sandmeyer, Dale Wasson, and Rudy I. Greer, Report: A Study of Oklahoma State Taxes, Oklahoma State University (February 1979), Table II-2, p. 26.

MICROSIMULATION MODEL

The basic purpose of the computer simulation model is to estimate the aggregate and distributional impacts of modifications to a state's individual income tax code on the state tax revenues. In development of such a model flexibility, economy, and adaptability of the different sources of input are essential.

The model has been developed to minimize additional programming for alternative simulations. It is designed to minimize computation time. The model could be used with alternative input sources (microdata bases). It is generalized to enable usage with any state tax code with minimal program modifications. The tax model is explained in detail in the following section.

Tax Model

To enable simulation involving all federal and state tax variables, each line in the state tax code has been included in the program in the form of equations. This will simplify generation of alternative scenarios with minimal analyst intervention.

The basic equations of the simulation model are:

$$STVAR(11) = VAR(49) + STVAR(2) + STVAR(3) + STVAR(4) - STVAR(7) - STVAR(8) - STVAR(9)$$

$$STVAR(35) = VAR(49) - STVAR(31) - STVAR(32) - STVAR(33)$$

$$STVAR(39) = STVAR(35) - STVAR(37) - STVAR(16)$$

VAR(49): Federal adjusted gross income

STVAR(2): State and Municipal Bond Interest

STVAR(3): Out of state losses

STVAR(4): Other additions

STVAR(7): Interest on U.S. Government obligations

STVAR(8): Out of state income

STVAR(9): Non-taxable income

STVAR(11): Oklahoma adjusted gross income

STVAR(16): Prorating factor

STVAR(31): Partial military pay exclusion

STVAR(32): Interest qualifying for Dividend exclusion

STVAR(33): Political contributions

STVAR(35): Oklahoma income after adjustments

STVAR(37): Federal Income tax deduction

STVAR(39): Oklahoma taxable income

Due to data limitations several state tax variables have been assumed to be zero. This is because state specific data was not available. But, there is a provision in the model to input state specific data into the model. The following state tax variables included in the above mentioned equations were taken to be zero.

State and municipal bond interest

Out of state losses

Other additions

Interest on U.S. Government obligations

Out of state income

Non-taxable income

Partial military pay exclusion

Interest qualifying for dividend exclusion

Political contributions

Simulator Input

Inclusion of all the components of the tax code in the program as variable names makes the program more generalized. Thus, simulations can be done by reading in the values for these components. In this program, for every record any of the 193 variables which are necessary for the simulation could be read in. These 193 variables are explained in detail in the documentation of the microdata files in the article by Turner et.al. (23).

Some of the components of the federal and state tax codes which are treated as input parameters in the model are listed in Table VI. The names of the different variables as used in the model are listed. In addition to the input parameters mentioned above, the following values are provided in the program:

1. The number of records read.
2. Minimum and maximum federal tax deduction.
3. The number of tables to be printed.
4. Minimum and maximum deductions.
5. Minimum and maximum exemptions.

In listing the programs initially, only 20 records were read. This was controlled by the parameter value controlling the number of records read. Thus, a section of the microdata base could be accessed without having to read all the records.

The program is divided into several subroutines. The first subroutine is to read the data from a microdata file. By separating this into a subroutine, alternative data sources could be used for the simulations. The second subroutine converts the federal tax variables to state tax variables according to the state tax code. This is the subroutine that would have to be modified to use the model with different state tax codes. The third subroutine determines the state adjusted gross income bracket for a particular record. The limits on the different brackets could be easily changed if necessary. The fourth subroutine is to compute the tax for a particular taxable income. This subroutine would have to be changed when the model is to be used with different state tax codes. The fifth subroutine is the one which computes the totals for each variable across each variable that would be printed out in the final output. If additional variables are required on the output, minor changes in this subroutine would suffice. The division of the program into several subroutines enhances the flexibility of the program.

TABLE VI

Federal adjusted gross income	VAR(49)
Type of deduction	VAR(17)
Amount of deduction	VAR(76)
Number of exemptions	VAR(44)
Weight factor	VAR(193)
Marital status	VAR(22)
Federal tax deductions	VAR(52)

Simulator Output

The output consists of eight different tables. The tables are classified by marital status and the taxable nature of the records. For each table the chosen number of variables are printed for each adjusted gross income class and the totals are printed at the bottom of each column.

Table VII contains a listing, by type of return, of the eight summary tables which the simulator is capable of producing for any forecast. For each return classification a table of totals is printed.

TABLE VII

Table Number	Type of Return Included
1	All returns
2	All taxable returns
3	All joint returns
4	All single taxable returns
5	All joint returns
6	All taxable joint returns
7	All head of household returns
8	All taxable head of household returns

Summary

Several simulation models developed earlier were very flexible and could be used for only a few predetermined variables. They were limited in their capability to estimate the aggregate and distributional impacts of alternative tax laws.

This model could estimate the impacts with a minimal program modification whenever necessary. It could be run with different input sources. It could estimate the impact of changes in the federal tax code on state tax revenues. It could be used with any state tax code by changing one subroutine in the program.

The flexibility is built into the simulator by using variable names throughout and specifying parameter values on the data cards. This model could be used to study the impact of any modifications to Oklahoma's individual income tax code. The listing of the computer program is shown in Appendix 7.

RESULTS

In the previous chapters, some important features of the Oklahoma individual income tax code were discussed and the microsimulation model was explained in detail. The purpose of this chapter is the discussion of the simulation results under alternative tax structures using the microsimulation model and the data bases mentioned earlier.

In the first section, the aggregate and distributional impact on state tax revenues, by an increase in the dividend and interest exclusion limit at the federal level is discussed. In the second section the impact of the changes in the Oklahoma state tax code in 1979 are discussed. In the final section the simulation using the state tax code of New Mexico, Kansas and Oklahoma with the same database is discussed.

Impact of Change in Federal Tax Code on State Tax Revenue

The amount of dividends and interest allowed for exclusion from federal adjusted gross income is expected to be increased to $400. A simulation was carried out to determine the impact of such a change on the state tax revenue. The summary table of this simulation is shown in Appendix 2.

The total federal tax deduction dropped to $324,783,000 from the previous level of $326,301,000. This reduction in the federal tax was due to the significantly higher dividend and interest exclusion. This change in the federal tax code decreased the state tax revenue by nearly 1.4 percent. The total state tax revenue dropped from $144,778,000 to $142,750,000. This reduction in the total state tax was due to the lower federal adjusted gross income.

TABLE VIII

IMPACT OF CHANGE IN FEDERAL INTEREST AND DIVIDEND EXCLUSION LIMIT ON STATE TAX REVENUE

Income Class	Average Tax Liability 1	2	Percent Change
$ 0 < 1	0	0	-
1 < 2	.13	.12	-7.6
2 < 3	1.72	1.67	-2.9
3 < 4	5.31	6.04	-13.75
4 < 5	10.83	10.48	-3.2
5 < 10	39.68	39.21	-1.2
10 < 15	106.39	106.01	-0.36
15 < 20	223.41	223	-0.18
20 < 25	420.36	414	-1.5
25 < 30	684	682	- .3
30 < 50	1181	1179	- .2
50 < 100	2546	2550	+ .1
100 < 200	5719	5719	-
200 < 500	16696	16679	-
500 < 1000	35300	35300	-
over 1000	217750	217750	-

The distributional impact of the change in federal tax code on state tax liability is brought out in Table VIII. The average state tax liability in each income class under the old and new codes had been computed. The most significant reductions in state tax liability under the new federal tax code was for the income classes from $1000 to $5000.

Impact of Change in State Tax Code on State Tax Revenue

In 1979 there was a major change in the amount of federal tax deduction allowed in computing the Oklahoma state tax liability. From 1975 to 1978, the amount of federal tax deduction allowed was the first $500 plus 5 percent of the excess of this amount. The maximum limit was $1700. The 1979 tax law provided the option of full federal tax deductibility and one set of tax tables or zero tax deductibility and the pre 1979 tables. The federal tax deduction is prorated by the ratio of Oklahoma adjusted gross income to federal adjusted gross income.

Using the 1975 database and the state tax codes of 1978 and 1979, two separate simulations were carried out. The summary tables of the simulations are shown in Appendix 3 and 4. The total state income tax dropped from $161,666,000 (1978) to $121,980,000 (1979). This was mainly due to the increased federal tax deductions which rose from $340,639,000 (1978) to $1,232,110,000 (1979).

The distributional impact of this change in the state tax code is shown in Table IX. There was no significant change in the average tax liability of taxpayers falling in the less than $5000 adjusted gross income brackets. But, for the taxpayers in the higher income brackets, there were large reductions in their state tax liability. For taxpayers falling in the $5000 - $10,000 range the state tax liability was reduced by nearly 42 percent. There was no difference for taxpayers with an income greater than $200,000, which may have been due to the higher marginal tax rates in those income brackets.

TABLE IX

IMPACT OF CHANGE IN FEDERAL TAX DEDUCTIONS ON OKLAHOMA STATE TAX REVENUE

Income Class (000)	Average Tax Liability 1978C	1979C	Percent Change
$ 0 < 1	0	0	
1 < 2	.124	.124	0
2 < 3	2.12	2.12	0
3 < 4	5.5	5.5	0
4 < 5	12.89	12.86	0.23
5 < 10	37.32	33.46	10.34
10 < 15	106.81	83.03	22.26
15 < 20	226.88	177.22	21.88
20 < 25	435.26	340.5	21.77
25 < 30	663.28	508.66	23.3
30 < 50	1161.15	856.65	26.2
50 < 100	2654.0	1773.61	33.17
100 < 200	5839	3378.0	42.15
200 < 500	16551	16551	0
500 < 1000	35624	35625	0
Over 1000	232666	232666	0

In another simulation, using the same database state tax revenue was computed using the tax codes of Kansas, New Mexico and Oklahoma. There are several major differences between the tax codes. The results of the simulations are shown in Appendices 3, 5 and 6.

Under the New Mexico tax code, no federal tax deduction is allowed. Whereas in Kansas a complete deduction of the total federal tax paid is allowed, and in Oklahoma the first $500 plus 5% of the excess of this amount with a maximum of $1700 is allowed as a federal tax deduction.

The other deductions allowed in New Mexico are high. But, itemization of deductions is not allowed according to the New Mexico tax code. In Kansas, the deduction limits are lower than those for New Mexico, but tax payers could itemize their deductions. In Oklahoma the deduction limits are the least of the three states and itemization is allowed. The marginal tax rates are high in Kansas in comparison with those in Oklahma and New Mexico.

The aggregate taxable income, in Oklahoma, was the highest and in Kansas, the least. But, the total tax revenue in Kansas was about 170 percent of the total tax revenue in Oklahoma. This reflects the very high marginal tax rates of Kansas. The total state tax revenue of New Mexico was about 84 percent of the revenue in Oklahoma.

The ratio of the number of taxable returns to the number of total returns was much higher in Oklahoma compared to those in Kansas and New Mexico. The results reflect the broader tax base and lower marginal tax rates of Oklahoma compared to those of New Mexico and Kansas.

The average state tax liability, under the three state tax codes is shown, by income class, in Table X. In the lower income classes, up to $5000, the tax liability under New Mexico tax code was much higher than under Oklahoma or Kansas tax codes. In the income classes

TABLE X

Income Class (000)$	Oklahoma State Tax Liability	Kansas State Tax Liability	Percent Change	N. Mexico State Tax Liability	Percent Change
0 < 1	0	0	-	3.699	-
1 < 2	.124	0	-	11.95	-
2 < 3	2.12	.23	-89.0	21.00	+890
3 < 4	5.50	4.54	-17.5	31.09	+465
4 < 5	12.89	16.11	+25	42.85	+232
5 < 10	37.36	56.15	+50.3	88.88	+138
10 < 15	106.81	222.49	+108	209.57	+ 96
15 < 20	226.88	452.95	+99.6	380.28	+ 68
20 < 25	435.26	794.09	+82.4	600.33	+ 38
25 < 30	663.30	1206.57	+82.0	843.50	+ 27
30 < 50	1161.15	1905.24	+64.1	1487.00	+ 28
50 < 100	2654	3618.00	+36.3	3626.00	+ 37
100 < 200	5839	5123.4	+12.3	8950.02	+ 53
200 < 500	16551	24265	+46.6	23634	+ 43
500 < 1000	35625	53000	+48.8	51250	+ 44
1000 or more	232666	348500	+49.8	346333	+ 49

ranging from $5000 to $100,000 the tax liability was highest under the Kansas tax code, marginally lower under New Mexico tax code and much lower under Oklahoma tax code. In the over $100,000 range the tax liability under New Mexico and Kansas tax codes were almost equal. But, they were nearly 45 percent higher than the state tax liability under Oklahoma tax code.

In this section the capability of the microsimulation model was illustrated by carrying out simulations under alternative tax structures. The kind of analysis that could be done with the summary tables was also illustrated. The results have not heen rigorously verified with available, actual data. But, preliminary verification showed the results to be within 5 percent of actual data.

The first simulation in this chapter was carried out with a change in the federal tax code. It showed that the taxpayers in the lower income brackets gained from this change. The aggregate state tax revenue dropped marginally. The second simulation was done incorporating the changes in the Oklahoma state tax code of 1979. There was a substantial reduction in the aggregate state tax revenue. The major gains under this change were for taxpayers in the higher income brackets. In the third simulation, a comparison of Kansas, New Mexico and Oklahoma state tax codes brought out the differences in the tax codes. The average tax liability under the Oklahoma state tax code was generally lesser than the tax liability under the tax codes of the other two states. In all the simulations, the 1975, Statistics of Income database was used.

SUMMARY AND EVALUATION

The specific objectives of this study are reviewed and the extent to which the model has achieved these objectives are discussed in this chapter. The limitations of the model are mentioned in conclusion.

The objective of this study was to develop a microsimulation model that would provide aggregate and distributional analyses of proposed changes in the federal and state income tax code, that would be flexible enough to be used with any tax code, to include all state tax variables, to input different data bases with minor program modifications.

At this stage the model is capable of providing aggregate and distributional analyses of proposed changes in the federal and state tax codes. It has been simulated with different data bases with minor program modifications, effectively. The program has been simulated with tax codes of different states with minor changes. But, no conclusive verification has been carried out to determine whether the estimates were accurate. Preliminary verification shows results of estimates to be within 5 percent of actual data.

The limitations of the model at this stage are discussed below. The state specific data have not been used in the simulations, which reduces the accuracy of the estimates. The aging factors for the different variables have not been determined which limits the simulations to the sample year. If these factors are included, forecasts of tax liability could be obtained for the state.

If all these changes are incorporated into the model, it would improve the accuracy of the forecasts made, using this model.

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APPENDIX 1

SUMMARY TABLE OF SIMULATION USING FEDERAL TAX CODE BEFORE CHANGE

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS , EXEMPTIONS , TAXABLE INCOME,INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES, BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER.

OKLAHOMA FULL YEAR

ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	10245.	2303.	10245.	9023.	0.	0.	0.	0.
$ 1 UNDER $ 1000..	41519.	34583.	40741.	48270.	0.	0.	0.	0.
$ 1000 UNDER $ 2000..	39979.	72202.	39979.	38369.	0.	1076.	5.	0.
$ 2000 UNDER $ 3000..	49544.	134945.	49544.	75024.	823.	16604.	85.	0.
$ 3000 UNDER $ 4000..	41024.	152532.	43418.	62782.	3174.	35244.	218.	0.
$ 4000 UNDER $ 5000..	56327.	273995.	74503.	104600.	10314.	85232.	610.	0.
$ 5000 UNDER $ 6000..	43734.	253758.	50843.	77310.	11960.	102237.	845.	0.
$ 6000 UNDER $ 7000..	47849.	325065.	55449.	116120.	14003.	131095.	1243.	0.
$ 7000 UNDER $ 8000..	39386.	307723.	63194.	76846.	16185.	139998.	1571.	224.
$ 8000 UNDER $ 9000..	39751.	351410.	65558.	78465.	19093.	176686.	2150.	83.
$ 9000 UNDER $ 10000..	46062.	456438.	90398.	102257.	21713.	229093.	2793.	295.
$ 10000 UNDER $ 11000..	38706.	417710.	86828.	102651.	18919.	199466.	2275.	392.
$ 11000 UNDER $ 12000..	28072.	329717.	59487.	64349.	14776.	182992.	2414.	0.
$ 12000 UNDER $ 13000..	38610.	495268.	92855.	83500.	21054.	286700.	4622.	40.
$ 13000 UNDER $ 14000..	30968.	426015.	72686.	81538.	17032.	245809.	4006.	155.
$ 14000 UNDER $ 15000..	28104.	419381.	91372.	67690.	15447.	238052.	4130.	421.
$ 15000 UNDER $ 20000..	102654.	1815650.	320254.	273297.	59839.	1112253.	22934.	1024.
$ 20000 UNDER $ 25000..	49395.	1122702.	187689.	127208.	31781.	745760.	20734.	52.
$ 25000 UNDER $ 30000..	22551.	662903.	105940.	53719.	16777.	441013.	15421.	0.
$ 30000 UNDER $ 50000..	21060.	822076.	112641.	52290.	19153.	585953.	24831.	0.
$ 50000 UNDER $ 100000..	7433.	523952.	87840.	19669.	10695.	374417.	18927.	0.
$ 100000 UNDER $ 200000..	2064.	278438.	46028.	5890.	3439.	213386.	11805.	0.
$ 200000 UNDER $ 500000..	56.	16662.	111.	146.	96.	16042.	935.	0.
$ 500000 UNDER $1000000..	10.	6067.	20.	31.	17.	5952.	353.	0.
$1000000 OR MORE........	8.	29195.	15.	30.	13.	29102.	1742.	0.
TOTAL	825111.	9730678.	1847633.	1721067.	326301.	5594165.	144778.	2897.

APPENDIX 2

SUMMARY TABLE OF SIMULATION USING CHANGED FEDERAL TAX CODE

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS, EXEMPTIONS, TAXABLE INCOME, INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES, BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER.

OKLAHOMA FULL YEAR — ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	10245.	2276.	10245.	9023.	0.	0.	0.	0
$ 1 UNDER $ 1000..	43076.	35733.	42298.	49438.	0.	0.	0.	0.
$ 1000 UNDER $ 2000..	41535.	75482.	41535.	43038.	0.	1021.	5.	0.
$ 2000 UNDER $ 3000..	53155.	147179.	53155.	83522.	823.	17428.	85.	0.
$ 3000 UNDER $ 4000..	38269.	145505.	50121.	53875.	3516.	36477.	231.	0.
$ 4000 UNDER $ 5000..	54463.	264134.	65049.	104810.	9713.	80534	57.	0.
$ 5000 UNDER $ 6000..	43189.	250271.	48443.	74912.	12260.	104486.	853.	0.
$ 6000 UNDER $ 7000..	48310.	328569.	55923.	116613.	14167.	133334.	1272.	0.
$ 7000 UNDER $ 8000..	39553.	308871.	64141.	77504.	16314.	139352.	1592.	224.
$ 8000 UNDER $ 9000..	39474.	347619.	64516.	77043.	18862.	174872.	205	83.
$ 9000 UNDER $ 10000..	45665.	451638.	93138.	103929.	21282.	221928.	2704.	295.
$ 10000 UNDER $ 11000..	33533.	414157.	83461.	100277.	19027.	200273.	2371.	392.
$ 11000 UNDER $ 12000..	28957.	339822	60705.	65483.	15252.	190014.	2449.	0.
$ 12000 UNDER $ 13000..	42712.	547348.	101779.	93109.	23287.	316829.	5069.	49.
$ 13000 UNDER $ 14000..	25009.	345051.	66707.	70019.	13491.	191668.	3041.	222.
$ 14000 UNDER $ 15000..	28845.	420823.	80187.	68714.	16076.	247570.	4446.	553.
$ 15000 UNDER $ 20000..	104105.	1839907.	324815.	275837.	60677.	1128297.	23245.	1034.
$ 20000 UNDER $ 25000..	47300.	1076402.	183303.	122556.	30373.	709400.	19566.	52.
$ 25000 UNDER $ 30000..	22613.	652612.	104982.	53900.	16916.	451312.	15413.	0.
$ 30000 UNDER $ 50000..	20634.	806638.	111572.	51621.	18750.	572946.	24319.	0.
$ 50000 UNDER $ 100000..	7353.	518982.	87121.	19538.	10577.	370808.	18753.	0.
$ 100000 UNDER $ 200000..	2039.	275312.	45742.	5606.	3395.	219794.	11663.	0.
$ 200000 UNDER $ 500000..	56.	10553.	111.	146.	96.	16032.	934.	0.
$ 500000 UNDER $1000000..	10.	6066.	20.	31.	17.	5951.	353.	0.
$1000000 OR MORE.........	8.	29193.	15.	30.	13.	29100.	1742.	0.
TOTAL	825111.	9665592.	1845382.	1721066.	324733.	5540527.	142750.	2897.

APPENDIX 3

SUMMARY TABLE OF SIMULATION USING OKLAHOMA TAX CODE of 1978

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS + EXEMPTIONS + TAXABLE INCOME, INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES, BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER.

OKLAHOMA — ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	1556.	0.	1556.	1167.	0.	0.	0.	0.
$ 1 UNDER $ 1000..	75050.	46007.	76671.	85708.	0.	0.	0.	0.
$ 1000 UNDER $ 2000..	64341.	55757.	65290.	81306.	0.	1645.	8.	30.
$ 2000 UNDER $ 3000..	69890.	174868.	69690.	97127.	279.	29032.	148.	0.
$ 3000 UNDER $ 4000..	64325.	225840.	66026.	109812.	3409.	56964.	351.	0.
$ 4000 UNDER $ 5000..	63610.	283959.	80078.	103970.	10314.	110495.	820.	0.
$ 5000 UNDER $ 6000..	66503.	362494.	75253.	125803.	14840.	149799.	1274.	0.
$ 6000 UNDER $ 7000..	47694.	307606.	51073.	97402.	11777.	147728.	1366.	0.
$ 7000 UNDER $ 8000..	51828.	386386.	78512.	121634.	16855.	174032.	1812.	0.
$ 8000 UNDER $ 9000..	45933.	390572.	78196.	89871.	20011.	202493.	2693.	308.
$ 9000 UNDER $ 10000..	50810.	463114.	94849.	120869.	22097.	245302.	2671.	0.
$ 10000 UNDER $ 11000..	50219.	524687.	108890.	118899.	24417.	273701.	3396.	682.
$ 11000 UNDER $ 12000..	34266.	353165.	69707.	79831.	17524.	226106.	3137.	0.
$ 12000 UNDER $ 13000..	35328.	457757.	86941.	94909.	19314.	266592.	2945.	40.
$ 13000 UNDER $ 14000..	31075.	417819.	76857.	72338.	16372.	252252.	4301.	173.
$ 14000 UNDER $ 15000..	26200.	378988.	30030.	66971.	13989.	228655.	4233.	383.
$ 15000 UNDER $ 20000..	114434.	1982411.	358075.	305192.	64051.	1255129.	25563.	1280.
$ 20000 UNDER $ 25000..	57053.	1257743.	207288.	141044.	35500.	873946.	24833.	52.
$ 25000 UNDER $ 30000..	23450.	638904.	107892.	60958.	15984.	454059.	15554.	0.
$ 30000 UNDER $ 50000..	25232.	906088.	129824.	61366.	20303.	694658.	29298.	0.
$ 50000 UNDER $ 100000..	8503.	563761.	90291.	22231.	10673.	444036.	22567.	0.
$ 100000 UNDER $ 200000..	1848.	242663.	39756.	5272.	2927.	194744.	10791.	0.
$ 200000 UNDER $ 500000..	49.	14145.	97.	126.	1.	13920.	511.	0.
$ 500000 UNDER $1000000..	8.	4054.	16.	25.	0.	4013.	281.	0.
$1000000 OR MORE........	6.	23356.	12.	24.	1.	23319.	1399.	0.
TOTAL	1011211.	10567930.	2094174.	2053855.	340639.	6315741.	161665.	2948.

APPENDIX 4

SUMMARY TABLE OF SIMULATION USING OKLAHOMA TAX CODE OF 1979

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS, EXEMPTIONS, TAXABLE INCOME, INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES, BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER.

OKLAHOMA — ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	1556.	0	1556.	1167.	0.	0.	0.	0.
$ 1 UNDER $ 1000..	76050.	46007.	76871.	85709.	0.	0.	0.	0.
$ 1000 UNDER $ 2000..	64341.	95757.	65290.	81306.	0.	1645.	6.	0.
$ 2000 UNDER $ 3000..	69890.	174668.	69890.	97127.	279.	29311.	146.	0.
$ 3000 UNDER $ 4000..	64325.	225843.	66028.	109812.	3409.	60374.	354.	0.
$ 4000 UNDER $ 5000..	63610.	283959.	30078.	103970.	10314.	120608.	818.	0.
$ 5000 UNDER $ 6000..	65503.	362494.	75253.	125803.	15294.	164639.	1254.	0.
$ 6000 UNDER $ 7000..	47694.	307606.	51073.	97402.	14003.	159515.	1297.	0.
$ 7000 UNDER $ 8000..	51828.	380386.	76512.	121634.	22025.	190867.	1627.	0.
$ 8000 UNDER $ 9000..	45933.	390572.	78196.	89871.	31531.	222504.	2270.	0.
$ 9000 UNDER $ 10000..	50810.	463114.	94849.	120869.	34294.	267475.	2356.	0.
$ 10000 UNDER $ 11000..	50219.	526687.	108890.	118899.	44253.	255117.	2785.	0.
$ 11000 UNDER $ 12000..	34266.	393169.	69707.	75831.	37901.	[illegible]	[illegible]	[illegible]
$ 12000 UNDER $ 13000..	36323.	457757.	86961.	86909.	55967.	285597.	[illegible]	[illegible]
$ 13000 UNDER $ 14000..	31075.	417819.	76857.	72332.	43453.	260724.	3347.	0.
$ 14000 UNDER $ 15000..	26200.	373983	80959.	56971.	39349.	234815.	[illegible]	[illegible]
$ 15000 UNDER $ 20000..	114634.	1982411.	350075.	395192.	224560.	1319176.	[illegible]	[illegible]
$ 20000 UNDER $ 25000..	57053.	1257743.	207288.	141044.	173327.	909466.	[illegible]	0.
$ 25000 UNDER $ 30000..	23450.	633904.	107892.	60963.	98407.	470043.	11928.	0.
$ 30000 UNDER $ 50000..	25232.	906098.	129824.	61366.	170503.	714996.	21615.	0.
$ 50000 UNDER $ 100000..	8503.	663761.	90291.	22231.	142573.	454751.	15061.	0.
$ 100000 UNDER $ 200000..	1848.	242563	39766.	5272.	80352.	197666.	6242.	0.
$ 200000 UNDER $ 500000..	49.	14145.	97.	126.	5.	13922.	511.	0.
$ 500000 UNDER $1000000..	8.	4854.	16.	25.	0.	4813.	285.	0.
$1000000 OR MORE........	6.	23356.	12.	24.	2.	23320.	1390.	0.
TOTAL	1011211.	10567630.	2094174.	2053855.	1232113.	6656372.	121960.	0

APPENDIX 5

SUMMARY TABLE OF SIMULATION USING KANSAS TAX CODE

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS , EXEMPTIONS , TAXABLE INCOME, INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES. BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER,

KANSAS — ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	1556.	0.	2645.	1556.	0.	0.	0.	0.
$1 UNDER $1000......	76050.	66007.	135654.	114277.	0.	0.	0.	0.
$ 1000 UNDER $ 2000......	64241.	95757.	115942.	110213.	0.	0.	0.	0.
$ 2000 UNDER $ 3000......	69890.	174868.	128087.	132615.	279.	783.	16.	0.
$ 3000 UNDER $ 4000......	64325.	225840.	120426.	149528.	3409.	14589.	292.	0.
$ 4000 UNDER $ 5000......	63610.	288559.	129963.	143296.	10314.	51223.	1025.	0.
$ 5000 UNDER $ 6000......	66503.	362494.	129430.	175524.	15294.	72018.	1543.	0.
$ 6000 UNDER $ 7000......	47694.	307606.	95518.	132931.	14038.	73096.	1679.	0.
$ 7000 UNDER $ 8000......	51828.	386386.	112251.	168405.	22025.	98670.	2343.	0.
$ 8000 UNDER $ 9000......	45933.	390572.	98923.	124498.	31531.	130855.	3581.	0.
$ 9000 UNDER $10000......	50810.	483114.	116343.	161159.	34294.	172314.	5606.	0.
$10000 UNDER $11000......	50219.	524687.	122104.	161917.	44253.	197524.	7156.	0.
$11000 UNDER $12000......	34266.	393169.	78422.	107570.	37901.	169499.	6679.	0.
$12000 UNDER $13000......	36328.	457757.	88266.	116597.	45867.	207027.	8882.	0.
$13000 UNDER $14000......	31075.	417819.	77053.	96450.	43453.	200862.	9155.	0.
$14000 UNDER $15000......	26200.	378988.	79272.	91550.	39649.	172552.	7756.	0.
$15000 UNDER $20000......	114434.	1982411.	350809.	407220.	224566.	959865.	51835.	0.
$20000 UNDER $25000......	57053.	1257740.	194232.	188424.	173327.	701779.	45305.	0.
$25000 UNDER $30000......	23450.	639904.	95761.	81291.	98338.	363512.	23294.	0.
$30000 UNDER $50000......	25232.	906088.	111227.	82190.	170603.	542123.	48071.	0.
$50000 UNDER $100000....	8503.	563761.	73054.	29759.	142130.	322369.	30761.	0
$100000 UNDER $200000...	1848.	242663.	29722.	7033.	79795.	126162.	946[illegible].	0.
$200000 UNDER $500000...	49.	14145.	101.	168.	0.	13675.	1139.	0.
$500000 UNDER $1000000..	8.	4654.	16.	33.	0.	4595.	428	0.
$1000000 OR MORE........	6.	23356.	12.	33.	0.	22311.	2091.	0.
TOTAL	1011211.	10567930.	2485225.	2784292.	1231035.	4664829.	273147.	0.

APPENDIX 6

SUMMARY TABLE OF SIMULATION USING NEW MEXICO TAX CODE

ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIONS, EXEMPTIONS, TAXABLE INCOME, INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FOR TAX PREFERENCES, BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS OF TAXPAYER.

N. MEXICO — ALL RETURNS

SIZE OF ADJUSTED GROSS INCOME	NUMBER OF RETURNS	ADJUSTED GROSS INCOME	TOTAL DEDUCTIONS	EXEMPTIONS	FED TAX DEDUCTIONS	TAXABLE INCOME	TOTAL INCOME TAX BEFORE CREDITS	CREDITS
NO ADJUSTED GROSS INCOME	355968.	1044585.	997199.	895674.	0.	0.	0.	0.
$1 UNDER $1000......	60023.	328536.	169349.	131224.	0.	27717.	222.	0.
$ 1000 UNDER $ 2000.....	73111.	480432.	203846.	167259.	0.	109264.	874.	0.
$ 2000 UNDER $ 3000......	56085.	450541.	163222.	146148.	0.	140874.	1178.	0.
$ 3000 UNDER $ 4000......	54904.	512449.	167732.	150787.	0.	193566.	1707.	0.
$ 4000 UNDER $ 5000.....	51484.	523720.	158178.	133918.	0.	231546.	2206.	0.
$ 5000 UNDER $ 6000......	51951.	601220.	155525.	160262.	0.	285256.	3071.	0.
$ 6000 UNDER $ 7000.....	36927.	469335.	115528.	112560.	0.	240886.	2711.	0.
$ 7000 UNDER $ 8000......	24755.	342004.	80399.	75590.	0.	185346.	2264.	0.
$ 8000 UNDER $ 9000......	22838.	348729.	74772.	80870.	0.	192657.	2516	0.
$ 9000 UNDER $10000.....	33465.	514303.	103459.	92312.	0.	318363.	4542.	0.
$10000 UNDER $11000.....	25182.	425736.	81786.	79008.	0.	264397.	4036.	0.
$11000 UNDER $12000.....	27053.	431131.	83343.	82447.	0.	311194.	5226.	0.
$12000 UNDER $13000.....	14116.	270927.	45305.	47136.	0.	177314.	3114.	0.
$13000 UNDER $14000.....	16720.	331466.	54721.	51486.	0.	225142.	4109.	0.
$14000 UNDER $15000.....	12921.	265984.	42314.	36306.	0.	187277.	3632.	0.
$15000 UNDER $20000.....	44665.	1050491.	146993.	139447.	0.	763657.	16955.	0.
$20000 UNDER $25000.....	18305.	526323.	61214.	56595.	0.	408053.	[illegible]	0.
$25000 UNDER $30000.....	11061.	371588.	36814.	35052.	0.	299690.	9239.	0.
$30000 UNDER $50000.....	11621.	507415.	37590.	35612.	0.	433559.	17277.	0.
$50000 UNDER $100000....	6515.	476612.	21176.	22736.	0.	432099.	23627.	0.
$100000 UNDER $200000...	1486.	205685.	4878.	5448.	0.	194092.	13300.	0.
$200000 UNDER $500000...	41.	12501.	135.	140.	0.	12220.	96[illegible]	0.
$500000 UNDER $1000000..	8.	4854.	24.	32.	0.	4796.	419.	0.
$1000000 OR MORE........	6.	23356.	19.	32.	0.	23304.	2078.	0.
TOTAL	1011211.	10568020.	3008015.	2738482.	0.	[illegible]	[illegible]	0.

```
JOB
      COMMON VAR,STVAR,OKVAR,TOT,K,M,N
      DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
      DO 10 K=1,8
      DO 20 M=1,25
      DO 30 N=1,8
      OKVAR(K,M,N)=0.0
   30 CONTINUE
   20 CONTINUE
   10 CONTINUE
      DO 700  L=1,2087
      CALL READ
      K=1
      CALL OKTAX
      CALL TXBRAC
      CALL TABCAL
      IF(STVAR(40).LE.1.0) GO TO 12
      K=2
      CALL TXBRAC
      CALL TABCAL
12     IF(VAR(22).EQ.1.0.OR.VAR(22).EQ.3.0) K=3
      IF(VAR(22).EQ.2.0.OR.VAR(22).EQ.5.0.OR.VAR(22).EQ.6.0) K=5
      IF (VAR(22).EQ.4.0.OR.VAR(22).EQ.7.0) K=7
      CALL TXBRAC
      CALL TABCAL
      IF(K.EQ.3.0.AND.STVAR(40).GE.1.0) K=4
      IF(K.EQ.5.0.AND.STVAR(40).GE.1.0) K=6
      IF(K.EQ.7.0.AND.STVAR(40).GE.1.0) K=8
      IF(K.EQ.3.0.OR.K.EQ.5.0.OR.K.EQ.7.0) GO TO 700
      CALL TXBRAC
      CALL TABCAL
  700 CONTINUE
      DO 701 K=1,8
      DO 340 I=1,8
340   TOT(I)=0.0
      WRITE(6,60)
   60 FORMAT('1',32X,'ALL RETURNS: ADJUSTED GROSS INCOME, TOTAL DEDUCTIO
     *NS , EXEMPTIONS , TAXABLE')
      WRITE(6,70)
   70 FORMAT(35X,'INCOME,INCOME TAX AFTER CREDITS, AND ADDITIONAL TAX FO
     *R TAX PREFERENCES,')
      WRITE(6,80)
   80 FORMAT(35X,'BY SIZE OF ADJUSTED GROSS INCOME AND BY MARITAL STATUS
     * OF TAXPAYER.')
      GO TO (82,85,90,100,110,120,130,140),K
   82 WRITE(6,142)
  142 FORMAT(/5X,'OKLAHOMA',47X,'ALL RETURNS')
      GO TO 180
   85 WRITE(6,145)
  145 FORMAT(/5X,'OKLAHOMA',47X,'ALL TAXABLE RETURNS')
      GO TO 180
   90 WRITE(6,150)
  150 FORMAT(/5X,'OKLAHOMA',47X,'ALL SINGLE RETURNS')
      GO TO 180
  100 WRITE(6,160)
  160 FORMAT(/5X,'OKLAHOMA',47X,'ALL SINGLE TAXABLE RETURNS')
      GO TO 180
  110 WRITE(6,170)
  170 FORMAT(/5X,'OKLAHOMA',47X,'ALL JOINT RETURNS')
      GO TO 180
```

```
[illegible] WRITE(6,19[illegible])
[illegible] FORMAT(/5X,'OKLAHOMA',47X,'ALL JOINT TAXABLE RETURNS')
     GO TO 180
1[illegible]0 WRITE(6,195)
1[illegible]5 FORMAT(/5X,'OKLAHOMA',47X,'ALL HEAD OF HOUSEHOLD RETURNS')
     GO TO 180
140 WRITE(6,143)
143 FORMAT(/60X,'ALL TAXABLE HEAD OF HOUSEHOLD RETURNS')
180 WRITE(6,193)
193 FORMAT(5X,'SIZE OF ADJUSTED GROSS INCOME',79X,'TOTAL')
     WRITE(6,200)
200 FORMAT(38X,'NUMBER OF',4X,'ADJUSTED',5X,'TOTAL',3X,'EXEMPTIONS',6X
    *,'FED TAX',6X,'TAXABLE',2X,' INCOME TAX',5X,'CREDITS')
     WRITE(6,210)
210 FORMAT(39X,'RETURNS',3X,'GROSS INCOME',1X,'DEDUCTIONS',14X,'DEDUCT
    *IONS',5X,'INCOME',2X,'BEFORE CREDITS')
     CALL OUTPUT
701 CONTINUE
     STOP
     END

     SUBROUTINE OUTPUT
     COMMON VAR,STVAR,OKVAR,TOT,K,M,N
     DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
     DIMENSION IC(24),ID(24)
     DATA IC /0,1,1000,2000,3000,4000,5000,6000,7000,8000,9000,
    *10000,11000,12000,13000,14000,15000,20000,25000,30000,50000,
    *100000,200000,500000/
     DATA ID /0,1000,2000,3000,4000,5000,6000,7000,8000,9000,
    *10000,11000,12000,13000,14000,15000,20000,25000,30000,50000,
    *100000,200000,500000,1000000/
     WRITE(6,220)(OKVAR(K,1,N),N=1,8)
220 FORMAT(5X,'NO ADJUSTED GROSS INCOME',7X,1F11.0,2X,4F11.0,3X,1F11.
    *0,3X,2F11.0)
     DO 300 M=2,24
     WRITE(6,250) IC(M),ID(M),(OKVAR(K,M,N),N=1,8)
250  FORMAT(/5X,'$',I7,' UNDER ','$',I7,'..',6X,1F11.0,2X,4F11.0,3X,1F1
    *1.0,3X,2F11.0)
300  CONTINUE
     WRITE(6,330)(OKVAR(K,25,N),N=1,8)
330 FORMAT(/5X,'$1000000 OR MORE........',7X,1F11.0,2X,4F11.0,3X,1F11.
    *0,3X,2F11.0)
     DO 501 N=1,8
     DO 500 M=1,25
     TOT(N)=TOT(N)+OKVAR(K,M,N)
500  CONTINUE
501  CONTINUE
     WRITE(6,400)TOT(1),TOT(2),TOT(3),TOT(4),TOT(5),TOT(6),TOT(7),TOT(8
    *)
400 FORMAT(/5X,'TOTAL',27X,1F11.0,2X,4F11.0,3X,1F11.0,3X,2F11.0)
     RETURN
     END

     SUBROUTINE READ
     COMMON VAR,STVAR,OKVAR,TOT,K,M,N
     DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
     READ (10,500)(VAR(I),I=1,193)
500 FORMAT(13F4.0,22F2.0,4X,F11.0,158F10.0)
     RETURN
     END
```

```
      SUBROUTINE TABCAL
      COMMON VAR,STVAR,OKVAR,TOT,K,M,N
      DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
      CALL OKTAX
      OKVAR(K,M,1)=OKVAR(K,M,1)+STVAR(57)
      OKVAR(K,M,2)=OKVAR(K,M,2)+(STVAR(11)*STVAR(57))/1000.00
      OKVAR(K,M,3)=OKVAR(K,M,3)+(STVAR(12)*STVAR(57))/1000.00
      OKVAR(K,M,4)=OKVAR(K,M,4)+ (STVAR(13)*STVAR(57))/1000.0
      OKVAR(K,M,5)=OKVAR(K,M,5)+(STVAR(37)*STVAR(57))/1000.00
      OKVAR(K,M,6)=OKVAR(K,M,6)+(STVAR(39)*STVAR(57))/1000.00
      OKVAR(K,M,7)=OKVAR(K,M,7)+(STVAR(40)*STVAR(57))/1000.00
      OKVAR(K,M,8)=OKVAR(K,M,8)+(STVAR(29)*STVAR(57))/1000.
      RETURN
      END

      SUBROUTINE TXBRAC
      COMMON VAR,STVAR,OKVAR,TOT,K,M,N
      DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
      DIMENSION J(24)
      DATA J /1,1000,2000,3000,4000,5000,6000,7000,
     *8000,9000,10000,11000,12000,13000,14000,15000,
     *20000,25000,30000,50000,100000,200000,500000,
     *1000000/
      M=1
      DO 10 I=1,24
      IF(STVAR(11).LT.J(I))GO TO 20
      M=M+1
      IF(M.EQ.25) GO TO 20
   10 CONTINUE
   20 RETURN
      END

      SUBROUTINE OKTAX
      COMMON VAR,STVAR,OKVAR,TOT,K,M,N
      DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
      STVAR(57)=VAR(193)
      STVAR(58)= VAR(38)
      STVAR(59)=VAR(39)
      STVAR(60)=VAR(40)
      STVAR(61)=VAR(41)
      STVAR(62)=VAR(42)
      STVAR(63)=VAR(43)
      STVAR(64)=VAR(44)
      STVAR(1)=VAR(49)
      STVAR(2)=0.0
      STVAR(3)=0.0
      STVAR(4)=0.0
      STVAR(5)=STVAR(2)+STVAR(3)+STVAR(4)
      STVAR(6)=STVAR(1)+STVAR(5)
      STVAR(7)=0.0
      STVAR(8)=0.0
      STVAR(9)=0.0
      STVAR(10)=STVAR(7)+STVAR(8)+STVAR(9)
      STVAR(11)=STVAR(6)-STVAR(10)
      IF(VAR(17).LE.2.0)GO TO 115
      STVAR(12)=0.15*STVAR(11)
      IF(VAR(22).EQ.3.0)GO TO 125
      IF(STVAR(12).GT.1000.00)GO TO 125
      STVAR(12)=1000.00
      GO TO 135
```

```
1[illegible] IF(STVAR(12).LE.2000.00)GO TO 135
      STVAR(12)=2000.00
      GO TO 135
 125 IF(STVAR(12).GT.500.00)GO TO 127
      STVAR(12)=500.00
      GO TO 135
127   IF(STVAR(12).LE.1000.00)GO TO 135
      STVAR(12)=1000.00
      GO TO 135
 115 STVAR(12)=VAR(76)
 135 STVAR(13)=VAR(44)*750.00
 148 STVAR(14)=STVAR(12)+STVAR(13)
      IF (STVAR(1).EQ.0.0)GO TO 156
 155 STVAR(15)=(STVAR(11)/STVAR(1))*100.00
       GO TO 157
 156  STVAR(15)=0.0
 157 STVAR(16)=(STVAR(14)/100.00)*(STVAR(15))
      STVAR(17)=VAR(32)
      IF(STVAR(17).LT.500.00)GO TO 188
      STVAR(18)=500.00
      GO TO 195
 188 STVAR(18)=STVAR(17)
 195 STVAR(19)=(STVAR(17)-STVAR(18))
      STVAR(20)=(STVAR(19)*0.05)
      STVAR(21)=(STVAR(18)+STVAR(20))
      STVAR(22)=STVAR(15)
      STVAR(23)=(STVAR(21)*STVAR(22))/100.0
      IF(STVAR(23).LE.1700.00)GO TO 235
      STVAR(23)=1700.00
235   STVAR(24)=VAR(127)
      STVAR(25)=STVAR(24)*0.2
      STVAR(26)=STVAR(11)
      STVAR(27)=STVAR(1)
      IF (STVAR(1).EQ.0.0)GO TO 236
      STVAR(28)=(STVAR(26)/STVAR(27))*100.00
      GO TO 237
236   STVAR(28)=0.0
237   IF(STVAR(29).LE.100.00)GO TO 285
      STVAR(28)=100.00
235   STVAR(29)=((STVAR(28)/100.00)*STVAR(25))
      STVAR(30)=STVAR(11)
      STVAR(31)=0.0
      STVAR(32)=0.0
      STVAR(33)=0.0
      IF(STVAR(33).GT.100.0)GO TO 338
      GO TO 342
 338 STVAR(33)=100.0
 342 STVAR(34)=STVAR(31)+STVAR(32)+STVAR(33)
      STVAR(35)=(STVAR(30)-STVAR(34))
      STVAR(36)=STVAR(16)
      STVAR(37)=STVAR(23)
      STVAR(38)=(STVAR(37)+STVAR(36))
      STVAR(39)=(STVAR(35)-STVAR(38))
      IF(STVAR(39).GT.0.0)GO TO 395
      STVAR(39)=0.0
395   CALL TAXCAL
 415 STVAR(41)=0.0
      STVAR(42)=STVAR(30)
      STVAR(43)=0.0
      STVAR(44)=STVAR(41)+STVAR(42)+STVAR(43)
```

```
      STVAR(45)=(STVAR(40)-STVAR(44))
      IF(STVAR(45).LT.0.0)GO TO 458
      GO TO 465
  458 STVAR(45)=0.0
  465 STVAR(46)=0.0
      STVAR(47)=0.0
      STVAR(48)=0.0
      STVAR(49)=0.0
      STVAR(50)=STVAR(46)+STVAR(47)+STVAR(48)+STVAR(49)
      STVAR(51)=(STVAR(50)-STVAR(45))
      IF(STVAR(51).GT.0.0)GO TO 515
      STVAR(51)=0.0
  515 STVAR(52)=0.0
      STVAR(53)=0.0
      STVAR(54)=(STVAR(45)-STVAR(50))
      IF(STVAR(54).GT.0.0)GO TO 545
      STVAR(54)=0.0
  545 N=1
      STVAR(55)=((0.05*STVAR(54))+(0.005*STVAR(54)*N))
      STVAR(56)=(STVAR(54)+STVAR(55))
      RETURN
      END

      SUBROUTINE TAXCAL
      COMMON VAR,STVAR,OKVAR,TOT,K,M,N
      DIMENSION VAR(193) , OKVAR(8,25,8) , TOT(8),STVAR(64)
      DIMENSION JB(6),JC(6),JD(6),AT(7),BT(7),CT(7),AMR(7)
      DATA JB/2000,5000,7500,10000,12500,15000/
      DATA JC/1000,2500,3750,5000,6250,7500/
      DATA JD/1500,3750,5625,7500,9375,11250/
      DATA AT/0.,10.0,40.0,90.0,165.0,265.0,390./
      DATA BT/0.,5.0,20.0,45.0,82.5,132.5,195.0/
      DATA CT/0.,7.5,30.0,67.5,123.75,198.75,292.5/
      DATA AMR/0.005,0.01,0.02,0.03,0.04,0.05,0.06/
      JA = VAR(22)
      GO TO (810,805,810,815,805,805,815) ,JA
  805 MA = 1
      DO 101 IA =1,6
      IF(STVAR(39).LE.JB(IA)) GO TO 222
      MA = MA +1
      IF(MA.EQ.7) GO TO 222
  101 CONTINUE
  222 IF(MA.EQ.7) IA = IA + 1
      IF(IA.EQ.1) GO TO 998
      STVAR(40)= AT(MA)+(AMR(MA)*(STVAR(39)-JB(IA-1)))
      GO TO 999
  810 MB = 1
      DO 202 IB =1,6
      IF(STVAR(39).LE.JC(IB)) GO TO 333
      MB = MB +1
      IF(MB.EQ.7) GO TO 333
  202 CONTINUE
  333 IF(MB.EQ.7 ) IB = IB + 1
      IF(IB.EQ.1) GO TO 998
      STVAR(40) = BT(MB) +(AMR(MB)*(STVAR(39)-JC(IB-1)))
      GO TO 999
  815 MC = 1
      DO 303 IC=1,6
      IF(STVAR(39).LE.JD(IC)) GO TO 444
      MC = MC +1
```

```
      IF(MC.EQ.7) GO TO  444                                    0000
  ... CONTINUE                                                  0000
      IF(MC.EQ.7) IC = IC + 1                                   0000
      IF(IC.EQ.1) GO TO 998                                     0000
      STVAR(40) = CT(MC)+(AMR(MC)*(STVAR(39)-JD(IC-1)))         0000
      GO TO 999                                                 0000
  998 STVAR(40) = AMR(1) * STVAR(39)                            0000
  999 RETURN                                                    0000
      END                                                       0000

ENTRY                                                           0000
```

VITA

Jayadev Gavini

Candidate for the Degree of

Master of Business Administration

Report: A MICROANALYTIC MODEL FOR SIMULATION OF CHANGES IN STATE INDIVIDUAL INCOME TAX CODES

Major Field: Business Administration

Biographical:

Personal Data: Born in Pedapudi Andhra Pradesh, India, May 12, 1954, the son of Venkata Subbarao and Sarojini Gavini.

Education: Graduated from Hyderabad Public School, Hyderabad, India in May, 1970; received the Bachelor of Technology degree from University of Madras, India with a major in Chemical Engineering, April, 1976; received Master of Science degree from Indian Institute of Technology, Madras, India with a major in Chemical Engineering, April, 1979; completed requirements for the Master of Business Administration degree at Oklahoma State University, December, 1981.