

# State of Utah Tax Reform

Methods, Models, and Documentation

April 2007





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**Demographic and Economic Analysis  
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State of Utah**

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# Table of Contents

Executive Summary .....	3
Historical Documentation .....	9
Technical Analysis .....	17
Appendices .....	49



# **Executive Summary**



# Executive Summary

## Highlights

### Components of 2007 Tax Reform

- o Income Tax (\$110m)
  - o Flat tax rate drops from 5.35% to 5%
  - o Credit of 6% of federal standard or itemized deduction and personal exemptions that phases out as income increases
  - o Retiree credit of 6% of the current deduction that phases out as income increases
- o Sales Tax (\$80m)
  - o General state sales tax rate is reduced by 0.1% - from 4.75% to 4.65% - \$40m
  - o State sales tax on food is reduced by 1% - from 2.75% to 1.75% - \$40m
- o Business Inputs (\$30m)
  - o Research and Development - \$15m
  - o Renewable Energy Credit - \$3m
  - o Dental Prosthesis Sales Tax Exemption - \$2m
  - o Mining Exemption - \$5m
  - o Cable Equalization - \$5m
- o Fiscal Year 2009 tax reduction of \$220 million

### Benefits of Utah Tax Reform

1. Broadens the income tax base.
  - o The low income will pay a flat tax on federal taxable income, but as income increases taxpayers will move to paying a flat tax on federal adjusted gross income.
2. Lowers the rate.
  - o In total, this will result in a 30% income tax rate reduction, from 7% to 5%.
3. Significantly reduces volatility in the income tax.
  - o This has the effect of stabilizing future revenue growth, thereby strengthening education funding.
4. Increases simplicity.
  - o The flat tax has fewer calculations than the old graduated system.
  - o Returns to a single income tax system.
5. Improves equity through a more progressive tax system.
6. Continues to strengthen Utah's long-term competitiveness, positioning the state for the 21st century.
  - o Provides businesses additional incentives to relocate to Utah.

### Tax Reform Overview

Over the last few years, The State of Utah has enacted significant tax reform which positions the state for continued economic growth in the coming decades. In a span of four years, the state's major taxes have been modified to provide for a more dynamic system. This results in a cumulative revenue reduction of nearly \$400 million to the State of Utah.

**Individual Income Tax.** The individual income tax has moved from a bracketed system with graduated rates and a top graduated rate of 7%, to a single rate system of 5%. In total, income tax reform will reduce income tax revenues by approximately \$190 mil-

lion. It will significantly decrease the volatility in revenue collections. Additionally, it provides a more competitive tax rate, while improving equity slightly with more transparent credits than current deductions and graduated rates. Overall, the tax becomes simpler and easier to administer.

**Sales Tax.** The sales tax was also modified to improve economic efficiency and equity. The main reforms removed much of the sales tax on unprepared food, a regressive tax. Additional sales tax exemptions were granted to business purchases involved in the production of certain goods and services. The general sales tax rate was also reduced, resulting in total sales tax reductions of \$160 million.

**Corporate Income Tax.** The corporate income tax was modified to allow for double weighted sales in the apportionment formula. Additionally, the Legislature provided business input tax reductions and other business tax changes designed to improve efficiency and competitiveness. These changes totaled \$50 million.

**Property Tax.** The property tax was altered to more tightly control how redevelopment funds were utilized; how property tax rate changes were communicated to taxpayers, while granting exemptions to businesses for insignificantly valued personal property; and providing additional credits for the low income and elderly.

In addition to these reforms, over 80 tax bills were enacted by the Legislature. These reforms provide for improvements in transparency, revenue sufficiency, efficiency, equity, simplicity, and administration. The tax system helps prepare the state for the challenges and opportunities in an ever changing and competitive world.

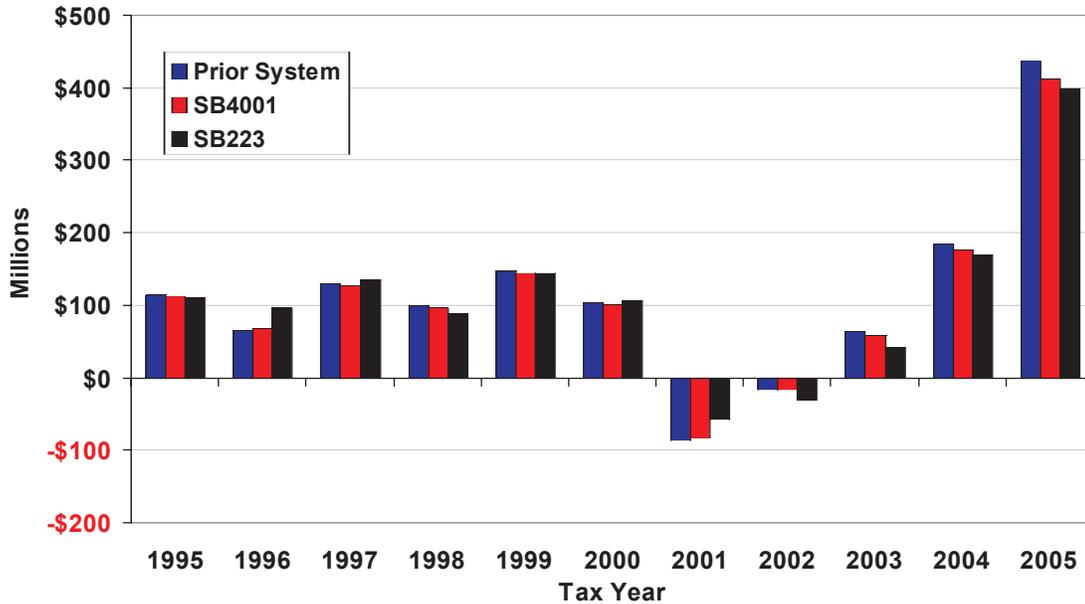
### Tax Reform Effects

**Volatility Reduction.** The most significant result of the reformed tax system is a dramatic reduction in the volatility of revenue received by the state. Reduction of the income tax system's volatility was a policy priority when tax reform was first discussed. Historically the income tax has been one of the more volatile revenue streams. This volatility is largely the result of changes in non-wage income such as capital gains, self employed profits, dividends, and interest that tend to fluctuate by large amounts. At roughly a third of the wage income, the revenue derived from this income source was a main contributor to declines in tax collections during economic downturns. In 2002 alone, collections from the individual income tax dropped by \$100 million.

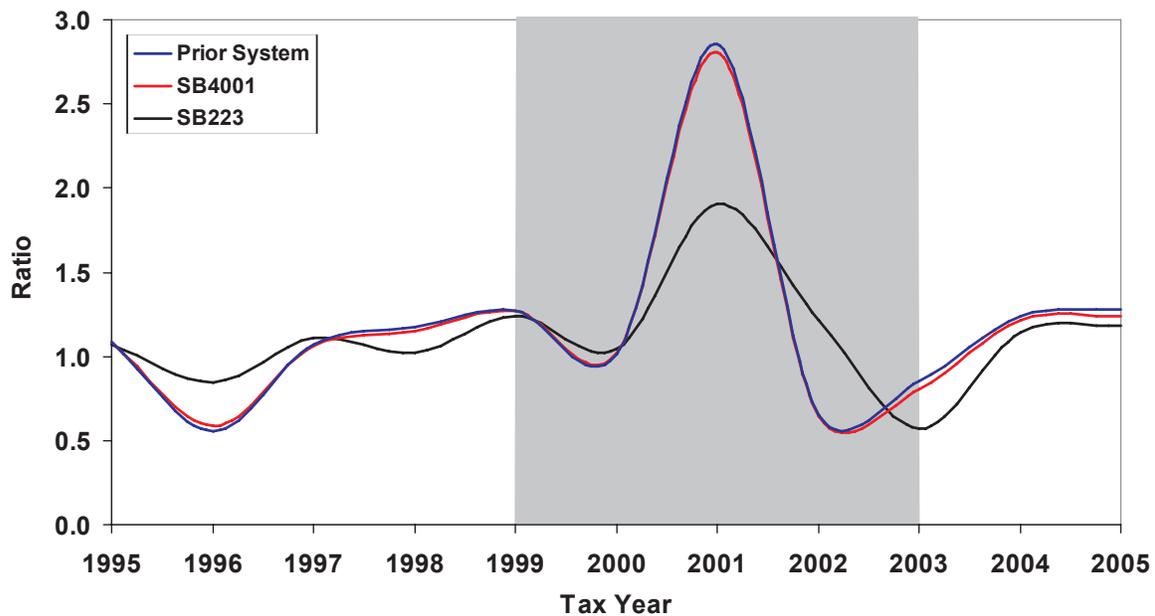
Analysis of alternative tax systems shows that volatility would be reduced only slightly from the dual tax system implemented during the 2006 special session. Moving to the single rate system, volatility would be reduced dramatically. For example, in 2001, a year of decreasing state revenue, the income tax elasticity (as defined by the percent change in tax over the percent change in adjusted gross income) would have been reduced in half. During economic downturns, revenue losses would not be as severe.

**Distributional Analysis.** Analysis was also conducted to better comprehend how changes in the individual income tax would

**Figure A**  
Comparing Income Tax Systems Change in Revenue



**Figure B**  
Comparing Income Tax Systems Volatility



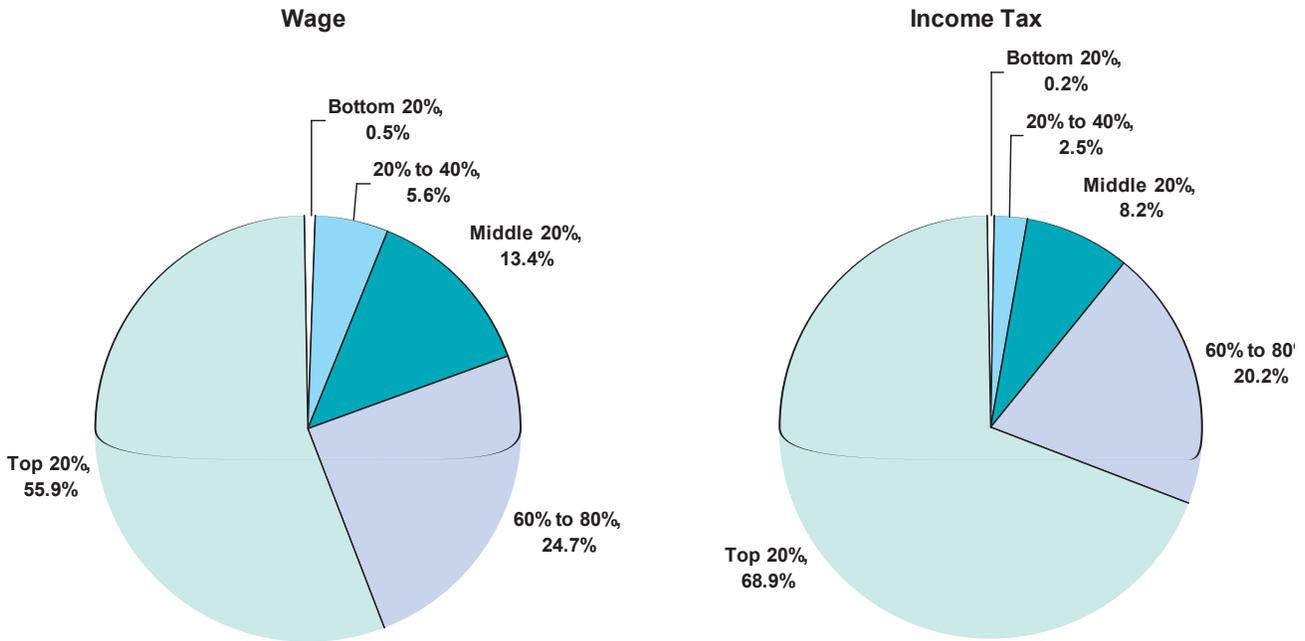
impact the state's taxpayers. Key to this effort was framing the change taxpayers could experience relative to the tax they were paying under the graduated system.

**Taxes are a function of income.** The distribution of income largely determines the distribution of taxes paid. In 2004, the top 5% of wage earners captured 24% of all wages and the top 25% of wage earners captured 63% of all wages. In 2004, the top 5% of taxpayers (based on federal adjusted gross income) paid 38% of the income tax; the top 25% of taxpayers paid nearly 76% of the income tax. The distribution of non-wage income is similar, but even more exaggerated.

**Tax Burden.** The graduated rate and single rate systems are progressive in nature, meaning those with more income pay a higher percentage of their total income in taxes. A comparison of the old graduated system to the new single rate system showed that the single rate system is slightly more progressive.

On average, those making under \$50,000 of federal adjusted gross income would pay \$495 in state income tax under the dual tax system. Under the single rate system they would pay \$473; the average tax change being a reduction of \$22. Taxpayers with income above \$50,000 would pay, on average, \$6,030 under the dual tax system and

**Figure C**  
Distributions by Income Quintile

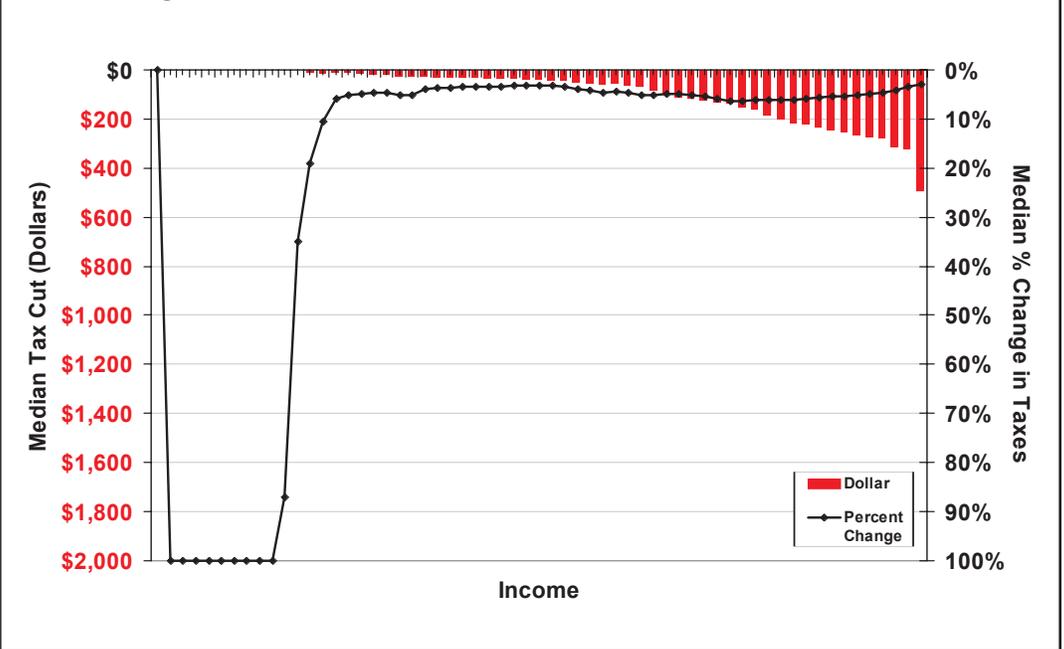


\$5,817 under the single rate system; an average tax reduction of \$213. The group of taxpayers making less than \$50,000 would pay 12% of the tax burden and receive 14% of the total aggregate reduction in income tax (\$109 million). Their total burden changes very slightly, less than 0.1%, with a commensurate increase in the group making over \$50,000.

In general, those making over \$100,000 in income will pay a slightly higher share of tax, from 62.1% to 62.6%, an increase in share of 0.5%, while receiving 48% of the \$109 million tax reduction. In addition, single filers will bear a slightly higher share of aggregate tax, from 16.8% to 17.0%, up 0.2% with a commensurate reduction for those married filing jointly. Additionally, those filing with 1 or 2 exemptions will pay a higher share, from 17.3% to 17.6%, up 0.3% and 34.0% to 34.7%, up 0.7% respectively, with those with 3 or more exemptions paying a lower share of taxes.

**Tax Impacts.** Comparing the single rate tax system to the dual tax system shows that nearly 90% of taxpayers realize reductions in tax liability, while 10% of tax payers realize moderate tax increases. One

**Figure D**  
Median Change in Income Tax



of the best methods of describing how the tax distribution changes is to compare how individual taxpayer's effective tax rates change en masse. At income levels below the beginning of the credit phase out, no tax is owed so the effective tax rate is zero. As income increases, taxpayers begin to pay a greater share of their income in taxes. The single rate system is progressive in nature. Those with little income pay little or no tax, but as income increases, taxpayers begin to owe a larger percent of their income in tax. Though those with the most income still pay the majority of the income tax, the

percentage of income any taxpayer is liable for is effectively capped at 5%, ultimately reflecting the flat nature of the single rate system.

### Summary

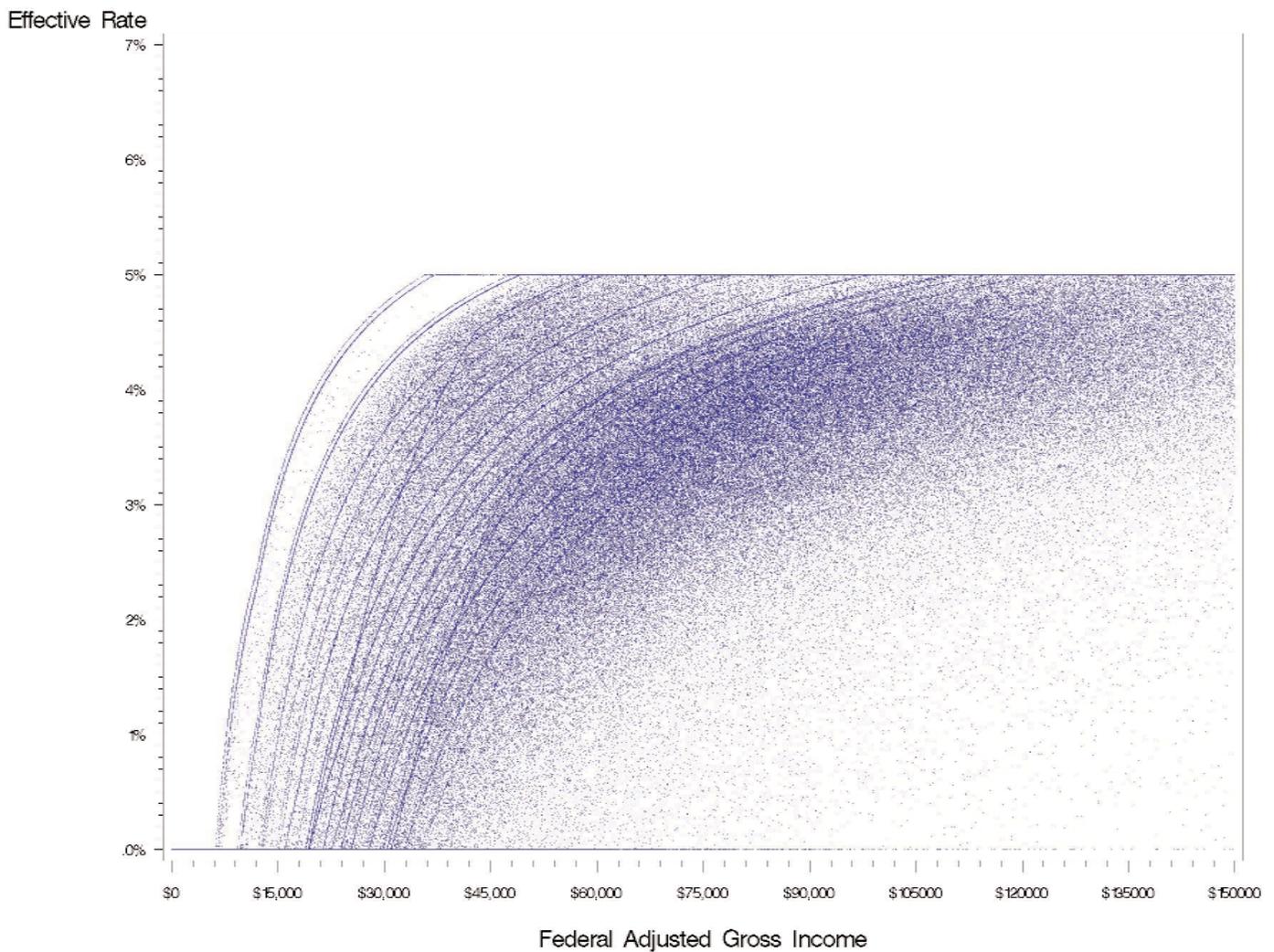
An integral component of the tax reform debate was modeling impacts of various tax proposals against the existing tax system. These models produced information which helped inform and guide policy makers in weighing the costs and benefits of changes to the individual income tax.

Models utilizing actual taxpayer records adjusted for timing changes simulated the impacts to individual taxpayers. Preliminary exploration of Utah's income dynamics resulted in improved forecasting of taxpayer income. Fiscal analysis estimated the impact to future revenues from tax changes. Volatility analysis determined the amount of risk mitigated by moving to an income tax with a larger

base and lower rate. The distributional analysis showed that tax reductions were roughly distributed proportionally to the amount of tax currently paid, though the system became marginally more progressive.

Tax reform in Utah has been a long and arduous process. It has required vigilance, patience, and even a bit of luck for it to be successful. Reforming the individual income tax system will be considered one of the major accomplishments of the Huntsman administration, as it competitively positions Utah long into the future. While income tax reform is largely complete, there are still areas of the tax system that require attention. Corporate income taxes, business input taxes, food taxes, and the sales tax on services must all be addressed in the future. These steps will help make Utah, a state that is strong and dynamic, even stronger and better able to adapt to a changing economy.

**Figure E**  
**2008 Single Rate Effective Income Tax Rates**



# **Historical Documentation**



## Introduction

Taxes exist to fund government services. However, they are often used to influence the behavior and decisions of individuals, firms, and governments. The composition of a tax system is generally analyzed from five perspectives: transparency, revenue sufficiency, equity, efficiency, and simplicity. A sixth perspective is administration of the tax system. These principles are often in conflict with each other and result in difficult trade-offs. Some very simple tax systems lack equity or fairness. Other tax systems could be efficient, but not raise enough revenue to meet the demand for public services. The overall tax system is a result of balancing these competing principles in a changing world and economy. This report will address the major milestones of Utah's recent tax reform.

This report reviews the changes of Utah's tax structure that have occurred during Governor Huntsman's administration. Key to the Governor's Plan for Economic Revitalization for Utah was improving Utah's tax structure.

The purpose and components of the tax system are reviewed. A brief history of Utah's taxes is provided along with the main components of the Utah tax system. Also included is an assessment of the structure of the tax system upon Governor Huntsman's entrance to office.

A short history of recent tax reform proposals and subsequent legislation shows the evolution of the tax reform to current date. The major steps accomplished in this reform period are covered:

- Recommendations from Governor Huntsman's Plan for Economic Revitalization for Utah.
- Assessment and recommendations of Governor Walker's tax advisors.
- The 2005 General Session: a focus on the corporate income tax and the establishment of the Tax Reform Task Force.
- Goals and Recommendations of the Tax Reform Task Force.
- The 2006 General Session: a focus on the income tax reform, reducing sales tax on food, and removing sales tax on business inputs.
- The 2006 Special Session: establishment of a dual tax system with a flat tax.
- The 2007 General Session: creating a single rate tax system, reducing sales tax on food, and other business tax changes.
- A summary of the tax reform impacts to the state.

Additionally, this report will briefly discuss potential reform that would continue to enhance the state's tax system.

## Utah's Tax System

In 2005 the Utah tax system was comprised of four main taxes: sales

and use tax, individual income tax, corporate income tax, and property tax. Together these taxes raised billions of dollars to support and sustain government services at the state and local levels.

## Sales and Use Tax

The sales and use tax is a charge, often a percent of the price, due for the purchase or use of a good or service. In response to a need for revenue in 1933, the Utah Legislature adopted a sales tax on the retail sales made within the state.

The tax was structured by defining the rate at which certain goods and services should be taxed. The sales tax became one of the main funding mechanisms of state services. It has been modified over time to change the base (which goods or services are taxable), the rates at which those items are taxed, and the recipients of the revenue generated. The rate has changed numerous times, remaining at 2% for roughly 30 years, while increasing to around 6.5% (state and local) on most taxable items during last 35 years. The base has also changed through time. At inception, the base excluded goods or services sold to governments or charitable organizations, also excluded were property and other constitutionally prohibited items.

As of 2005, there were many more exclusions (e.g., sales of medicines, new manufacturing equipment, and coin operated services) for a variety of reasons including equity, efficiency, and administrability. The sales and use tax has been flexible in generating revenue, though equity issues exist due to a regressive nature. The tax likely distorted some economic efficiency and could be considered less transparent than alternative taxes as taxpayers internalize the cost of the tax into the price of goods and services. The tax structure also became quite complex, translating into difficult administration.

## Individual Income Tax

An individual income tax is levied as a percent of a person's income. In response to a need for revenue in 1931, the Utah Legislature levied a tax on the income individuals earned through their labor and capital.

The structure of the tax initially relied on exemptions coupled with moderate graduated rates: a taxpayer would calculate what income was subject to tax (the base) and then apply the various rates to this taxable income to arrive at the tax due. The first \$1,000 of taxable income was taxed at 1.00%, the next \$1,000 at 1.25%, up to 4% after \$8,000. In the intervening years, the state modified the tax rates and exemptions, added new deductions and credits, passed constitutional amendments restricting the use of revenues to education, mandated withholding from wages, and tied the system closely with the federal income tax.

By 2005, Utah's income tax system of deductions and graduated rates had been compressed due to inflation with the vast majority of taxpayers located in the top bracket paying at a top rate of 7%. The income tax has been quite flexible at generating revenue, though it was a revenue stream bearing more risk than alternative taxes due to fluctuations in income. As a tax on productive activity, it may have skewed labor or capital investments, reducing economic efficiency. It was designed to be progressive through increasing graduated rates, which required those with higher income to pay a larger share of the tax. As a complicated tax, it may have impaired transparency result-

ing in more difficult administration in complying with and collecting the tax.

### **Corporate Income Tax**

A corporate income tax charges firms for a percent of their profit. Utah enacted a tax on corporations at the same time as the individual income tax in 1931 intending to raise revenue and charge businesses for the "privilege of doing business in the state."

The structure of the tax was designed to calculate liability based on a corporation's Utah apportioned net income, what was left of revenue after paying for the costs of doing business, or some minimum amount. The tax began at either 3% of Utah's apportioned profit or at \$10. The rate, minimum tax, and methods of apportionment changed over time as the tax adjusted to a changing economy, with the rate moving between 3% and 6% as the minimum tax increased to \$100.

The most difficult and complex issue regarding the corporate tax since its inception has been how to calculate the profits generated in Utah. For a company exclusively based in and operating within the borders of Utah, apportionment is not an issue because all revenue and expenses, and hence profits occur within the state. Most, if not all, corporations generate revenue or incur expense outside of Utah's boundaries. What then constitutes profit by political boundaries is a difficult, if not impossible question to resolve. In an effort to mitigate and resolve disputes under calculating the proper tax base, Utah joined the Multi State Tax Compact, which facilitates how to make the proper calculations.

In 2005, the corporate tax rate was 5% and the apportionment was calculated by taking the sum of the ratios of Utah and U.S. payroll, property, and sales. The corporate tax lacked transparency due to the difficult nature of calculating the tax base. Additionally, it is difficult to determine exactly where the incidence of the tax falls as individuals end up paying the corporate tax, whether they are the owners of capital or the consumers of goods and services. However, corporations consume public goods and services and the tax attempted to balance equity with respect to individuals. Because of the application of the tax, it could discourage business that would otherwise occur. The tax, though simple in principle, was complex and required costly administration by corporations and governments. The revenue generated by the tax fluctuated wildly, and though large as a share of revenue at inception, the tax has come represent only a small proportion of total state revenue.

### **Property Tax**

The property tax is a charge for possessing wealth and has been the main vehicle of taxation throughout recorded history. The property tax was the only tax instituted within Utah's Constitution and provided the vast majority of state revenue until the Great Depression.

The structure of the tax has been to provide "a uniform and equal rate of assessment and taxation on all property in the state, according to its value in money." At inception, various exemptions were granted for property owned by government or charitable and religious organizations. The calculation of the tax comprised two steps—determining value and applying the rate; the critical and often

disputed step being the assessment of value. In general, the value is taken to mean the fair market value, or the money the owner could receive if he or she were to sell the property.

The property tax has changed dramatically over the last century because of reduced costs in administration and record keeping as the state strove to meet its constitutional obligation. Over time, the state granted more exemptions, instituted rules in calculating assessment, redirected the revenue streams from the tax, and applied rules regarding how the tax can grow.

By 2005, the property tax was a significant and stable funding mechanism at the local level of government, including school districts. The public sentiment regarding the tax was generally quite negative. This could stem from the difference in income and wealth. A taxpayer with lower income might not be able to afford the tax on the wealth and would need to sell a property in the extreme case to pay the tax. Regarding equity however, the tax generally supported local services so it could be considered equitable in that the users of such services paid for them. The tax was transparent, being due once a year, though various exemptions may have obscured the transparency. As regards efficiency, it may be considered the most efficient tax. The administration of the property tax is extremely difficult because of changing markets and valuation, notwithstanding its apparent simplicity.

### **Tax Reform Proposals and Analysis Huntsman Plan**

One of the driving principles in the Huntsman Plan for Economic Revitalization for Utah was revamping the tax structure in order to compete with other U.S. states (see Appendix A for the plan's executive summary). The goal to modernize the tax structure would help attract and retain vital industry within the state.

Governor Huntsman proposed improving the tax structure in order to create a more business-friendly environment that would allow for more effective recruitment of high-paying jobs while enhancing the development of the state's economy. He proposed a number of measures to meet these goals, including: improvements in the way local governments recruited business; elimination of the corporate income tax; diversification of tax incentives; revision of research and development credits; elimination of the sales tax on food; modifying how capital gains and dividends are taxed. Governor Huntsman's proposed changes to the tax structure would make Utah more competitive with other U.S. states. Competitive incentives would attract new high-paying jobs and ensure that current jobs stay in Utah. Economic growth would increase revenue and provide more funding for public education, while historically volatile sources of revenue would be replaced with more stable sources.

### **Walker Tax Recommendations**

Under the direction of Governor Olene Walker in 2004, a group of tax advisors analyzed and proposed changes to Utah's tax system to meet the needs of the changing economy and citizens of Utah. Their recommendations generally advocated broadening the tax base and lowering tax rates. Specifically, the task force recommended adoption of a flat individual income tax system with a broad base and low rate. Complete repeal of the corporate income tax was sug-

gested. They recommended a uniform statewide consumption tax, exempting purchases for business inputs. This would avoid the compounding of sales tax through the chain of production while increasing economic efficiency. They also suggested broadening the sales tax base to include services. They also recommended an increase in the property tax to restore the relative importance of the three main funding streams while keeping the overall tax system revenue neutral to produce enough revenue to meet the needs of Utah's citizens. Appendix B contains the executive summary of Governor Walker's Recommendations on a Tax Structure for Utah's Future.

## **Tax Reform Actions**

### **2005 General Session**

In the 2005 General Session, Governor Huntsman and the Legislature set out to create a more attractive business environment and to study alternatives to the current tax structure. The Legislature passed House Bill 78, which reduced the tax burden and established a task force to study tax reform and make future recommendations. To attract corporations to Utah, House Bill 78 provided corporations with the option of double weighting the sales factor in the apportionment formula used to compute corporate tax payments, benefiting firms with large out-of-state sales. National companies would be more inclined to come to Utah, thus bringing economic growth and jobs. The task force was charged with studying taxes and making recommendations for future tax policy.

### **Tax Reform Task Force**

The task force began by adopting guiding principles; it then held public hearings, deliberated in working groups, and held over 50 meetings, comprehensively studying the existing tax system.

The task force adopted 16 draft bills and six concepts to reform the state's tax system. Specifically, it proposed to alter the individual income tax based on federal adjusted gross income, with a single rate of 5%, and credits to allow for equity. It proposed modification of the corporate income tax by allowing an electable single sales factor to be used as an alternate apportionment formula, which would improve the competitive position of corporations exporting goods and services outside of Utah.

It also proposed altering the sales tax in three significant ways: eliminating the sales tax on food on equity grounds; exempting business inputs to increase economic efficiency; and unifying the various sales tax rates into a single statewide rate.

Additional exemptions would be added to the property tax, easing the administrative burden of tracking business personal property, while expansion of tax credits for the elderly and poor would improve equity. Clarifying the rules regarding how local governments could change property tax rates would allow for greater transparency in the process.

In all, these proposals represented significant changes to the way in which firms, individuals, and governments would be affected by the tax system. Appendix C contains a more detailed overview of the task force's recommendations.

### **2006 General Session**

During the 2006 General Session, the focus was to reduce the sales tax on food and business inputs, and reforming the income tax. The 2006 Legislature passed House Bill 109, Sales and Use Tax - Food and Food ingredients. House Bill 109 reduced the 4.75% state sales tax on unprepared food by 2%. Senate Bill 242 attempted to simplify the tax code by applying a single lower rate of 4.975% while providing tax credits for equity reasons for mortgage payments or home ownership and charitable contributions, in addition to a taxpayer credit which phased out as income increased. Senate Bill 242 stalled in the House and failed to pass.

Several Senate bills (including 29 and 31) passed, thus reducing the sales tax on certain manufacturing and telecommunication business inputs, creating more economic efficiency.

House Bill 358 exempted certain business personal property from the property tax while other bills expanded property tax credits to seniors, modified sales tax distribution to cities, clarified rules regarding truth in taxation, and modified the scope, breadth, and use of local redevelopment agencies.

The debate regarding many of the proposed tax reforms began in earnest during the 2006 General Session and was to continue in the future.

### **2006 Special Session**

Governor Huntsman called a special session of the Legislature in September to address the income tax system and funding for transportation. The Legislature enacted a dual tax system, overlaying an optional flat tax upon the existing graduated rate system. Under Senate Bill 4001, an optional flat tax at 5.35% of adjusted gross income was instituted. Additionally, the traditional tax system was modified by expanding, and inflation indexing the brackets while lowering the top marginal rate of 7.00% to 6.98%. Taxpayers would calculate the income tax using both methods and choose the lesser of the two, with nearly all taxpayers receiving some kind of tax reduction. While lower income taxpayers received a larger percent tax reduction, higher income taxpayers generally received a larger dollar amount of tax cuts due to the change in the top bracket and the new flat tax option. Roughly 5% of taxpayers were projected to benefit from switching to the flat tax system.

Senate Bill 4002 authorized counties of any size to impose an additional quarter cent sales and use tax for transportation. This tax would be imposed if a majority of county voters approved the increase and would be utilized for whichever transit or transportation project improved the transportation system most. It also reserved a quarter of the money raised to be used in the acquisition of corridor preservation.

### **2007 General Session**

An omnibus tax bill reformed much of Utah's tax system in the 2007 General Session. Senate Bill 223 provided for a new individual income tax system, a reduction in the general sales tax and a further reduction of the sales tax on food, combined with several business tax changes to promote economic efficiency and equity.

The traditional bracket system with graduated rates was replaced with a single rate income tax of 5%. A credit was designed to equitably distribute the tax burden across income earners based on a percent of federal exemptions and deductions that phases out as income increases.

The general state sales tax was reduced from 4.75% to 4.65% and the state sales tax on food was further reduced from 2.75% to 1.75%.

Businesses benefited from the general sales tax reduction, expanded credits for research and development, with the reduction of certain gross receipts taxes. These significant reforms reduce the tax burden on Utah citizens and businesses, improving the environment in which businesses and individuals thrive and grow.

### **Tax Reform Summary**

During Governor Huntsman's current term of office, significant tax reform has been enacted, thus positioning the state for continued economic growth for the coming decades. In a span of four years, the state's major taxes have been modified to provide for a more dynamic tax system.

The individual income tax has moved from a bracketed system with graduated rates, the top rate being 7%, to a single rate system of 5% (see Appendix D for a visual summary). The income tax reform, in total, will reduce revenues by approximately \$190 million in the individual income tax in 2008; reduce growth in the tax marginally, while decreasing the volatility in revenue collections if economic growth slows. Additionally, it provides a more competitive tax rate, while improving horizontal and vertical equity slightly with more transparent credits than current deductions and graduated rates. Overall, the tax becomes simpler and easier to administer.

The sales tax was modified to improve economic efficiency and equity. The main thrust removed much of the sales tax on unprepared food, a regressive tax. Additional sales tax exemptions were granted to business purchases involved in the production of certain goods and services. The general sales tax rate was also reduced, resulting in sales tax reductions of \$160 million in 2008.

The corporate income tax was modified to allow for a double weighted sales factor in the apportionment factor, and other business tax changes designed to improve efficiency and competitiveness totaled roughly \$50 million in 2008.

The property tax was altered to more tightly control how redevelopment funds were utilized, how property tax rate changes were communicated to taxpayers, while granting exemptions to businesses for insignificantly valued personal property, and providing additional credits for the low income and elderly. In addition to these reforms, over 80 tax bills were enacted by the Legislature (see Appendix E for a complete list).

These reforms provide for improvements in transparency, revenue sufficiency, efficiency, equity, simplicity, and administration. The tax system helps prepare the state for the challenges and opportunities in an ever changing and competitive world.

### **The Next Step: Tax Reform Beyond 2007**

While much has been done to reform the Utah tax system, there is still more that can be done. Some changes are possible in a one or two year time frame, while others will require a longer time horizon. The ability to make changes will also depend on the availability of tax revenues and the willingness of legislators to make changes to the tax system. Below is a list of possible changes to the Utah tax system with a brief description of each.

#### **Income Tax**

**Individual Income Tax.** Most of the effort over the past two legislative sessions has been in the area of the individual income tax. The reform efforts have resulted in a system that is simpler, less volatile, and with a rate at 5%, provides a more attractive economic development incentive to corporate executives and business decision makers.

One action that will make the individual income tax even stronger in Utah is dropping the rate below 5%. This is not easy or inexpensive. Each drop of 0.01% in the income tax rate reduces revenues by approximately \$7 million. In other words, a rate drop from 5% to 4.95% will result in a revenue reduction of approximately \$35 million to the State of Utah. However, dropping the income tax rate is an important step in ensuring that Utah remains competitive with other states in the intermountain west.

Another reform option on the individual income tax is addressing the existing tax credits. In order to guarantee support and passage of income tax reform, it was necessary to include all the income tax credits that existed in the old graduated tax system. These credits are an inefficient method of encouraging behaviors in society and they cause complexity in the tax system. The Legislative Master Study List, which delineates the major issues for the next legislative session, cites developing methods for switching these credits to other funding mechanisms as a priority.

**Capital Gains Tax.** The capital gains tax is part of the individual income tax system. It is a tax that is imposed when an individual realizes gains on the sale of an asset. This is often in the form of an equity or real estate holding. Reducing or eliminating the capital gains tax encourages economic growth by lowering the cost of investing. However, under the new single rate income tax system, it would be necessary to introduce a new deduction or credit to accomplish this goal. This would be inconsistent with other goals of tax reform, especially removing the remaining tax credits.

**Corporate Income Tax.** The corporate income tax remains a deterrent to business investment in the state. It discourages businesses to relocate or operate in the state and many other states in the country are taking steps to reduce this tax. Additionally, it provides a very volatile revenue stream to the state which exposes the budget to a large amount of risk. In 2005, Governor Huntsman supported legislation that would have entirely eliminated the corporate income tax. This legislation did not pass because stakeholders and policymakers expressed concern about the effect of intangible assets to the tax system. Entirely eliminating the corporate income tax would have triggered a provision in the Utah Constitution requiring the taxation of intangible assets. The repercussions of this effect could have been enormous.

As an alternative to the entire elimination of the corporate income tax, allowing businesses the option of filing income taxes based on a single sales factor would provide a large economic benefit. This change would encourage businesses that export goods or services to locate in Utah, thus providing a large benefit to the state. This proposal is supported by the Utah Taxpayers Association and by business groups throughout the state. The drawback of this proposal is the cost. Currently, the State of Utah is receiving around \$400 million in revenue from the corporate income tax. To allow the election of a single sales factor could reduce income tax revenues by half of the total amount collected.

### **Sales Tax**

**Sales Tax on Food.** The removal of the sales tax on food has been a top priority of the Huntsman administration and of the current Speaker of the House. During the 2007 General Legislative Session, this tax was lowered from 2.75% to 1.75% for a cost of \$40 million. To entirely remove the remainder of this tax would cost approximately \$80 million to the General Fund. This proposal has been opposed by the Senate because of the view that it does not help economic development in the state. However, this tax is viewed as regressive, impacting lower income taxpayers more than higher income taxpayers. Its removal is viewed as a matter of increasing equity in the tax system.

**Business Inputs.** Lowering or removing taxes on business inputs encourages economic growth by lowering the cost of a business producing a good. By lowering the tax on the inputs to production it is less expensive to produce a final product, consumers pay lower prices for goods, and business will expand or increase the amount of goods produced. The Senate has been very supportive of reducing or removing taxes on business inputs in the past and the past several legislative sessions have included reductions to various business inputs.

**Single Statewide Sales Tax Rate.** Adopting a single statewide sales tax rate is a way of equalizing tax collections among all entities within the state. This is an important part of bringing Utah into compliance with the national Streamlined Sales Tax agreement, which would allow Utah to collect taxes on many internet purchases. The drawback of this proposal is that it could cause financial hardships to some local governments.

**Motor Fuel Tax.** Right now, the motor fuel tax is a unit tax. Regardless of the price of gasoline, the amount collected per gallon sold remains the same. Incorporating a sales component into the motor fuel tax would allow revenue collections to fluctuate with the price of gasoline. The benefit of this change is that as inflation causes the price of gasoline to increase, the amount of revenue collected also increases. The drawback of this change is that the overall revenue source becomes more volatile, fluctuating as the price of gas fluctuates. One alternative would be to retain the existing per-unit tax and impose a small sales tax on purchases of motor fuel. This would maintain stability through the per unit tax while allowing the revenue stream to increase with inflation.

**Sales Tax Distribution.** The distribution of sales tax revenue to local governments remains an ongoing discussion item in the legislature and it has been identified as a study item for the 2008 General

Session. Currently, sales tax revenue is distributed to cities according to a formula that includes population and tax receipts. The result of the tax receipts component of this formula is that many cities engage in "zoning for dollars." The term zoning for dollars describes the action of cities competing for retail business to increase their sales tax revenue. Ultimately, this results in a zero sum game to the economy, shuffling money between cities as they compete for retail centers. The Walker Tax Advisors recommended changing the sales tax distribution formula to being entirely based on population, with little or no point of sale component in the formula.

**Taxing Services.** The Utah economy, as well as the U.S. economy, is becoming more of a service-based economy. As this transition continues, the sales tax is collecting revenues on a smaller proportion of the overall economy, because the sales tax is only tied to the exchange of goods, not the exchange of services. Eventually, it will be necessary to extend the sales tax to the purchase of services in the economy. Moving to a sales tax on services was one of the main recommendations of the Walker Tax Advisors. Several states have already begun this process and it is something that Utah will need to do to maintain a dynamic tax revenue portfolio. However, this proposal is very controversial and it engenders much debate. It is not something that will be accomplished easily or quickly.

### **Property Tax**

**Basic Levy.** The basic levy is a state funding source of public education tied to the property tax. Because of rapid home price appreciation during the 1970s, the state required local taxing entities to hold public hearings in order to raise property taxes. Without a public hearing, the property tax rate must be set lower as values appreciate in order to keep taxes from rising on specific properties. The intent is to limit revenue growth to taxes levied on new property. Taxes on existing property should not rise, without a public hearing. The basic levy, however, is a state tax set by the Legislature, but remitted to the school districts. Current statute guides the Legislature to lower the basic rate as property values rise. School funding advocates argue the basic rate should be kept constant in statute, so school revenue would increase with property values. They argue that school districts already do this, and the state should follow, to maintain current funding streams. To keep taxes on specific properties from rising, business and homeowner advocates argue the current procedure should not be changed.

### **Conclusion**

Tax reform in Utah has been a long and arduous process. It has required vigilance, patience, and even a bit of luck, for it to be successful. Reforming the individual income tax system will be considered a major accomplishment of the Huntsman administration, as it competitively positions Utah long into the future. While income tax reform is largely complete, there are still areas of the tax system that require attention. Corporate income taxes, business input taxes, food taxes, and the sales tax on services must all be addressed in the future. These steps will help make Utah, a state that is strong and dynamic, even stronger and better able to adapt to a changing economy.



# **Technical Analysis**



## Technical Introduction

Technical analysis has been central to the recent tax reform debate in Utah. The technical analysis encompassed a variety of simulation and statistical modeling to predict how changes to Utah's tax system would impact individual taxpayers, businesses, and the state's revenue streams. At the national level, similar tax models are utilized by the Treasury Department, Congress's Joint Committee on Taxation, the Congressional Budget Office, and various advocacy groups to analyze the impact of proposed changes to the nation's tax system. During the last four years, several state agencies: The Legislative Fiscal Analysts Office; The Office of Legislative Research and General Counsel; The Utah State Tax Commission; The Governor's Office of Planning and Budget; and various working groups: Governor Walker's Tax Advisors; tax advisors to Governor Huntsman; The Tax Reform Task Force; The Tax Review Commission; produced analyses covering a wide range of taxes. In general, the work was conducted independently, though many parties collaborated in the design of many of the tax models.

The purpose of this section is to provide an overview and description of the analysis conducted by the Governor's Office of Planning and Budget throughout this process. An effort will be made to document, in detail, the tax models' assumptions, procedures, and results that contributed to the tax reform debate. In containing the scope of this document, analyses that were tangential to the models in question will be mentioned, but dealt with cursorily.

A model is a simple version of reality. In common experience, a street map is an example of a model that strips reality down to a few essential facts to assist people in knowing where they are; informing them how they can get to another location. Models permeate every discipline and subject matter from the universe at large, to the tiniest atom: weather forecasts; heart surgeries; airplane flights; stocking grocery store shelves; cooking meals; determining interest rates; building houses; all rely on the formation and application of useful models. Tax models are useful tools that provide critical information to policymakers in the formation of tax policy.

A tax model is generally comprised of two elements: data and instructions to transform the data into useful information. The quality and relevance of the data, combined with the accuracy and transparency of a model's instructions make a tax model useful. The production of good data and clear instructions is not a trivial matter; there exists no black box containing an omniscient spreadsheet with the sales, income, and property tax every individual, household, or business paid to the government.

Organizing the relevant data from disparate administrative records, if available, is a complicated task. Because policymakers require information to weigh proposed tax changes with future budgets, the historical data that is compiled can, at best, serve as a proxy for future data that does not yet exist. Instructions, in the form of computer programs, have the ability to augment this historical data with future expectations to produce a representative composite of future taxpayers. Additional computer programs utilize these projected data by applying the tax code, or potential tax code to calculate future taxes. Further programming culls from massive amounts of data the aggregate effects, or a wide variety of other statistical measures regarding the structure or incidence of a given tax or tax

change. In sum, tax simulation models are excellent tools that consolidate vast amounts of information into a rational framework that describe how tax policy impacts the individuals, businesses, and governments in an economy.

In preparation for the 2006 Utah General Legislative Session, the Governor's Office of Planning and Budget began analyzing various tax proposals in the fall of 2005 based on the proceedings of the Tax Reform Task Force. Initial analysis focused on changes to the individual income tax. The goal of the initial analysis was to determine how the potential tax changes were distributed among different groups of taxpayers.

## Initial Data

The tax system relies heavily on the voluntary compliance of taxpayers; as such, their data is guarded by strict confidentiality laws at the federal and state levels. Improper disclosure of tax data is a felony and can result in significant fines and jail time.

**Table 1**  
**Aggregate Data Set Metadata**

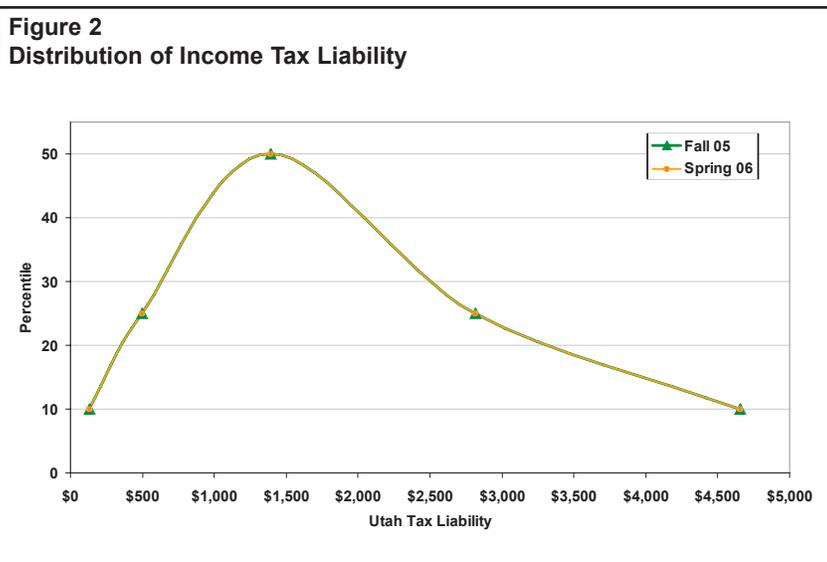
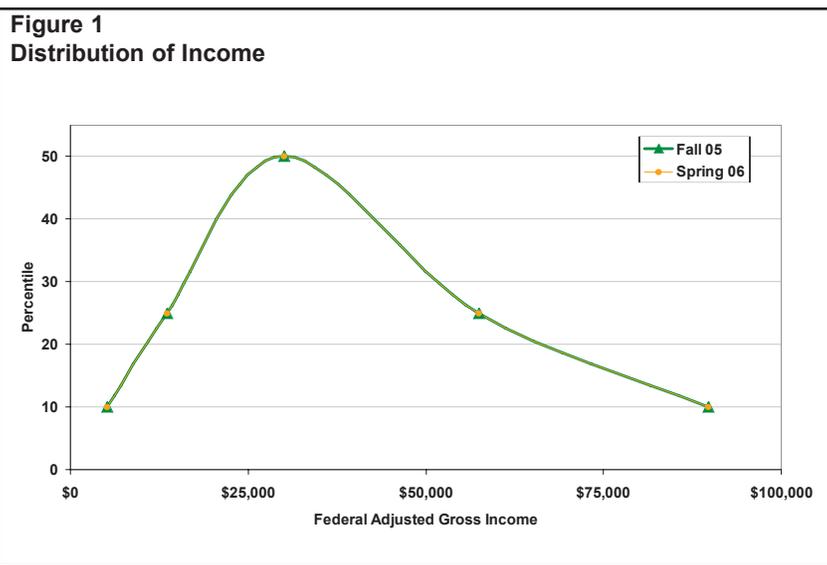
Variable	Description
EXEMP	Personal exemptions
FS	Filing status
NUMCLAS	Category variable used to bin tax payers into groups
_FREQ_	Total number of taxpayers summarized
EIC	Federal earned income tax credit
FAGI	Federal adjusted gross income
HANDICAP	Additional exemptions for disabled dependents
MODAGI	Modified adjusted gross income
NATIVE	Native American income
NRUTI	Non-resident Utah taxable income
RR	Railroad retirement
TOTCONTR	Charitable contributions in itemized deductions
TOTINT	Mortgage interest deductions in itemized deductions
TOTITM	Total itemized deductions
USINT	US interest income
UTAX	Utah tax liability
WITH	Utah tax withheld
STATEREF	State tax refund reduction
SEIC	Federal earned income tax credit
SFAGI	Federal adjusted gross income
SHANDI	Additional exemptions for disabled dependents
SMODAGI	Modified adjusted gross income
SNATIVE	Native American income
SNRUTI	Non-resident Utah taxable income
SRR	Railroad retirement
SSTATR	Charitable contributions in itemized deductions
STOTCONT	Mortgage interest deductions in itemized deductions
STOTINT	Total itemized deductions
STOTITM	US interest income
SUSINT	Utah tax liability
SUTAX	Utah tax withheld
SWITH	State tax refund reduction

In place of the actual tax records, the best alternative was to use the smallest statistical summaries of tax information available. The Utah Tax Commission aggregated and averaged information from 2004 individual income tax returns at the state and federal level by every 10 taxpayers. The state data comprised information collected from processing tax returns through the middle of October 2005. These data were assembled by manually entering data from paper forms or by storing the information from e-returns. The IRS assembled similar files for the federal returns from Utah containing the sources of income, the composition of itemized deductions, and other relevant tax information for each taxpayer. Each taxpayer's data were merged together on an IBM mainframe utilizing SAS software. The combined file of resident returns was sorted by filing status, number of exemptions, and income to average the income and tax liability of every 10 taxpayers to produce a data set of approximately 92,000 records to proxy for the entire taxpayer population.

The information available in this data set is represented in table 1. In addition to income and taxes paid, other information was summarized, including: the federally mandated deductions from income; components of itemized deductions; the amount of tax withheld; and the state tax refund reduction included in federal taxes. In addition to calculating the mean values for income, tax liability, and the other measures, the standard deviation for each group of records was also computed to provide a measure of dispersion among the values for a given group of taxpayers.

The total federal adjusted gross income, Utah tax liability, and the number of exemptions derived from this data set is compared with the official statistics, produced in March 2006, in table 2. The difference in the data, 3.9% for income, 1.3% for tax liability, and 0.4% for personal exemptions is largely accounted for by differences in timing, e.g., those that filed for late extension. As more records are processed, total aggregate income, tax liability, and exemptions increase. The distribution of income and tax liability is compared in figures 1 and 2 for these time periods.

The use of these data presented certain challenges in modeling. These records proxy well for individual taxpayers when everyone summarized in a given group is similar. How taxpayers are sorted into groups is essential in creating useful data to analyze. Regardless of how well the data is sorted, there is much variation in the individual



characteristics of a group of taxpayer's data. Treating each summary record as a proxy for an individual taxpayer could induce bias in the results. Subsequently, analysis produced from this model was treated as an additional tool to augment the other tax models that were being utilized by other agencies to describe the impacts of tax reform.

### Initial Analysis

To compare the impacts of proposed tax changes to resident taxpayers a micro simulation model was built using PC SAS. After importing the data produced on the mainframe, a number of tests were run to explore the data. The distribution of filing status was compared with the official statistics; additive data was checked to ensure there was no error in the data compilation; the distribution, sum, mean, median, and extreme values of all the numeric variables were reviewed, in addition to the coefficients of variation for each record. Application of various tax reform proposals followed with descriptive analysis of the results.

The initial tax reform proposals discussed by the Tax Reform Task Force altered the individual

**Table 2**  
**Income, Tax, and Exemption Summary**

	Aggregate Data Set Fall 2005	Official Statistics Spring 2006	% Change
Federal Adjusted Gross Income	\$42,090,077,845	\$43,723,611,414	3.9%
Utah Tax Liability	\$1,717,330,261	\$1,739,921,709	1.3%
Personal Exemptions	2,129,129	2,137,055	0.4%

**Table 3**  
**Home Ownership in Utah by Income**

1999 Income Categories	2004 Share of AGI	Renter	Owner	Probability
Less than \$5,000	Less than 2.29%	9,751	6,310	39.3%
\$5,000 to \$9,999	2.29% to 6.03%	16,307	9,933	37.9%
\$10,000 to \$14,999	6.03% to 10.94%	18,043	16,361	47.6%
\$15,000 to \$19,999	10.94% to 16.54%	19,692	19,570	49.8%
\$20,000 to \$24,999	16.54% to 22.84%	21,194	23,002	52.0%
\$25,000 to \$34,999	22.84% to 36.09%	37,416	55,479	59.7%
\$35,000 to \$49,999	36.09% to 55.01%	37,471	95,227	71.8%
\$50,000 to \$74,999	55.01% to 77.51%	26,219	131,602	83.4%
\$75,000 to \$99,999	77.51% to 88.85%	7,597	71,934	90.4%
\$100,000 to \$149,999	88.85% to 96.36%	4,271	48,370	91.9%
\$150,000 or more	96.36% or more	1,661	23,871	93.5%
All Households		199,622	501,659	71.5%

Source: US Census Bureau, 2000 Decennial Census, Utah HCT35

**Table 4**  
**Household Sales Tax on Food**

Income	Persons				
	1	2	3	4	5.6
\$5,000	\$80	\$77	\$76	\$58	\$58
\$15,000	\$102	\$84	\$71	\$68	\$59
\$25,000	\$109	\$88	\$71	\$68	\$54
\$35,000	\$117	\$97	\$78	\$68	
\$45,000	\$119	\$109	\$75	\$70	\$54
\$60,000	\$130	\$110	\$86	\$76	\$58
\$75,000			\$88		
\$90,000			\$88		
\$110,000	\$144		\$109		
\$120,000		\$134		\$87	
\$125,000					\$73
\$135,000			\$120		
\$228,000			\$127		

Source: Bureau of Labor Statistics: 2004 Consumer Expenditure Survey, compiled by the Utah Office of Legislative Research and General Counsel.

**Table 5**  
**Regression Models**

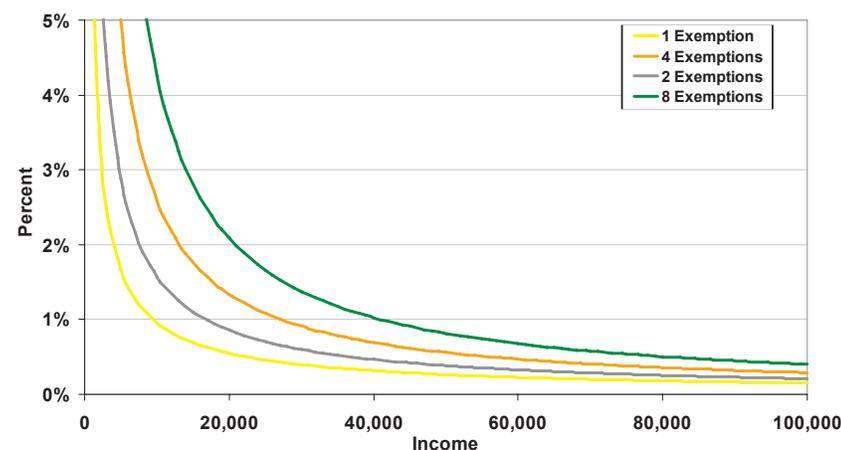
$$\text{Sales Tax} = e^{(\beta_0 + \beta_1 \log(\text{Income}))}$$

Exemptions	$\beta_0$	$\beta_1$
0	2.336	0.1975
1	2.741	0.1975
2	3.928	0.1226
3	4.623	0.0788
4	5.116	0.0477
5	5.498	0.0236
6	5.810	0.0039
7	6.074	-0.0127
8	6.303	-0.0271
9	6.505	-0.0399
10	6.685	-0.0512

income tax by expanding the tax base and lowering the tax rate. Under various iterations, these proposals ranged from flat taxes on federal adjusted gross income to single rate tax systems with portions of the prior deductions or credits retained. During the 2006 General Legislative Session a tax framework was designed around a single rate tax system. The legislation, Senate Bill 242 (SB242), moved the tax base away from federal taxable income to federal adjusted gross income by repealing or modifying the additions and subtractions to income and the standard deductions. The system also created and modified several credits based on the filing status, number of personal exemptions, charitable contributions, home ownership, and income levels of the taxpayers.

In order to simulate the proposed tax system, additional data needed to be applied to the aggregate data. As table 1 indicated, there was no variable in the data indicating home-ownership, nor was there such a variable in the individual income tax data collected by the state or federal governments. Administrative records contained the mortgage interest taxpayers elected to deduct from income, but only 40% of taxpayers itemized their deductions. Many taxpayers owned homes outright, or had mortgages small enough to utilize the standard deduction. The proposed

**Figure 3**  
**Sales Tax on Food as a Percent of Income**



tax credit was based on home ownership, but the data did not specify who owned homes. In order to ascertain a realistic incidence of the distribution of tax changes, statistical measures were used to impute home ownership among taxpayers by utilizing information from the 2000 Decennial Census.

The taxpayer records were categorized into 11 groups based on their cumulative percent of federal adjusted gross income. In the first instance, homeownership was assigned based on the deduction of mortgage interest to determine initial frequencies of home ownership for the different income groups. Data from Utah's tenure by household income in 1999 series (HCT35) were merged to this data set to assign the remaining homeownership. In this step, the implied probability of home ownership from the census sample, table 3, was sub-

Figure 4 Sample from Compendium: Taxpayers by Type of Tax Change with Food Tax

### Plan H3200400100300

Tax Rate=.05 | Credits: Household=\$200; Family=\$400; Individual=\$100 Phase Outs at 30x to 70x the credit  
 Eliminated Grocery Sales Tax=N; \$300 Home Owner Credit or 50% Mortgage Interest; 50% Charity -85 m = 2004 Magnitude Shift

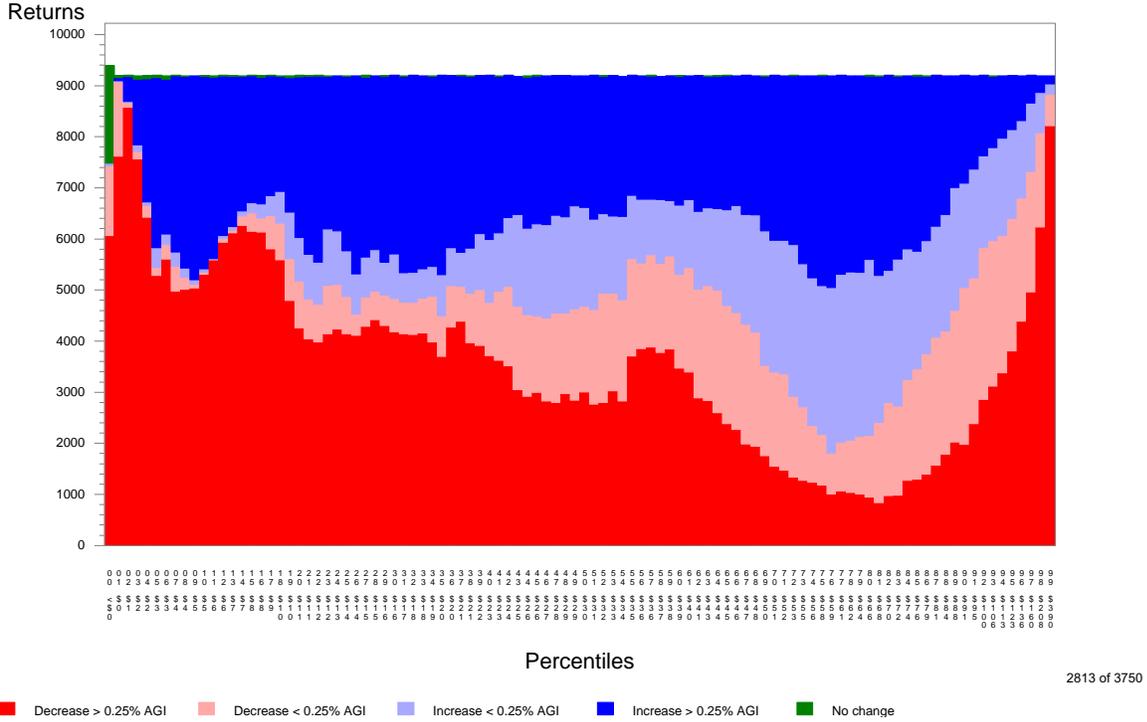
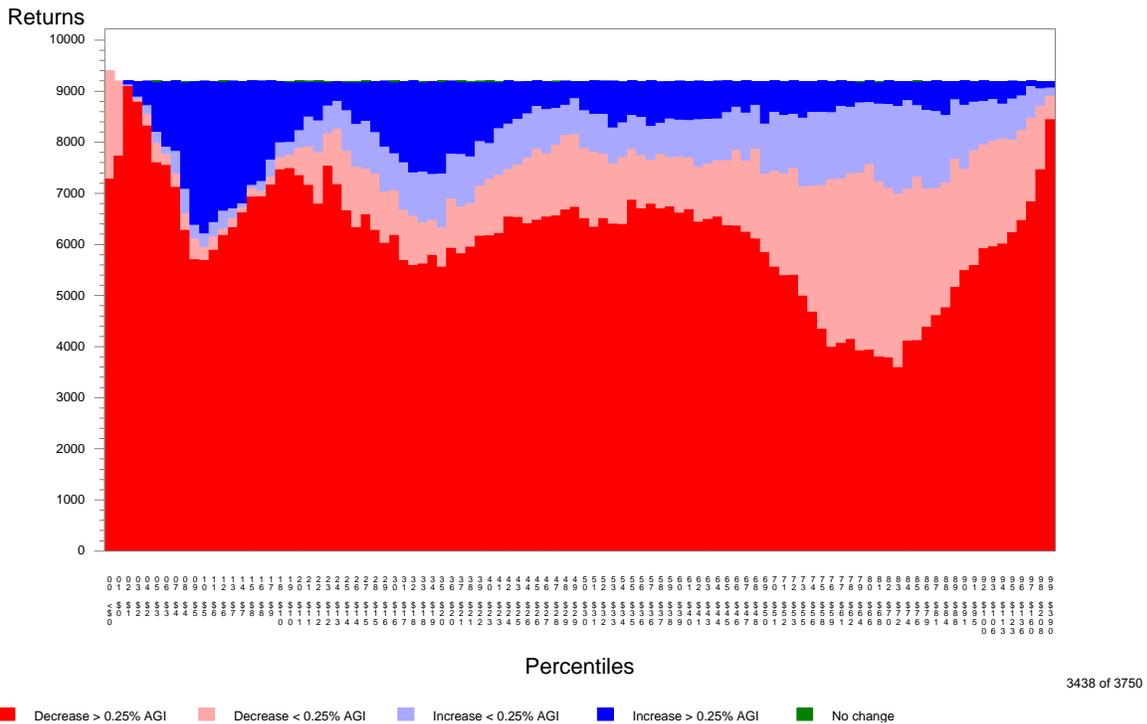


Figure 5 Sample from Compendium: Taxpayers by Type of Tax Change without Food Tax

### Plan H3200400100300

Tax Rate=.05 | Credits: Household=\$200; Family=\$400; Individual=\$100 Phase Outs at 30x to 70x the credit  
 Eliminated Grocery Sales Tax=Y; \$300 Home Owner Credit or 50% Mortgage Interest; 50% Charity -254 m = 2004 Magnitude Shift



tracted from the initial frequency of home ownership among the taxpayers to arrive at the additional number of homes that needed to be assigned to the different income groups to control homeownership in the tax data for the entire population. Uniform random numbers were compared to the additional percent of homes needed and the additional homes were randomly assigned to eligible taxpayers; taxpayers not claiming their own personal exemption were excluded from the possibility of implied home ownership. These modified tax data were then compared against the census data for validity.

The income tax data were expanded to capture the potential impacts on individual taxpayers from the partial or complete removal of the sales tax on food. Sales tax is generally collected from the sellers of goods and services, as such, there are no administrative records reflecting the incidence of this tax on individual taxpayers, as businesses remit the tax. To estimate this tax, the Consumer Expenditure Survey from the Bureau of Labor Statistics (BLS) was utilized to estimate the amount of unprepared food sales tax households of different size and income pay, see table 4. Data specific to Utah is not collected in this survey so a proxy geography was utilized as an input to regression models designed to yield the amount of sales tax on unprepared food, see table 4. A regression equation was estimated for household sizes up to ten. The parameter estimates for the different household sizes are represented in table 5.

The rapid decline of the food tax as a percent of income is illustrated in figure 3 for single, married, married with 2 children, and married with 4 children; reflecting the regressive nature of the food sales tax. For a single person with an income of \$50,000, the model pre-

dicts \$131 (0.3%) in annual sales tax on unprepared food; at a 6.5% tax rate this equates to approximately \$168 a month in taxable food purchases, or 4% of annual income. For a family of 4 with an income of \$75,000, the model predicts \$285 (0.4%) in annual sales tax on unprepared food; approximately \$365 a month in taxable food purchases, or 6% of annual income. Utilizing these regression equations, the impact and distribution of a sales tax change could be analyzed in conjunction with changes to the individual income tax. The calculation of income tax, or changes to the income tax is straightforward given the nature of the data set containing the taxpayer records. Ignoring the nuances of data management in this explanation, the calculation of the tax or of tax changes from proposed reform is deterministic - apply a given formula to the data and collect the results. In the first instance, the tax liability was already calculated by the taxpayer. As table 1 shows, this is a variable included in the data set. In order to remove any error when comparing taxes before and after reform, the initial tax was recalculated based on the graduated bracket system.

The post reform taxes were derived by calculating the new tax base; in the instance of SB242, by subtracting the federally mandated deductions from federal adjusted gross income and determining the initial tax liability by multiplying this base by a tax rate of 4.975%. Calculation of new credits was based on the income level, filing status, number of personal exemptions, amount of itemized charitable contributions, and the itemized mortgage interest or implied homeownership of the taxpayers, see table 6. The difference between the pre and post reform tax was calculated. Additionally, taxpayers were assigned categories based on the type and amount of tax change. Other measures were also calculated regarding how the effective tax

**Table 6  
Tax Calculations**

$$\text{Graduated Tax} = [\text{Adjusted Income}_c - \text{Deductions/Exemptions}_c] [\text{Brackets}_{1,6}] [\text{Tax Rates}_{1,6}]^T - \text{Credits}_c$$

**Adjusted Income<sub>c</sub>** = Federal adjusted gross income + State income tax deducted as an itemized deduction + Lump sum distribution + State Taxes allocated from an estate/trust + Medical Savings Account + Utah Educational Savings Plan + Reimbursed adoption expenses + Child's income excluded from parent's return + Municipal bond interest + Untaxed income of a Trust

**Deductions/Exemptions<sub>c</sub>** = (Standard or Itemized Deduction) + Personal exemptions + Federal tax ÷ 2 + State tax refund + Retirement deduction/exemption + U.S. Interest + Medical Savings Account + Utah Educational Savings Plan + Health care insurance premiums + Long-term care insurance premiums + Adoption expenses + Native American income + Railroad retirement income + Equitable adjustments + Gains on capital transactions + Nonresident active duty military pay + National Guard/Reserve military pay

**[Brackets<sub>1,6</sub>]** = [\$863; \$1,726; \$2,588; \$3,450; \$4,313] for Single or Married Filing Separate  
 [\$1,726; \$3,450; \$5,176; \$6,900; \$8,626] for Married Filing Joint, Head of Household, or Qualifying Widow(er)

**[Tax Rates<sub>1,6</sub>]** = [2.3%; 3.3%; 4.2%; 5.2%; 6.0%; 7.0%]

**Credits<sub>c</sub>** = At-home parent + Qualified sheltered workshop + Renewable energy systems + Clean fuel vehicle + Historic preservation + Enterprise zone + Low-income housing + Hiring disabled + Recycling market + Tutoring disabled + Research activities + Research machinery/equipment + Tax paid to another state + Live organ donation expenses

$$\text{Single Rate Tax} = (\text{Adjusted Income}_p - \text{Deductions}_p) \times \text{Tax Rate} - \text{Credits}_p$$

**Adjusted Income<sub>p</sub>** = Federal adjusted gross income + Utah Educational Savings Plan + Municipal Bond Interest + Untaxed trust income

**Deductions<sub>p</sub>** = U.S. Interest + Native American income + Railroad retirement + Equitable adjustments

**Tax Rate** = 4.975%

**Credits<sub>p</sub>** = Taxpayer + Charitable contribution + (Mortgage interest or home owner) + Tax paid to another state

**Table 7**  
**Sample from Tax Compendium Results**

Plan Name	Tax Rate	Household Credit	Family Credit	Person Credit	Home Owner Credit	Out		2004 Fiscal Impact			
						Begin	End	Sales Tax			
								ON food	pdf	OFF food	pdf
H3100200125450	5.0%	\$100	\$200	\$125	\$450	30	70	-\$86,663,881	2520	-\$255,665,568	3145
H3200200150225	4.9%	\$200	\$200	\$150	\$225	30	70	-\$86,492,496	1522	-\$255,494,182	2147
H3200400125225	5.0%	\$200	\$400	\$125	\$225	30	70	-\$85,654,407	2817	-\$254,656,093	3442
H3200200150150	4.8%	\$200	\$200	\$150	\$150	30	70	-\$85,557,744	271	-\$254,559,431	896
H320050050375	5.0%	\$200	\$500	\$50	\$375	30	70	-\$85,150,261	2829	-\$254,151,948	3454
H3200400125150	4.9%	\$200	\$400	\$125	\$150	30	70	-\$84,975,434	1566	-\$253,977,120	2191
<b>H3200400100300</b>	<b>5.0%</b>	<b>\$200</b>	<b>\$400</b>	<b>\$100</b>	<b>\$300</b>	<b>30</b>	<b>70</b>	<b>-\$84,902,352</b>	<b>2813</b>	<b>-\$253,904,039</b>	<b>3438</b>
H315050075225	4.8%	\$150	\$500	\$75	\$225	30	70	-\$84,864,120	207	-\$253,865,806	832
H3250200100375	5.0%	\$250	\$200	\$100	\$375	30	70	-\$84,266,729	2889	-\$253,268,415	3514
H310040050450	4.9%	\$100	\$400	\$50	\$450	30	70	-\$84,249,491	1305	-\$253,251,178	1930
H3200300100300	4.9%	\$200	\$300	\$100	\$300	30	70	-\$84,204,456	1538	-\$253,206,142	2163
H325020075375	4.9%	\$250	\$200	\$75	\$375	30	70	-\$84,198,513	1634	-\$253,200,199	2259

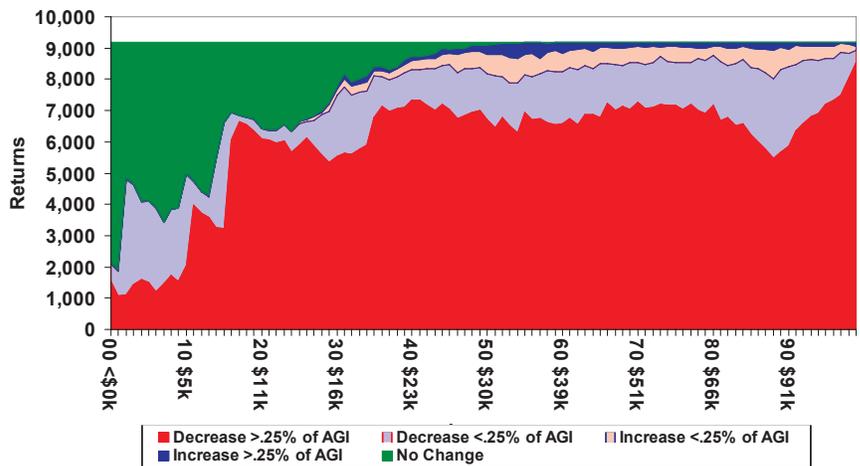
Use the pdf column to find the page number of the chart corresponding to each plan in Income Tax Reform Compendium.pdf

rate changed; the tax change as a percent of income; and the percent change in tax. These measures were also calculated including potential changes to the sales tax on food. Income percentiles were assigned by sorting the records by federal adjusted gross income with every cumulative percent of taxpayers being a new percentile, ties were randomly assigned to either percentile.

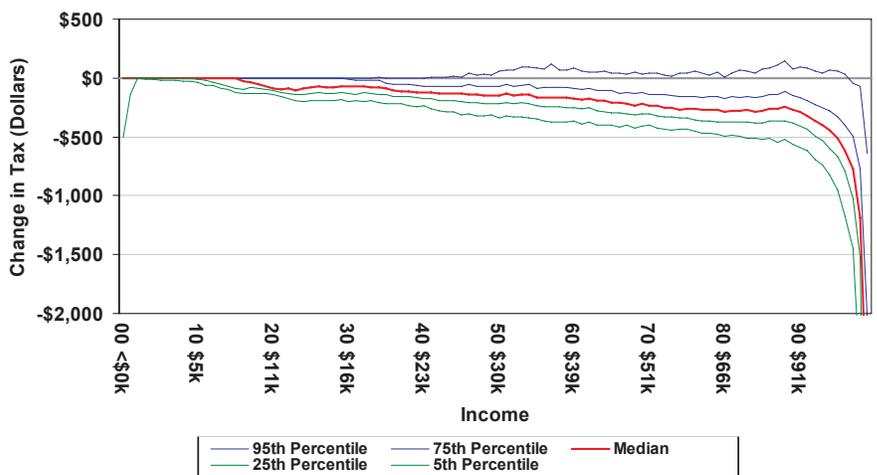
These programs were designed to produce consistent analyses whenever parameter values within tax reform changed (e.g., increasing a credit by \$50, or decreasing the tax rate an additional 0.1%). Given a specific tax reform structure (e.g., SB242), the parameters, the tax rate, the household credit, the per exemption credit, etc. could be varied around starting and ending values at small intervals to produce literally thousands of potential tax reform packages.

Early in the analysis, such a compendium of 3,750 different tax reform iterations was produced which altered: a single tax rate between 4.8% and 5.0% at 0.1% intervals; a household credit between \$100 and \$300 in \$50 increments; a family credit between \$200 and \$600 in \$100 increments, an individual credit between \$50 and \$150 in \$25 increments; a homeowner credit between \$150 and \$450 in \$75 increments; while including and excluding the complete removal of the sales tax on food (3 x 5<sup>4</sup> x 2 = 3,750). This exhaustive framework allowed for the development of intuition surrounding the interaction of the credits, the rate, and the sensitivity of these components of the proposed tax system. The framework also allowed for relative comparison of the potential costs of different tax reform proposals - though the model was not designed

**Figure 6**  
**Taxpayers by Type of Tax Change**



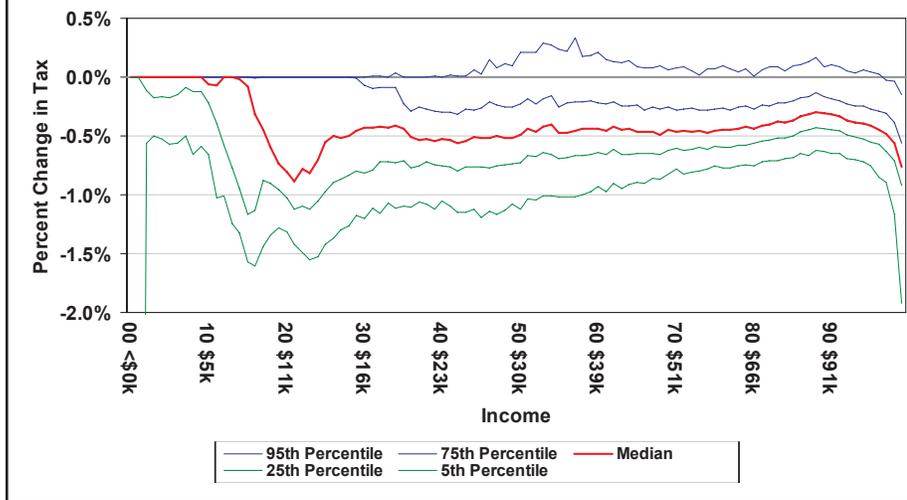
**Figure 7**  
**Distribution of Tax Dollar Change by Income Percentile**



as a revenue analysis for the state's budget, the cost of one proposal compared to another could be weighed with the distributive impact to taxpayers, see table 7. As SAS processed these iterations, stacked bar charts were produced to compare the levels of tax change by income percentile for each plan, see figures 4 and 5. Tax decreases were separated into two groups, whether the change was greater than or less than 0.25% of income; the same condition applied to tax increases; another group captured taxpayers with no change in tax liability. The relative cost measures and distributive impact charts provided a tool for understanding the robustness of a given tax reform proposal.

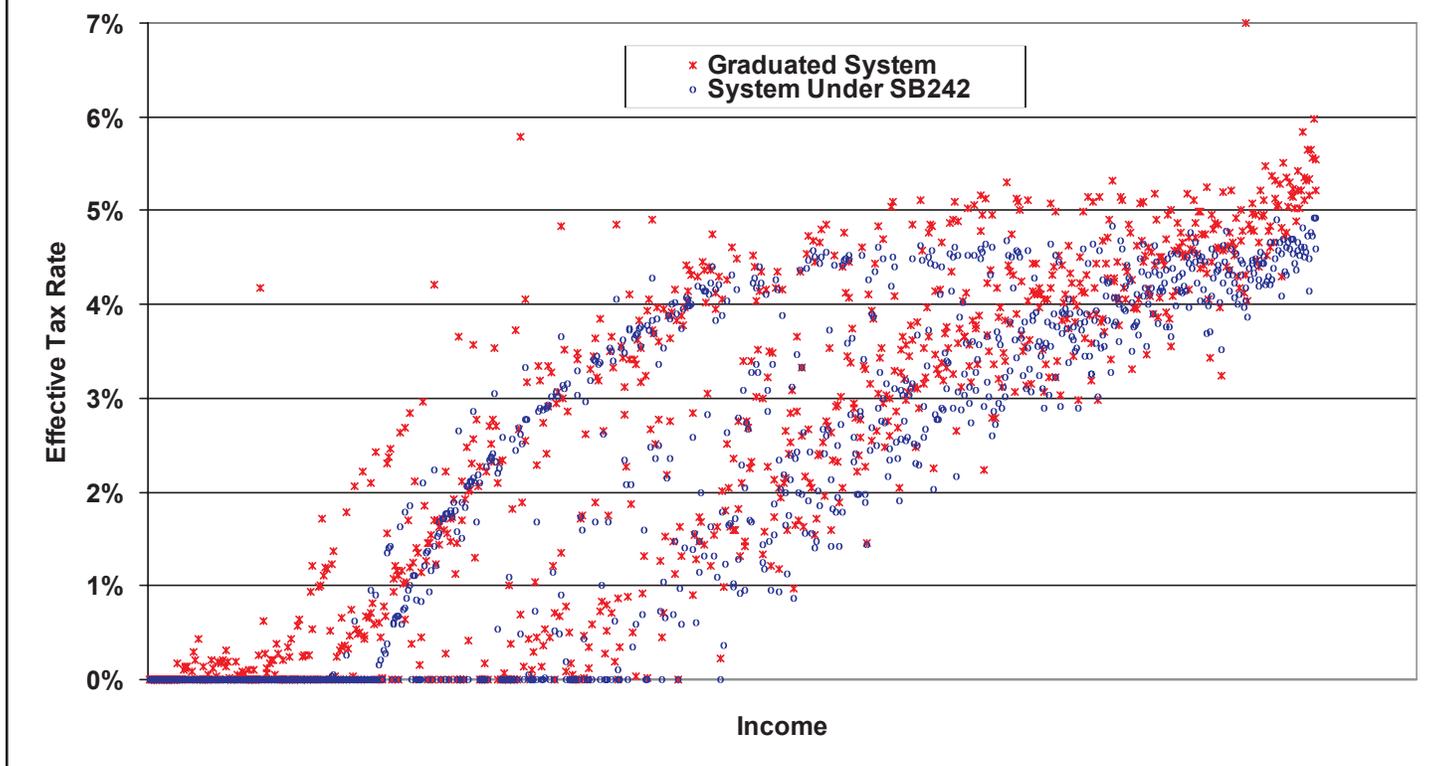
Additional analysis revealed the distribution of tax changes with more detail. Reflecting the potential impacts of SB242, figure 6 exhibits the gross number of taxpayers realizing changes to their income tax. Though more transparent in figures 4 and 5, there is a distribution of large and small tax changes across the entire income spectrum. In order to better quantify these effects, the distribution of tax changes was estimated by income percentile; the tax change within each income percentile was estimated at the 5th, 25th, 50th, 75th, and 95th percentile and charted, see figure 7. For example, the median income percentile contained over 9,000 taxpayers; the majority had large tax decreases (6,720), with a small number realizing tax increases (940)—but the size of these tax changes cannot be gleaned from figure 6. Figure 7 exhibits the size, and figure 8 the relative size of potential tax changes by graphing the amount of the tax change at the median and the fringes of each income percentile. At the median, the tax change moved from a tax cut of \$100 to more than \$2,000; on a relative scale, the tax cut as a percent of income remained fairly constant at roughly 0.5% of income. At the 95th percentile, the tax change remained near zero until the middle of the income distribution, and then hovered around \$150, remaining below 0.3% of income. At the 5th percentile, taxpayers near the lower end of the income spectrum realized greater relative cuts, 1.5% of income, which converged closer to 0.5% of income near the top of the income spectrum before spiking back down.

**Figure 8**  
**Distribution of Income Tax Percent Change by Income Percentile**



At the median, the tax change moved from a tax cut of \$100 to more than \$2,000; on a relative scale, the tax cut as a percent of income remained fairly constant at roughly 0.5% of income. At the 95th percentile, the tax change remained near zero until the middle of the income distribution, and then hovered around \$150, remaining below 0.3% of income. At the 5th percentile, taxpayers near the lower end of the income spectrum realized greater relative cuts, 1.5% of income, which converged closer to 0.5% of income near the top of the income spectrum before spiking back down.

**Figure 9**  
**Effective Income Tax Rates**



**Table 8**  
**2004 Utah Tax Data Set Summary: Income, Deductions, and Credits**

	Item	Residents				All Taxpayers				
		#	%	\$	mean \$	#	%	\$	mean \$	
Income	04. Federal adjusted gross income	908,485	100	41,857,626,000	46,074	985,995	100	59,713,811,000	60,562	
	05. State income tax deducted on federal schedule	325,445	35.82	1,373,403,000	4,220	351,336	35.63	2,128,415,000	6,058	
	06. Additions to income	5,152	0.57	23,480,000	4,557	6,880	0.7	91,017,000	13,229	
	51. Lump sum distribution	401	0.04	3,350,000	8,354	429	0.04	3,616,000	8,429	
	52. State taxes allocated from estate/trust	164	0.02	386,000	2,354	189	0.02	416,000	2,201	
	53. Medical Savings Account	81	0.01	88,000	1,086	87	0.01	92,000	1,057	
	54. Utah Educational Savings Plan	253	0.03	558,000	2,206	265	0.03	588,000	2,219	
	55. Reimbursed adoption expenses	61	0.01	187,000	3,066	65	0.01	456,000	7,015	
	56. Child's income excluded from parent's return	220	0.02	225,000	1,023	287	0.03	267,000	930	
	57. Municipal bond interest	3,893	0.43	17,587,000	4,518	5,459	0.55	80,198,000	14,691	
60, 61. Untaxed income of a trust	123	0.01	1,099,000	8,935	157	0.02	5,385,000	34,299		
		908,485	100	43,254,509,000	47,612	985,995	100	61,933,244,000	62,813	
Deductions	08. Standard or itemized deduction	905,554	99.68	11,740,577,000	12,965	982,660	99.66	14,743,571,000	15,004	
	09. Personal exemptions deduction	815,528	89.77	4,854,937,000	5,953	882,497	89.5	5,217,485,000	5,912	
	10. One-half of the federal tax	606,179	66.72	2,027,121,000	3,344	662,851	67.23	3,837,511,000	5,789	
	11. State tax refund included on federal schedule	223,770	24.63	181,131,000	809	241,445	24.49	270,503,000	1,120	
	12. Retirement exemption/deduction	77,381	8.52	665,172,000	8,596	80,064	8.12	684,504,000	8,549	
	13. Other deductions	85,212	9.38	281,893,000	3,308	94,964	9.63	448,263,000	4,720	
	71. Interest from U.S. Government Obligations	16,975	1.87	36,012,000	2,121	20,042	2.03	126,777,000	6,326	
	72. Medical Savings Plan	228	0.03	308,000	1,351	241	0.02	380,000	1,577	
	73. Utah Educational Savings Plan	3,232	0.36	11,522,000	3,565	3,355	0.34	11,972,000	3,568	
	74. Health care insurance premiums	55,875	6.15	102,863,000	1,841	60,360	6.12	110,970,000	1,838	
	75. Long-term care insurance premiums	3,509	0.39	4,699,000	1,339	3,710	0.38	5,048,000	1,361	
	76. Adoption expenses	584	0.06	4,317,000	7,392	613	0.06	4,432,000	7,230	
	77. Native American income	1,211	0.13	29,580,000	24,426	1,367	0.14	32,916,000	24,079	
	78. Railroad retirement income	1,406	0.15	18,929,000	13,463	1,446	0.15	19,486,000	13,476	
	79. Equitable adjustments	323	0.04	3,091,000	9,570	421	0.04	8,143,000	19,342	
81. Gains on capital transactions	79	0.01	899,000	11,380	99	0.01	1,167,000	11,788		
82. Nonresident active duty military pay	502	0.06	21,442,000	42,713	1,924	0.2	69,100,000	35,915		
83. National Guard/Reserve military pay	1,277	0.14	20,918,000	16,381	1,375	0.14	22,557,000	16,405		
		908,485	100	19,750,831,000	21,740	985,995	100	25,201,836,000	25,560	
	15. Utah taxable income	714,899	78.69	25,820,996,000	36,118	779,842	79.09	39,561,647,000	50,730	
	18. Utah income tax	695,012	76.5	1,675,347,000	2,411	754,070	76.48	1,747,763,000	2,318	
Tax Credits	Non-refundable*	01. At-home parent	4,435	18.62	436,000	98	4,831	18.06	470,000	97
		02. Qualified sheltered workshop	101	0.42	13,000	129	106	0.4	14,000	132
		03. Renewable energy systems	78	0.33	65,000	833	83	0.31	67,000	807
		05. Clean fuel vehicle	155	0.65	264,000	1,703	164	0.61	271,000	1,652
		06. Historic Preservation	155	0.65	551,000	3,555	158	0.59	582,000	3,684
		07. Enterprise zone	263	1.1	1,159,000	4,407	289	1.08	1,339,000	4,633
		08. Low-income housing	61	0.26	122,000	2,000	69	0.26	125,000	1,812
		09. Hiring disabled	<10	.	5,000	.	<10	.	6,000	.
		10. Recycling market	81	0.34	207,000	2,556	84	0.31	210,000	2,500
		11. Tutoring disabled	84	0.35	8,000	95	88	0.33	8,000	91
		12. Research activities	82	0.34	162,000	1,976	126	0.47	184,000	1,460
		13. Research machinery/equipment	<10	.	8,000	.	<10	.	8,000	.
		17. Tax paid to another state	12,284	51.57	39,597,000	3,223	12,386	46.31	39,903,000	3,222
	19. Live organ donation expense	3,205	13.45	35,000	11	3,280	12.26	36,000	11	
	Refundable	40. Targeted business tax credit	<10	.	125,000	.	<10	.	125,000	.
		41. Special needs adoption credit	80	0.34	127,000	1,588	85	0.32	134,000	1,576
		43. Nonresident shareholder's withholding	11	0.05	42,000	3,818	1,474	5.51	8,577,000	5,819
		46. Mineral production withholding	1,551	6.51	813,000	524	2,297	8.59	2,073,000	902
47. Agricultural off-highway gas/undyed diesel		1,154	4.84	268,000	232	1,180	4.41	291,000	247	
	48. Farm operation hand tools	20	0.08	7,000	350	21	0.08	15,000	714	
		23,822	2.62	44,017,000	1,848	26,745	2.71	54,441,000	2,036	

Report consistent with tax returns collected through November 2005, all taxpayers values weighted by Utah proportion of income.

\*Only the amount of a non-refundable credit that could be claimed was included in this analysis.

Figure 10

2005 Tax Model: Process

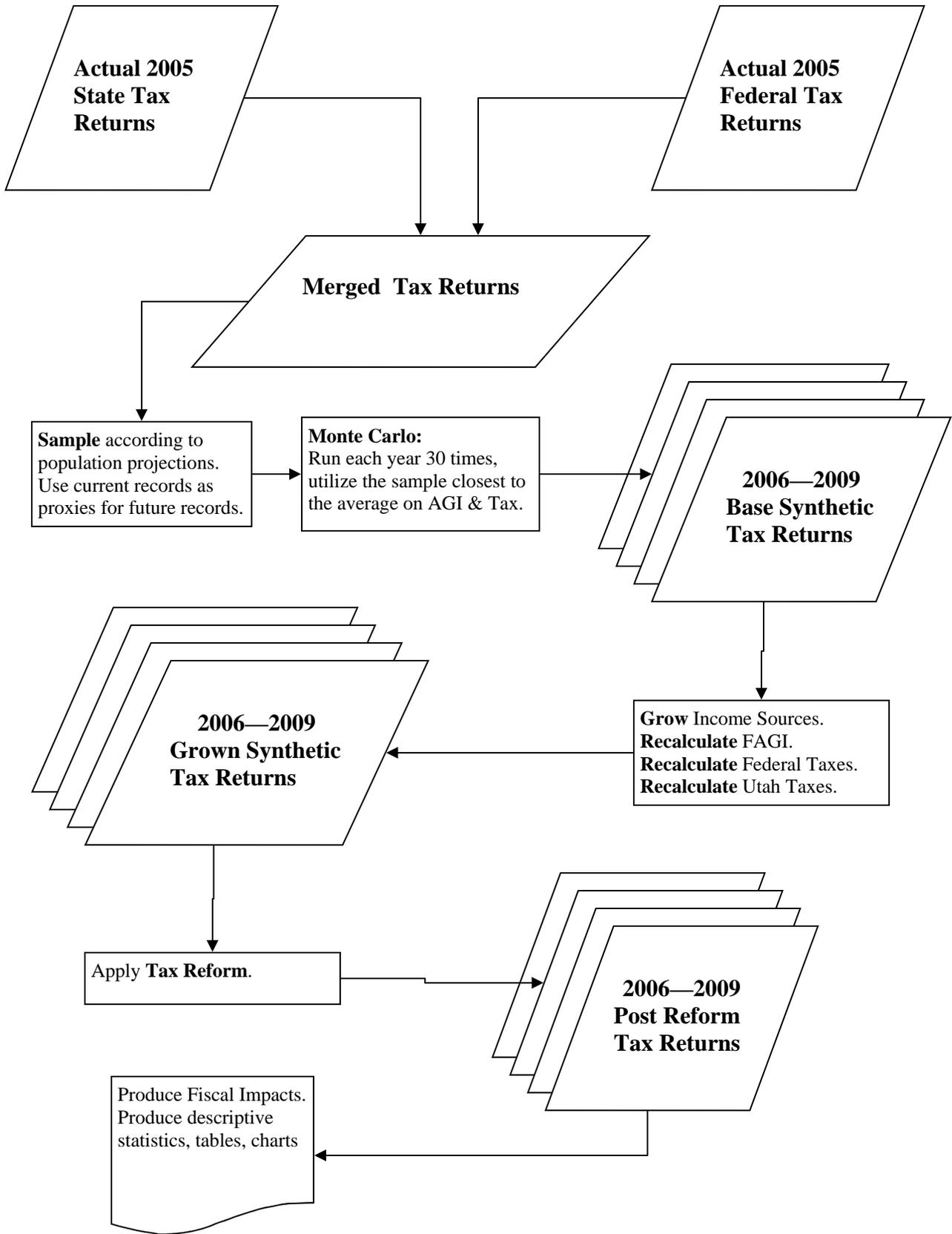


Figure 11 Distribution of Forecast AGI: 2006

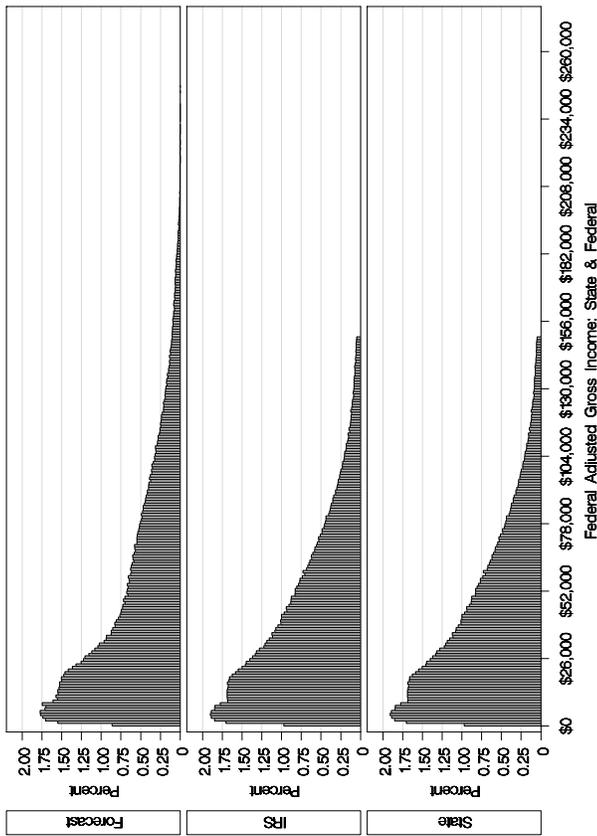


Figure 12 Distribution of Forecast AGI: 2006

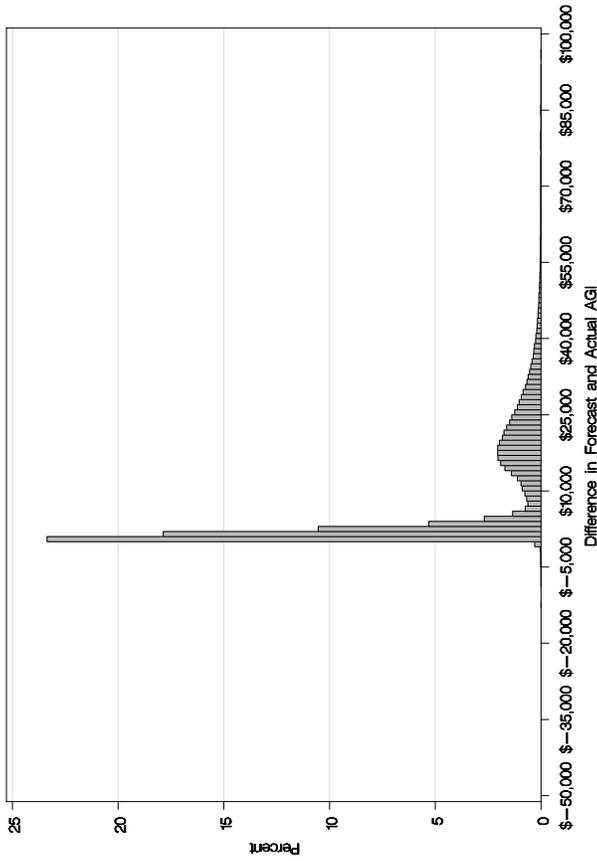


Figure 13 Distribution of Forecast AGI: 2006

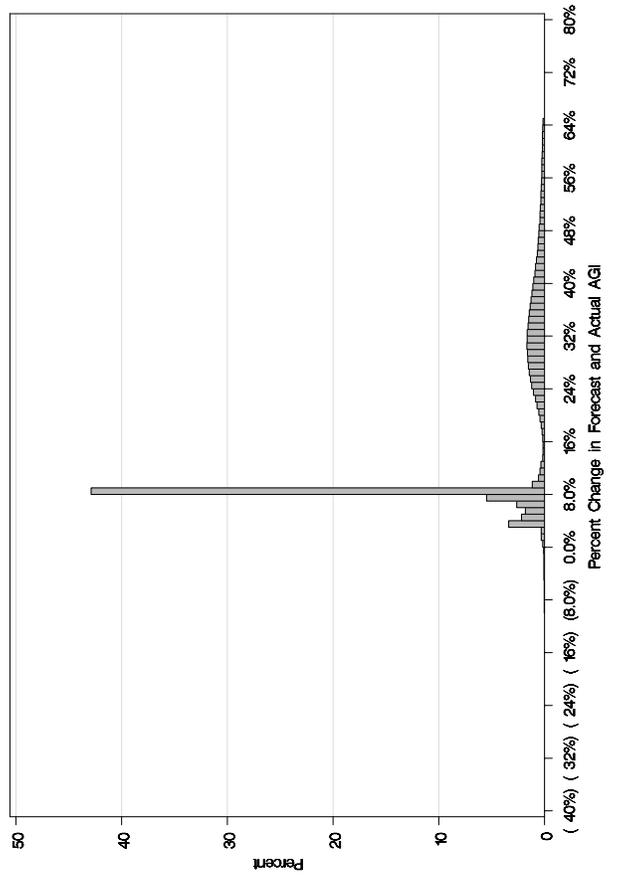
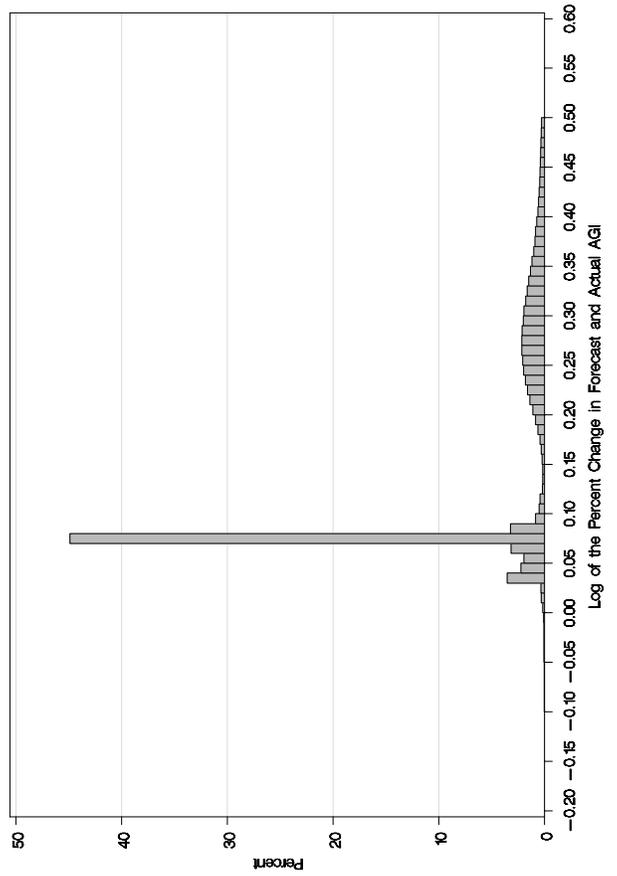


Figure 14 Distribution of Forecast AGI: 2006



Critical to understanding the nature of tax changes is comprehension of what taxpayers were liable for before any policy changes. In general, income tax systems differentiate between different types of taxpayers; whether based on the ability to pay, who benefits from the tax, or other criteria. These differences show up readily when analyzing effective tax rates. Figure 9 presents a sample of effective tax rates; i.e., the amount of tax divided by the amount of income for a given taxpayer. This measure is useful in comparing how the tax burden is distributed among taxpayers. The two clusters roughly separate single filers from married filers. As income increases, the tax people pay is a larger share of their income. The effective tax rates under SB242 are more tightly bound, resulting in more horizontal equity; where similar taxpayers are treated in the same manner. Whether vertical equity was altered is unclear as the distribution of the tax changes as a percent of income appears to be stable, see figure 8.

The charts and analyses presented here are a sample of the type of analysis that was performed hundreds of times for different proposals over the span of a legislative session. The model informed policy makers and enabled them to make decisions regarding the direction of tax reform. Though the model and subsequent analysis was able to address many questions, there was a range of questions the model was unable to approach because of the nature of the aggregate data and the difficulty in forecasting these records. In order to allow the states' economic models to collaborate and better corroborate results, during the 2006 3rd Special Session legislation enabled legislative staff to access state tax records for statistical purposes. Additionally, sharing technical staff between the Governor's Office and the State Tax Commission enabled the creation of additional models to verify the statistical information from proposed changes to state tax policy.

### Additional Data

Utilizing actual tax records enabled the creation of more robust tax models that would address future revenue impacts, provide more accurate distributive analysis, and allow for more corroboration among the state's other tax models. The detailed data comprised a better picture of each taxpayer's income and utilization of deductions and credits; enabling more reasonable forecasts.

As with the aggregate data, the expanded data source comprised data from merged state and federal 2004 and 2005 income tax returns. The 2005 data set contained 1,084,995 records with over 100 variables that described the source of income, deductions, and credits; as well as demographic information, including age, household size, and filing status. A summary of the detail attainable from the 2004 data set is found in table 8.

These data were utilized to make forecasts by using current tax records to proxy for future tax records, see figure 10 for a flow chart describing this

Year	Records	Growth
1994	804,360	
1995	843,610	4.9%
1996	880,078	4.3%
1997	914,419	3.9%
1998	939,069	2.7%
1999	963,512	2.6%
2000	987,688	2.5%
2001	997,748	1.0%
2002	1,002,124	0.4%
2003	997,347	-0.5%
2004	1,018,358	2.1%
2005	1,084,995	6.5%
2006*	1,109,792	2.3%
2007*	1,136,968	2.4%
2008*	1,164,031	2.4%
2009*	1,193,088	2.5%
2010*	1,221,627	2.4%

\*Forecast data sets

**Table 10  
Taxpayers by Wage Quantile**

		2004 Wage Quantiles																		Miss	Total		
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85			90	95
2003 Wage Quantiles	0	38,586		884	502	353	262	257	196	134	135	115	109	95	84	68	62	50	35	33	35	5,818	47,813
	5	798	36,319	1,458	922	623	414	405	273	222	187	152	147	129	100	67	53	63	49	47	67	5,319	47,814
	10	1,159	2,782	18,974	4,670	3,127	1,980	1,289	878	539	379	277	205	165	107	73	63	53	26	32	36	10,999	47,813
	15	735	1,070	3,391	8,941	7,846	5,520	3,362	2,092	1,210	692	442	286	200	113	74	52	30	21	17	10	11,710	47,814
	20	535	805	1,868	4,588	8,507	7,298	5,247	3,360	2,041	1,230	772	452	263	171	97	70	45	31	16	16	10,401	47,813
	25	409	596	1,271	2,447	4,617	8,693	7,053	5,074	3,099	1,909	1,172	698	460	287	149	113	63	40	18	17	9,629	47,814
	30	342	508	884	1,484	2,437	4,634	9,142	7,314	4,832	2,993	1,821	1,170	669	412	248	164	85	41	16	20	8,597	47,813
	35	300	458	608	974	1,493	2,508	5,099	9,925	7,470	4,479	2,677	1,599	988	613	347	225	124	69	30	16	7,812	47,814
	40	237	377	493	660	935	1,559	2,525	5,009	11,685	7,841	4,072	2,411	1,396	890	439	291	147	71	38	25	6,712	47,813
	45	206	327	369	422	581	971	1,488	2,481	5,146	13,228	8,194	3,761	2,047	1,240	757	385	228	112	62	20	5,789	47,814
	50	194	283	294	304	405	606	924	1,355	2,279	5,249	14,553	8,518	3,649	1,855	1,099	565	339	155	84	42	5,062	47,814
	55	151	246	231	253	298	429	601	800	1,265	2,098	5,357	15,515	8,977	3,471	1,692	933	492	266	114	61	4,563	47,813
	60	147	244	199	176	230	320	415	555	772	1,154	2,069	5,572	16,259	9,266	3,420	1,523	823	425	182	69	3,994	47,814
	65	128	192	158	146	170	219	303	379	464	729	1,054	2,031	5,888	17,111	9,706	3,267	1,372	665	301	104	3,426	47,813
	70	89	150	146	78	144	164	205	258	378	452	658	1,070	2,038	6,128	18,227	9,934	3,052	1,087	450	155	2,951	47,814
	75	88	137	102	70	90	118	152	159	230	280	378	676	1,022	2,068	6,390	19,634	9,949	2,534	842	287	2,607	47,813
80	84	114	77	53	61	76	103	134	183	165	265	402	642	1,025	1,975	6,566	21,488	9,809	1,875	457	2,260	47,814	
85	65	100	66	45	55	50	70	94	103	132	163	264	345	563	935	1,771	6,368	24,564	8,950	1,050	2,060	47,813	
90	69	78	72	32	36	44	40	42	80	80	113	140	214	315	478	809	1,577	6,024	29,220	6,582	1,769	47,814	
95	83	112	77	42	36	28	43	59	49	58	52	96	112	179	194	285	541	1,037	4,957	37,757	2,017	47,814	
Miss	4,732	4,240	17,516	22,329	17,094	13,245	10,415	8,701	6,957	5,667	4,782	4,016	3,580	3,140	2,703	2,373	2,249	2,077	1,854	2,312		139,982	
Total	49,137	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,137	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,138	49,138	113,495	1,096,253

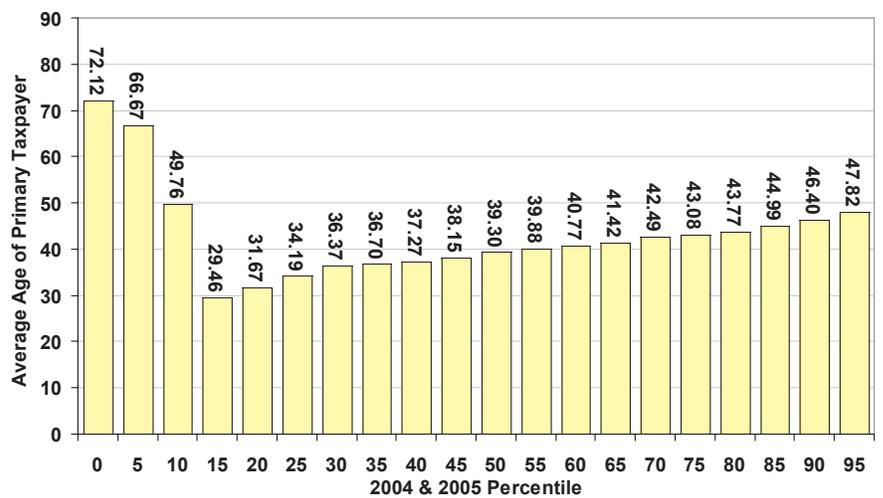
**Table 11**  
Average Age of Taxpayers Moving between Wage Quantiles

		2004 Wage Quantiles																		Miss	Total		
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85			90	95
2003 Wage Quantiles	0	72.1		55.6	48.0	47.1	47.9	48.7	49.6	46.5	45.2	48.6	44.9	46.8	48.5	46.4	49.3	46.6	42.8	48.5	51.6	68.1	68.6
	5	66.3	66.7	41.8	38.8	41.0	38.8	40.7	42.4	42.4	41.9	42.2	43.1	44.3	42.5	43.7	43.4	48.4	45.6	46.9	50.5	59.5	61.6
	10	60.9	56.5	49.8	26.2	25.7	27.1	29.5	30.3	32.6	34.8	34.7	36.6	38.7	37.9	40.2	36.7	46.9	44.4	43.1	48.8	33.3	37.9
	15	56.9	46.7	33.7	29.5	23.9	24.1	25.5	26.9	29.0	29.7	30.0	30.5	33.2	32.5	32.4	34.5	41.1	49.9	42.4	46.4	26.5	27.2
	20	56.1	48.9	34.8	30.5	31.7	25.8	25.4	26.4	27.1	29.1	30.4	30.6	30.6	31.1	33.9	34.7	36.6	37.4	42.9	44.7	27.6	28.5
	25	54.9	49.3	37.8	31.8	32.5	34.2	27.8	26.6	27.3	28.9	29.6	30.2	31.2	31.1	34.1	32.9	35.8	41.2	36.0	46.6	28.6	30.0
	30	54.6	49.4	38.7	33.8	33.2	34.3	36.4	30.2	28.5	28.7	30.2	30.3	31.2	31.8	32.6	34.4	35.4	37.5	49.7	43.4	29.8	31.7
	35	53.2	49.5	40.9	36.5	34.6	33.7	35.9	36.7	31.6	29.7	30.4	30.2	30.9	31.0	31.8	32.7	36.0	37.8	40.2	43.6	30.5	32.6
	40	53.5	49.4	41.2	38.5	36.2	35.6	34.8	35.9	37.3	32.6	31.3	30.8	31.6	31.6	32.0	34.0	35.9	35.0	38.1	45.3	31.0	33.7
	45	52.0	49.6	44.1	40.6	37.7	36.9	35.9	35.9	37.1	38.1	34.2	32.4	32.3	32.1	32.8	33.2	35.3	36.6	39.4	40.0	32.2	34.8
	50	55.5	50.0	46.0	41.5	38.5	38.7	37.6	36.8	36.4	37.7	39.3	35.6	33.2	33.7	33.3	33.8	34.9	36.6	38.3	37.2	33.5	36.2
	55	58.1	51.5	48.8	42.1	41.8	41.9	39.7	38.2	37.8	37.4	39.0	39.9	36.4	33.9	34.1	34.1	34.5	36.2	39.2	42.3	34.3	37.1
	60	54.1	53.3	47.9	45.0	43.5	43.5	41.0	41.5	39.3	38.4	37.9	39.5	40.8	37.3	35.3	35.1	34.7	36.5	38.2	40.4	35.0	38.1
	65	57.8	50.6	49.9	45.5	46.1	45.2	44.5	41.6	41.3	40.7	39.3	39.3	40.5	41.4	38.1	36.4	36.0	37.0	39.4	42.3	36.5	39.0
	70	57.4	50.7	51.0	46.8	46.2	46.4	45.5	45.1	42.5	42.6	40.7	40.5	39.6	41.3	42.5	39.4	37.8	38.0	38.6	40.2	37.5	40.1
	75	54.7	53.1	52.9	49.0	48.7	47.8	48.1	47.2	46.4	43.7	43.4	42.0	41.5	40.8	42.4	43.1	40.2	38.8	39.4	39.7	38.5	41.1
	80	53.1	53.2	51.1	49.6	48.0	48.0	47.7	49.9	47.1	45.5	44.8	44.7	43.3	41.6	41.4	43.0	43.8	41.5	40.8	41.4	39.6	42.1
	85	52.8	53.3	54.6	54.9	52.2	46.9	45.4	50.5	49.4	47.5	49.0	45.7	45.7	44.7	43.6	43.2	44.0	45.0	42.8	41.8	41.1	43.5
	90	53.4	52.7	51.4	56.2	47.5	51.6	52.7	47.0	49.4	50.5	50.0	48.7	47.0	46.8	46.0	46.9	46.0	45.8	46.4	44.3	42.7	45.2
	95	52.6	54.2	53.3	54.2	52.8	53.9	52.5	51.5	53.6	50.2	51.5	49.0	49.9	48.6	48.0	47.6	48.2	46.0	47.2	47.8	45.1	47.0
Miss	63.5	52.3	24.4	21.5	23.5	25.7	27.9	28.9	30.3	31.5	32.8	33.6	35.1	35.9	36.5	37.2	38.2	38.8	41.2	43.3			
Total	69.5	62.4	41.6	28.6	29.7	31.3	33.1	34.2	35.0	36.3	37.4	38.3	39.2	40.2	41.3	42.2	43.1	44.5	46.2	47.9		39.8	

procedure. Thirty samples were drawn for each of the future tax years (2006, 2007, 2008, 2009, 2010) totaling more than 150 million records in 150 different data sets. The data sets in a given year were compared to the mean tax and income the 30 samples generated and the sample closest to the mean tax and income was selected as the proxy data set to use in a given tax year to avoid sampling bias. These base synthetic tax returns were then adjusted according to economic assumptions derived from the Revenue Assumption Committee in conjunction with other national forecasts regarding how wages and other sources of income would grow over time. The projected growth is applied to each taxpayer's income sources and projected federal adjusted gross income is calculated, see figures 11-14 for some of the model diagnostics. As figure 13 shows, over 40% of taxpayer's income was projected to grow at around 8%

between 2005 and 2006; the bimodal distribution of income growth is the result of growing other sources of income (e.g., capital gains) at higher rates. Additional investigation into growing income sources stochastically was performed, but not applied to the model in question (i.e., not multiplying every taxpayer's wage by 8%, but applying a growth rate from a distribution of potential growth rates while controlling aggregate wage growth to 8%). Parameters for a given year's statutory tax code at the federal and state level were merged into the data and state and federal taxes were recalculated resulting in complete proxy data sets for the 2006, 2007, 2008, 2009, and 2010 tax returns. Each of these data sets contained over 100 variables, one million records, and was over 1 gigabyte of data.

**Figure 15**  
How Experience Impacts Wages



In addition to the forecast data sets, historical data sets for state taxes were available from 1994 through 2005. These data sets lacked source of income information, but contained the adjusted gross income, the deductions and credits taxpayers utilized in addition to their tax liability. These data encompassed over 17 million individual tax payer records spanning 16 years, see table 9.

With much more data available, it was possible to expand the breadth, scope, and depth of the analysis. In addition to expanding the distributional analysis of previous models, a revenue analysis of potential tax changes impacting future budgets was created.

### Income Dynamics

To better understand the dynamics surrounding the growth of taxpayer's income over time, a critical assumption in forecasting the fiscal impacts from tax changes, the wages Utah taxpayer's made in 2003 was compared to their 2004 wages. These years were chosen to enable completeness in the data compared. Many taxpayers file for extensions, which results in roughly 5% of a given tax year's returns arriving in the next calendar year. Though actual data for 2005 was available, the lack of 5% of the data could skew movement among the wage distribution.

Utah taxpayer records in 2003 and 2004 were sorted by ascending wage. The data was divided into 20 equal quantiles (groups), and each record was assigned a number based on its position within the wage distribution. The records were merged together by the primary taxpayers and comparison was made regarding the wage mobility of these taxpayers, see table 10. The table is read by picking a row, which represents the taxpayers in a given quantile in 2003; choosing a specific column indicates where taxpayers were located in the 2004 wage distribution. For example, there are 47,814 taxpayers between the 70th and 75th percentile (row 70) in 2003; 18,227 (38%) of these taxpayers remained at the same relative position in the 2004 wage distribution; 11,958 (25%) moved down the wage distribution; 14,678 (31%) moved up the wage distribution; and 2,951 (6%) taxpayers were missing in the 2004 wage distribution.

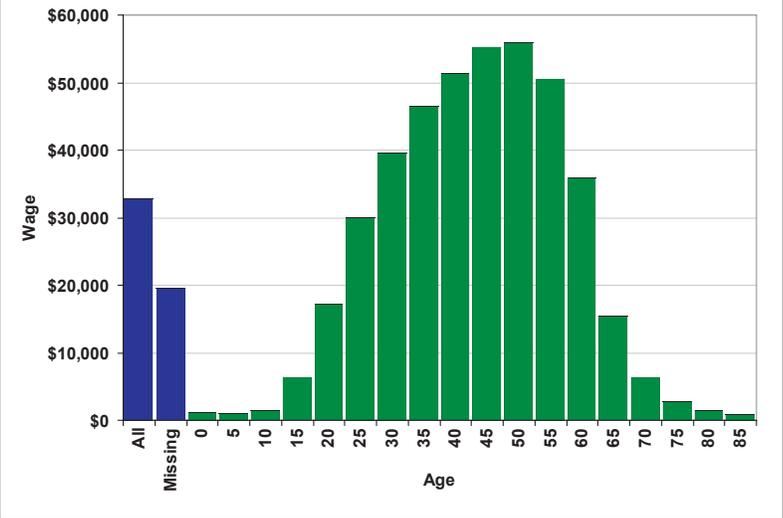
These data show a high degree of wage mobility in a given year; much of this is explained by demographic trends, see table 11 describing the average age of taxpayers in the quan-

tile matrix. In general, this shows that taxpayers near the bottom of the wage distribution are likely retirees who rely on non-wage income sources. The diagonal cells representing wage earners remaining in the same relative position between years exhibit the returns to human capital in that more experienced taxpayers are generally higher in the wage distribution, see table 12 and figure 15. Peak wage earning years tend to cluster around the age of fifty as illustrated in figures 16 and 17. Mobility also exhibits a degree of consistency in that much of the movement among quantiles is bunched around the diagonal of prior relative quantile position. Table 13 and figure 18 show a saddle like curve which reveals that taxpayers at the lower end of the 2003 wage distribution are more likely to move up the 2004 wage distribution. Comparing this information with tables 11 and 12, the taxpayers moving down the wage distribution appear to be related to peak earnings and other retirement related choices. A more absolute measure of how these taxpayer's wages changed over this time is reflected in table 14. The average wage change was calculated among the taxpayers in a given

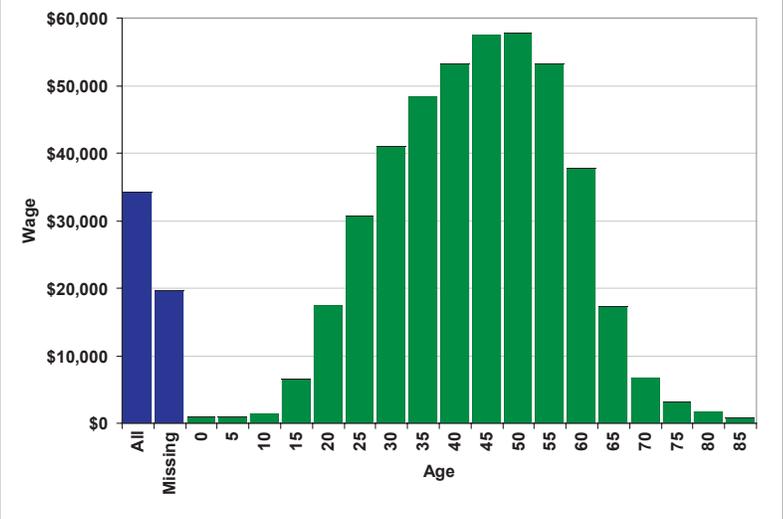
**Table 12**  
**Utah Wages by Age**

Age Group	2004		2003	
	Taxpayers	Mean Wage	Taxpayers	Mean Wage
All	982,758	\$34,156	956,271	\$32,830
Missing	2,819	\$19,740	2,781	\$19,523
0	776	\$976	789	\$1,152
5	1,938	\$895	1,856	\$950
10	4,520	\$1,381	4,511	\$1,405
15	89,598	\$6,610	88,481	\$6,334
20	147,048	\$17,530	146,407	\$17,129
25	124,473	\$30,782	118,159	\$30,060
30	96,619	\$40,946	93,117	\$39,516
35	81,874	\$48,329	80,677	\$46,493
40	84,436	\$53,257	84,230	\$51,371
45	81,253	\$57,507	79,607	\$55,325
50	69,994	\$57,828	67,418	\$55,930
55	56,229	\$53,207	52,879	\$50,630
60	41,915	\$37,784	39,350	\$35,847
65	31,005	\$17,252	29,583	\$15,436
70	24,522	\$6,838	24,129	\$6,354
75	19,622	\$3,086	19,266	\$2,797
80	13,964	\$1,777	13,456	\$1,495
85	10,153	\$718	9,575	\$735

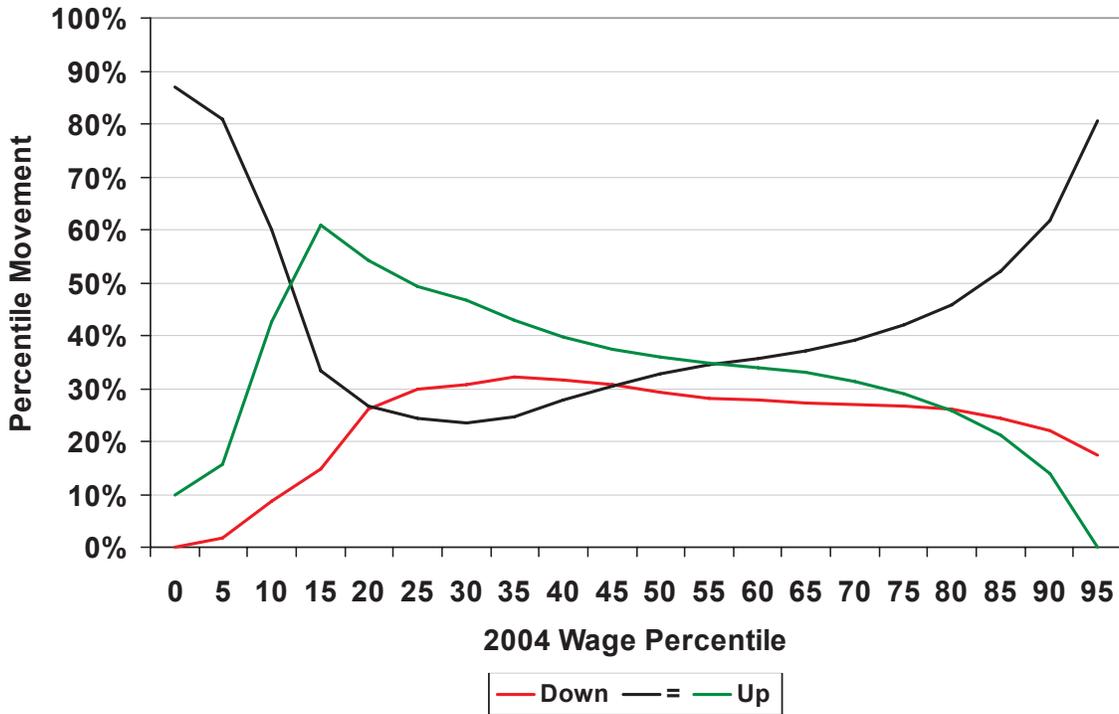
**Figure 16**  
**Mean Wage by Age Group 2003**



**Figure 17**  
**Mean Wage by Age Group 2004**

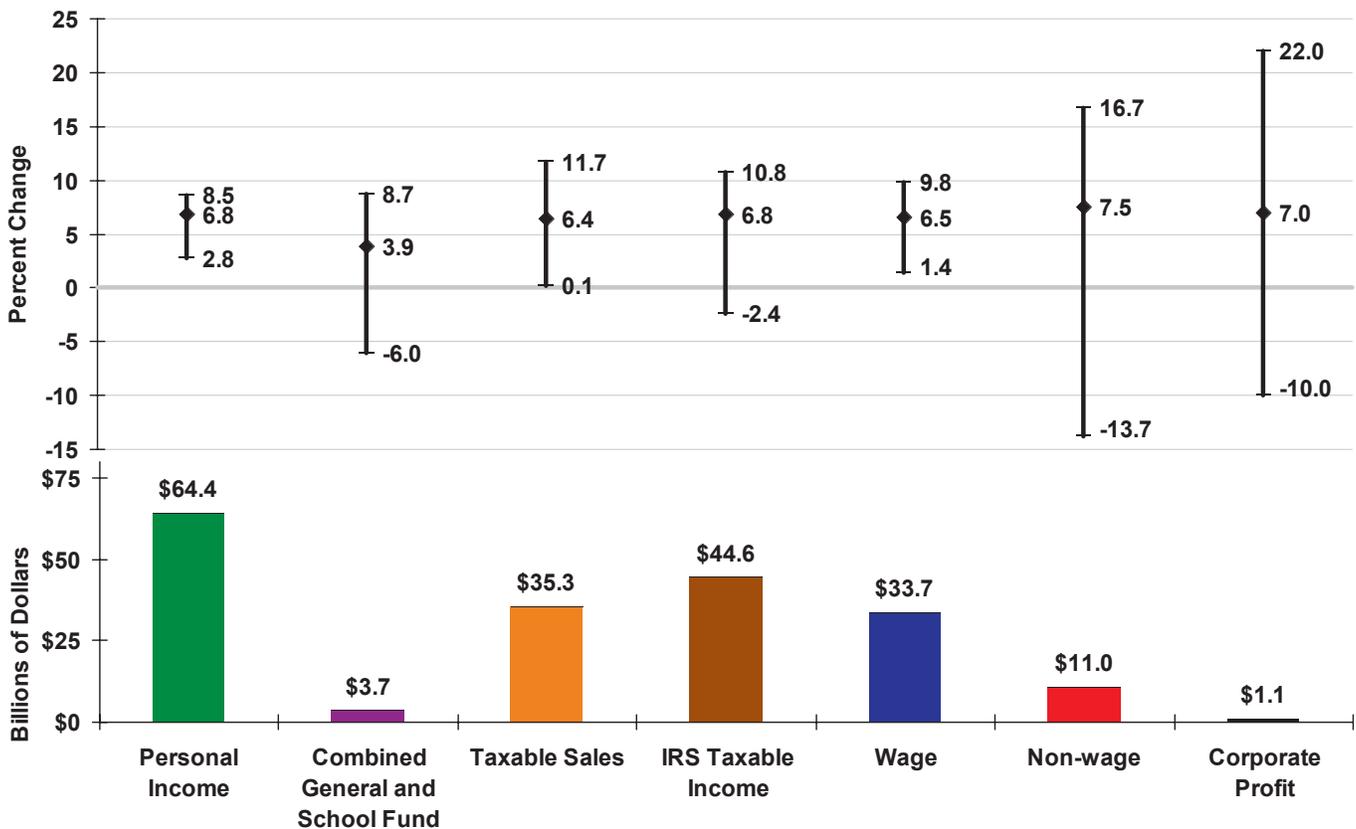


**Figure 18**  
Taxpayers Wage Mobility



2003 to 2004		
Down	=	Up
	87%	10%
2%	81%	16%
9%	60%	43%
15%	33%	61%
26%	27%	54%
30%	24%	49%
31%	24%	47%
32%	25%	43%
32%	28%	40%
31%	30%	37%
29%	33%	36%
28%	34%	35%
28%	36%	34%
27%	37%	33%
27%	39%	31%
27%	42%	29%
26%	46%	26%
24%	52%	21%
22%	62%	14%
17%	81%	

**Figure 19**  
Volatility and Size: Extreme and Mean Percent Change 1990-2004



**Table 13**  
**Movement between Wage Quantiles**

		2004 Wage Quantiles																			Miss	
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		95
2003 Wage Quantiles	0	87%	0%	3%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%
	5	2%	81%	5%	3%	2%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%
	10	3%	6%	60%	17%	10%	6%	3%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%
	15	2%	2%	11%	33%	24%	15%	9%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	32%
	20	1%	2%	6%	17%	27%	20%	14%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	28%
	25	1%	1%	4%	9%	14%	24%	18%	13%	7%	4%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	25%
	30	1%	1%	3%	6%	8%	13%	24%	18%	11%	7%	4%	3%	1%	1%	1%	0%	0%	0%	0%	0%	22%
	35	1%	1%	2%	4%	5%	7%	13%	25%	18%	10%	6%	4%	2%	1%	1%	0%	0%	0%	0%	0%	20%
	40	1%	1%	2%	2%	3%	4%	7%	12%	28%	18%	9%	5%	3%	2%	1%	1%	0%	0%	0%	0%	16%
	45	0%	1%	1%	2%	2%	3%	4%	6%	12%	30%	18%	8%	4%	3%	2%	1%	0%	0%	0%	0%	14%
	50	0%	1%	1%	1%	1%	2%	2%	3%	5%	12%	33%	19%	8%	4%	2%	1%	1%	0%	0%	0%	12%
	55	0%	1%	1%	1%	1%	1%	2%	2%	3%	5%	12%	34%	20%	8%	4%	2%	1%	1%	0%	0%	11%
	60	0%	1%	1%	1%	1%	1%	1%	1%	2%	3%	5%	12%	36%	20%	7%	3%	2%	1%	0%	0%	9%
	65	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	5%	13%	37%	21%	7%	3%	1%	1%	0%	8%
	70	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	2%	4%	13%	39%	21%	7%	2%	1%	0%	7%
	75	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	2%	4%	14%	42%	21%	5%	2%	1%	6%
	80	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	4%	14%	46%	21%	4%	1%	5%
	85	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	4%	14%	52%	19%	2%	0%	5%
	90	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	3%	13%	62%	14%	4%
	95	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	10%	81%	4%
Miss	1%	9%	55%	83%	53%	37%	27%	22%	16%	13%	11%	9%	8%	7%	6%	5%	5%	4%	4%	5%		

**Table 14**  
**Average Taxpayer Wage Percent Change between Wage Quantiles**

		2004 Wage Quantiles																			=		
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		95	
2003 Wage Quantiles	0																						
	5																						
	10	-100%	-100%	74.5%	439%	1085%	2057%	3339%	5825%	3657%	6570%	5334%	13043%	13442%	13434%	16387%	7938%	31699%	13138%	34403%	166766%	74.5%	
	15	-100%	-100%	-62%	17.8%	107%	208%	320%	438%	572%	711%	866%	1036%	1263%	1427%	1767%	1879%	2175%	2665%	3084%	7178%	17.8%	
	20	-100%	-100%	-84%	-37%	9.7%	6.1%	119%	183%	250%	320%	396%	485%	576%	690%	802%	964%	1109%	1251%	1715%	2842%	9.7%	
	25	-100%	-100%	-90%	-60%	-25%	7.6%	45%	87%	130%	176%	226%	283%	340%	422%	496%	590%	720%	859%	1055%	1486%	7.6%	
	30	-100%	-100%	-93%	-71%	-47%	-19%	6.2%	35%	66%	100%	136%	176%	221%	274%	330%	395%	480%	565%	751%	1304%	6.2%	
	35	-100%	-100%	-95%	-78%	-60%	-39%	-15%	5.4%	27%	53%	81%	112%	147%	185%	231%	284%	344%	421%	541%	996%	5.4%	
	40	-100%	-100%	-96%	-82%	-68%	-52%	-34%	-13%	4.8%	22%	45%	70%	98%	129%	165%	205%	255%	319%	424%	849%	4.8%	
	45	-100%	-100%	-97%	-86%	-73%	-60%	-45%	-29%	-10%	4.4%	19%	41%	65%	91%	121%	155%	195%	248%	323%	522%	4.4%	
	50	-100%	-100%	-98%	-88%	-77%	-66%	-54%	-40%	-25%	-9%	4.2%	18%	39%	61%	87%	116%	150%	195%	257%	432%	4.2%	
	55	-100%	-100%	-98%	-90%	-81%	-71%	-60%	-49%	-37%	-24%	-8%	4.2%	17%	37%	58%	83%	113%	150%	210%	417%	4.2%	
	60	-100%	-100%	-99%	-91%	-84%	-75%	-66%	-56%	-46%	-35%	-23%	-8%	4.0%	17%	36%	57%	83%	115%	161%	312%	4.0%	
	65	-100%	-100%	-99%	-92%	-86%	-79%	-71%	-62%	-53%	-44%	-34%	-22%	-8%	3.9%	16%	35%	57%	86%	127%	251%	3.9%	
	70	-100%	-100%	-99%	-94%	-88%	-81%	-75%	-68%	-60%	-51%	-42%	-33%	-21%	-7%	3.8%	16%	35%	60%	95%	193%	3.8%	
	75	-100%	-100%	-99%	-94%	-89%	-84%	-78%	-72%	-65%	-57%	-50%	-42%	-32%	-21%	-7%	3.9%	16%	38%	69%	148%	3.9%	
	80	-100%	-100%	-99%	-95%	-91%	-86%	-81%	-76%	-70%	-64%	-57%	-50%	-42%	-32%	-21%	-7%	4.1%	17%	44%	110%	4.1%	
85	-100%	-100%	-99%	-96%	-92%	-88%	-84%	-80%	-74%	-69%	-64%	-57%	-50%	-43%	-33%	-23%	-8%	4.2%	19%	76%	4.2%		
90	-100%	-100%	-100%	-97%	-94%	-90%	-87%	-83%	-79%	-75%	-70%	-65%	-59%	-53%	-45%	-37%	-26%	-9%	4.5%	32%	4.5%		
95	-100%	-100%	-100%	-98%	-96%	-95%	-92%	-89%	-86%	-84%	-81%	-78%	-73%	-68%	-63%	-55%	-49%	-37%	-15%	9.0%	9.0%		

**Table 15**  
**Actual and Estimated Economic Indicators Utah and the U.S.: February 2007**

ECONOMIC INDICATORS	UNITS	2004	2005	2006	2007	2008	% CHG	% CHG	% CHG	% CHG
		ACTUAL	ACTUAL	FORECAST	FORECAST	FORECAST	CY04-05	CY05-06	CY06-07	CY07-08
<b>PRODUCTION AND SPENDING</b>										
U.S. Real Gross Domestic Product	Billion Chained \$2000	10,703.5	11,048.6	11,422.4	11,733.4	12,083.7	3.2	3.4	2.7	3.0
U.S. Real Personal Consumption	Billion Chained \$2000	7,577.1	7,841.2	8,092.3	8,356.1	8,602.6	3.5	3.2	3.3	3.0
U.S. Real Fixed Investment	Billion Chained \$2000	1,713.9	1,842.0	1,897.1	1,871.2	1,919.7	7.5	3.0	-1.4	2.6
U.S. Real Defense Spending	Billion Chained \$2000	475.4	483.6	492.7	509.9	515.4	1.7	1.9	3.5	1.1
U.S. Real Exports	Billion Chained \$2000	1,120.4	1,196.1	1,302.3	1,408.1	1,528.8	6.8	8.9	8.1	8.6
Utah Exports (NAICS, Census)	Million Dollars	4,718.3	6,055.9	6,798.1	7,494.6	8,283.4	28.3	12.3	10.2	10.5
Utah Coal Production	Million Tons	21.8	24.6	26.0	25.1	25.4	12.5	5.9	-3.5	1.2
Utah Crude Oil Production	Million Barrels	14.7	16.7	18.0	17.8	17.4	13.0	8.1	-1.1	-2.2
Utah Natural Gas Production Sales	Billion Cubic Feet	251.8	275.6	318.2	324.6	331.1	9.5	15.5	2.0	2.0
Utah Copper Mined Production	Million Pounds	581.5	486.6	596.0	600.0	600.0	-16.3	22.5	0.7	0.0
Utah Molybdenum Production	Million Pounds	25.0	34.4	37.0	30.0	27.0	37.6	7.6	-18.9	-10.0
<b>SALES AND CONSTRUCTION</b>										
U.S. New Auto and Truck Sales	Millions	16.9	16.9	16.5	16.4	16.6	0.5	-2.6	-0.5	1.2
U.S. Housing Starts	Millions	1.95	2.07	1.82	1.54	1.58	6.3	-12.3	-15.4	3.0
U.S. Residential Investment	Billion Dollars	675.3	770.4	767.1	675.8	681.9	14.1	-0.4	-11.9	0.9
U.S. Nonresidential Structures	Billion Dollars	300.8	338.6	411.6	460.4	464.4	12.6	21.6	11.9	0.9
U.S. Repeat-Sales House Price Index	1980Q1 = 100	325.1	368.1	375.2	387.1	400.7	13.2	1.9	3.2	3.5
U.S. Existing S.F. Home Prices (NAR)	Thousand Dollars	195.2	219.0	223.3	230.3	238.4	12.2	1.9	3.2	3.5
U.S. Retail Sales	Billion Dollars	3,837.0	4,113.8	4,373.3	4,543.7	4,724.2	7.2	6.3	3.9	4.0
Utah New Auto and Truck Sales	Thousands	101.4	105.2	114.4	117.8	120.2	3.7	8.7	3.0	2.0
Utah Dwelling Unit Permits	Thousands	24.3	28.3	26.3	24.0	21.5	16.4	-6.9	-8.8	-10.4
Utah Residential Permit Value	Million Dollars	3,552.6	4,662.6	4,955.5	5,000.0	5,000.0	31.2	6.3	0.9	0.0
Utah Nonresidential Permit Value	Million Dollars	1,089.9	1,217.8	1,588.4	1,800.0	1,900.0	11.7	30.4	13.3	5.6
Utah Additions, Alterations and Repairs	Million Dollars	476.0	707.6	865.3	800.0	750.0	48.7	22.3	-7.5	-6.3
Utah Repeat-Sales House Price Index	1980Q1 = 100	267.6	295.5	340.4	374.6	393.3	10.4	15.2	10.0	5.0
Utah Existing S.F. Home Prices (NAR)	Thousand Dollars	158.0	173.9	200.3	220.4	231.4	10.1	15.2	10.0	5.0
Utah Taxable Retail Sales	Million Dollars	20,351	22,155	24,614	26,467	28,498	8.9	11.1	7.5	7.7
<b>DEMOGRAPHICS AND SENTIMENT</b>										
U.S. July 1st Population (Global Insight)	Millions	293.7	296.4	299.1	301.8	304.4	0.9	0.9	0.9	0.9
U.S. Consumer Sentiment of U.S. (U of M)	1966 = 100	95.2	88.6	87.3	92.0	90.8	-7.0	-1.4	5.3	-1.2
Utah July 1st Population (UPEC)	Thousands	2,469	2,547	2,615	2,684	2,748	3.2	2.7	2.6	2.4
Utah Net Migration (UPEC)	Thousands	18.4	40.6	28.7	29.6	24.9	na	na	na	na
Utah July 1st Population (Economy.Com)	Thousands	2,422	2,490	2,550	2,576	2,602	2.8	2.4	1.0	1.0
<b>PROFITS AND RESOURCE PRICES</b>										
U.S. Corporate Before Tax Profits	Billion Dollars	1,144.3	1,518.7	1,813.5	1,876.4	1,915.4	32.7	19.4	3.5	2.1
U.S. Before Tax Profits Less Fed. Res.	Billion Dollars	1,124.3	1,492.1	1,779.2	1,837.3	1,874.8	32.7	19.2	3.3	2.0
West Texas Intermediate Crude Oil	\$ Per Barrel	41.5	56.6	66.1	58.1	61.4	36.4	16.9	-12.1	5.7
U.S. Coal Price Index	1982 = 100	109.3	116.9	126.5	128.8	128.6	7.0	8.2	1.8	-0.1
Utah Coal Prices	\$ Per Short Ton	17.7	19.3	22.4	24.0	23.0	9.3	16.0	7.0	-4.2
Utah Oil Prices	\$ Per Barrel	39.4	54.0	59.8	60.0	60.2	37.2	10.7	0.4	0.2
Utah Natural Gas Prices	\$ Per MCF	5.24	7.16	5.42	5.40	5.90	36.6	-24.3	-0.4	9.3
Utah Copper Prices	\$ Per Pound	1.34	1.69	3.20	2.25	1.50	26.1	89.3	-29.7	-33.3
Utah Molybdenum Prices	\$ Per Pound	15.9	32.8	24.1	15.0	8.0	105.8	-26.3	-37.9	-46.7
<b>INFLATION AND INTEREST RATES</b>										
U.S. CPI Urban Consumers (BLS)	1982-84 = 100	188.9	195.3	201.6	204.7	209.3	3.4	3.2	1.5	2.3
U.S. GDP Chained Price Indexes	2000 = 100	109.4	112.7	116.1	118.5	120.8	3.0	2.9	2.1	2.0
U.S. Federal Funds Rate	Percent	1.35	3.21	4.96	5.18	5.00	na	na	na	na
U.S. 3-Month Treasury Bills	Percent	1.36	3.13	4.72	4.96	4.90	na	na	na	na
U.S. T-Bond Rate, 10-Year	Percent	4.27	4.29	4.79	4.86	5.09	na	na	na	na
30 Year Mortgage Rate (FHLMC)	Percent	5.84	5.87	6.41	6.55	6.85	na	na	na	na
<b>EMPLOYMENT AND WAGES</b>										
U.S. Establishment Employment (BLS)	Millions	131.4	133.7	136.2	138.1	140.1	1.7	1.9	1.4	1.4
U.S. Average Annual Pay (BLS)	Dollars	39,354	40,677	42,566	44,072	45,670	3.4	4.6	3.5	3.6
U.S. Total Wages & Salaries (BLS)	Billion Dollars	5,172	5,438	5,796	6,085	6,397	5.1	6.6	5.0	5.1
Utah Nonagricultural Employment (WFS)	Thousands	1,104.3	1,148.0	1,203.3	1,250.1	1,291.3	4.0	4.8	3.9	3.3
Utah Average Annual Pay (WFS)	Dollars	31,685	32,835	34,539	35,944	37,257	3.6	5.2	4.1	3.7
Utah Total Nonagriculture Wages (WFS)	Million Dollars	34,990	37,696	41,560	44,935	48,110	7.7	10.3	8.1	7.1
<b>INCOME AND UNEMPLOYMENT</b>										
U.S. Personal Income (BEA)	Billion Dollars	9,717	10,225	10,882	11,485	12,137	5.2	6.4	5.5	5.7
U.S. Unemployment Rate (BLS)	Percent	5.5	5.1	4.6	4.7	4.7	na	na	na	na
Utah Personal Income (BEA)	Million Dollars	63,401	67,906	74,289	80,381	86,490	7.1	9.4	8.2	7.6
Utah Unemployment Rate (WFS)	Percent	5.2	4.3	3.3	3.4	3.9	na	na	na	na

Sources: State of Utah Revenue Assumptions Committee, Moody's Economy.Com, and Global Insight.

**Table 16**  
Fiscal Analysis: Senate Bill 223

Calendar Year	Tax Returns	% Change	Calendar Year Baseline Tax	% Change	Calendar Year Proposed Tax	Change in Tax
2005	1,084,995		\$2,220,489,431			
2006	1,109,792	2.3%	\$2,531,439,442	14.0%	\$2,440,032,124	(\$91,407,318)
2007	1,136,968	2.4%	\$2,743,922,541	8.4%	\$2,643,078,340	(\$100,844,201)
2008	1,164,031	2.4%	\$2,988,723,656	8.9%	\$2,880,529,668	(\$108,193,988)
2009	1,193,088	2.5%	\$3,222,966,142	7.8%	\$3,110,171,666	(\$112,794,476)

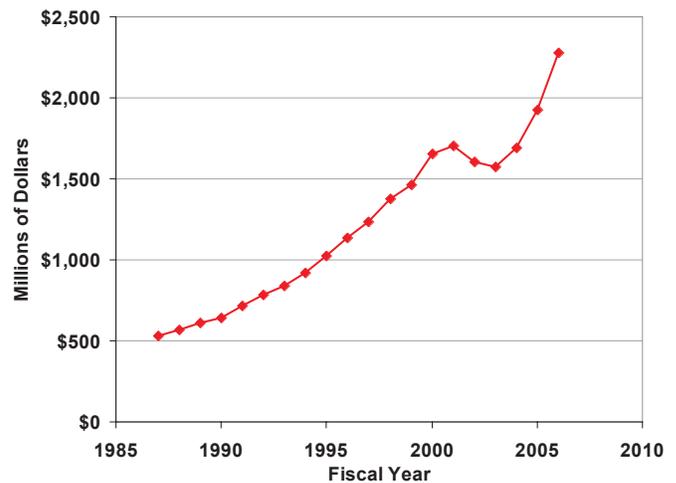
Fiscal Year	Fiscal Factor	Fiscal Year Baseline Tax	% Change	Fiscal Year Proposed Tax	Change in Tax
2006	82.0%	\$2,276,460,433			
2007	82.0%	\$2,569,686,400	12.9%	\$2,476,580,443	
2008	82.0%	\$2,787,986,742	8.5%	\$2,685,819,579	(\$25,541,791)
2009	82.0%	\$3,030,887,303	8.7%	\$2,921,865,227	(\$109,022,076)

In tax year 2008, **10.3%** of taxpayers are projected to realize income tax increases.

**Table 17**  
Utah Historical Income Tax Collections

Fiscal Year	Amount (millions \$)	Change (millions \$)	% Change (millions \$)
1987	\$531.8		
1988	\$568.2	\$36.5	6.9%
1989	\$612.0	\$43.7	7.7%
1990	\$644.5	\$32.5	5.3%
1991	\$714.1	\$69.6	10.8%
1992	\$781.4	\$67.3	9.4%
1993	\$839.0	\$57.6	7.4%
1994	\$921.6	\$82.6	9.8%
1995	\$1,024.2	\$102.5	11.1%
1996	\$1,135.8	\$111.7	10.9%
1997	\$1,233.5	\$97.7	8.6%
1998	\$1,374.5	\$141.0	11.4%
1999	\$1,461.3	\$86.8	6.3%
2000	\$1,651.4	\$190.1	13.0%
2001	\$1,705.3	\$53.8	3.3%
2002	\$1,605.3	-\$100.0	-5.9%
2003	\$1,572.5	-\$32.8	-2.0%
2004	\$1,692.3	\$119.8	7.6%
2005	\$1,926.6	\$234.3	13.8%
2006	\$2,277.6	\$351.0	18.2%

**Figure 20**  
Utah Historical Income Tax Collections



cell of the quantile matrix. As expected, taxpayers moving rapidly up the wage distribution exhibit huge gains in wages; e.g., the 53 taxpayers moving from the 10th to 15th percentile (row 10) in 2003 to the 80th to 85th percentile (column 80) in 2004 experienced wage growth averaging 31,699%. In general, it appears the lower end of the wage distribution realizes larger average percent changes, but exhibits diminishing returns as taxpayers climb through the wage distribution.

In addition to providing a good framework for understanding Utah's income dynamics, this analysis yielded useful information in designing and applying wage changes to forecast data sets to more accurately determine changes to prospective revenues for future budgets.

**Table 18**  
**Comparing Income Tax Systems Volatility**

Year	Taxpayers	Utah AGI		Prior System			SB4001			SB223			Elasticity		
		millions	%chg	millions	chg	%chg	millions	chg	%chg	millions	chg	%chg	Prior	SB4001	SB223
1994	804,360	\$24,533		\$979			\$953			\$958			1.09	1.09	1.07
1995	843,610	\$27,178	10.8%	\$1,094	\$115	11.7%	\$1,065	\$112	11.7%	\$1,068	\$111	11.5%	0.56	0.59	0.84
1996	880,078	\$30,092	10.7%	\$1,159	\$65	6.0%	\$1,132	\$67	6.3%	\$1,165	\$96	9.0%	1.07	1.06	1.11
1997	914,419	\$33,259	10.5%	\$1,289	\$130	11.2%	\$1,258	\$126	11.1%	\$1,301	\$136	11.7%	1.17	1.15	1.02
1998	939,069	\$35,473	6.7%	\$1,390	\$100	7.8%	\$1,355	\$97	7.7%	\$1,389	\$89	6.8%	1.27	1.27	1.24
1999	963,512	\$38,469	8.4%	\$1,538	\$149	10.7%	\$1,500	\$145	10.7%	\$1,534	\$145	10.4%	1.02	1.02	1.05
2000	987,688	\$41,009	6.6%	\$1,642	\$103	6.7%	\$1,602	\$101	6.8%	\$1,641	\$106	6.9%	2.86	2.81	1.90
2001	997,748	\$40,249	-1.9%	\$1,555	-\$87	-5.3%	\$1,519	-\$83	-5.2%	\$1,583	-\$58	-3.5%	0.65	0.64	1.21
2002	1,002,124	\$39,578	-1.7%	\$1,538	-\$17	-1.1%	\$1,502	-\$16	-1.1%	\$1,551	-\$32	-2.0%	0.86	0.80	0.57
2003	997,347	\$41,471	4.8%	\$1,601	\$63	4.1%	\$1,560	\$58	3.8%	\$1,593	\$42	2.7%	1.24	1.22	1.14
2004	1,018,358	\$45,326	9.3%	\$1,785	\$184	11.5%	\$1,737	\$177	11.3%	\$1,762	\$169	10.6%	1.28	1.24	1.18
2005	1,084,995	\$54,009	19.2%	\$2,222	\$436	24.4%	\$2,148	\$411	23.7%	\$2,161	\$399	22.6%			

**Fiscal Analysis**

Producing a fiscal analysis of potential impacts to tax changes using a micro simulation model requires a forecast of future revenues. This baseline of potential revenue is created from a range of demographic and economic assumptions. The Utah Revenue Assumptions Committee, a group of economists and technical experts, meets quarterly to discuss the outlook of over 50 indicators of economic growth, see table 15. The topics covered include: production and spending; sales and construction; demographics and sentiment; profits and resource prices; inflation and interest rates; employment and wages; income and unemployment. Many of these indicators are critical assumptions in various econometric and micro simulation models that help inform the state's official revenue forecast. An important assumption for the micro simulation model is the growth of Utah's nonagricultural wages.

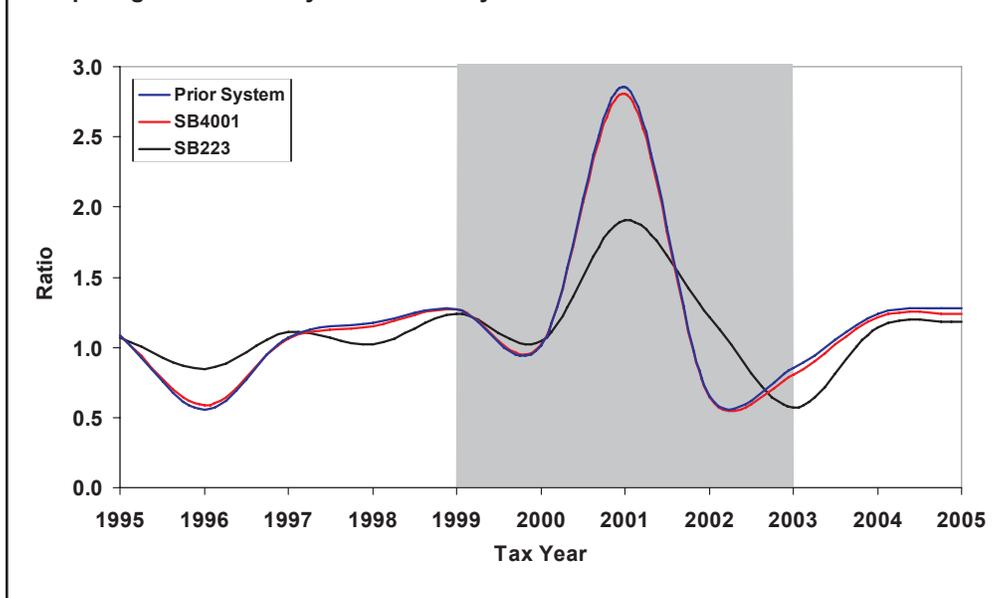
The baseline income tax utilized in the micro simulation model is based on the forecast records described earlier. After the projected

taxes are calculated from the forecast income, the final tax liability for each taxpayer record in each data set is summed to arrive at the baseline revenue forecast, see table 16. The model results are derived for each calendar year, and then adjusted to the fiscal year to account for the flow of revenue. Comparing this method to the actual revenue collections in Fiscal Year 2006 shows the baseline forecast of \$2,276,460,433 is 0.05% different from actual Fiscal Year 2006 collections (before mineral production) of \$2,277,611,600. The Utah taxes that would be collected under reform are calculated and summed in the same manner the baseline forecast was produced. The same fiscal year adjustments are applied to the calendar year revenue forecasts and the difference between the forecast and baseline is compared to arrive at the fiscal impact from the 2007 General Session Senate Bill 223. The effective date of the bill caused a quarter of the full fiscal year impact to impact revenues \$26 million in Fiscal Year 2008, and the full impact in Fiscal Year 2009 was estimated to be \$109 million.

**Volatility Analysis**

Reduction of the income tax system's volatility was a policy priority when tax reform was first discussed. Historically the income tax has been one of the more volatile revenue streams, see figure 19. The maximum, minimum, and average growth of taxable sales and income sources from 1990 to 2004 are plotted above their relative size in billions of dollars. The taxable income from the IRS is shown to fluctuate from 10.8% in the highest growth year, to down 2.4% in the lowest growth year. Over the same time, taxable sales highest growth was 11.7% and the lowest growth was 0.1%. The source of the volatile income is the non-wage income; capital gains, self employed profits, dividends, and interest fluctuated from 16.7% in the highest growth

**Figure 21**  
**Comparing Income Tax Systems Volatility**



year to a 13.7% decline in the lowest growth year. At roughly a third of the wage income, the revenue derived from this income source was a main contributor to the 6% decline in tax collections in the combined general and school fund. In comparison, the slowest personal income growth, a measure of economic activity, was 2.8% over the same time period. Table 17 and figure 20 exhibit the actual unadjusted Utah income tax collections, excluding mineral production revenue from 1987 through 2006. In Fiscal Year 2002, collections from the individual income tax dropped by \$100 million.

To investigate how volatility would be impacted under alternative tax systems, the historical state tax data from 1994 to 2005 was utilized to compare the tax collections from Utah taxpayers. Table 18 shows the number of taxpayers, aggregate adjusted gross income, and the tax amounts under alternative tax systems had they been implemented consistently with the legislation SB4001 from the 2006 Fourth

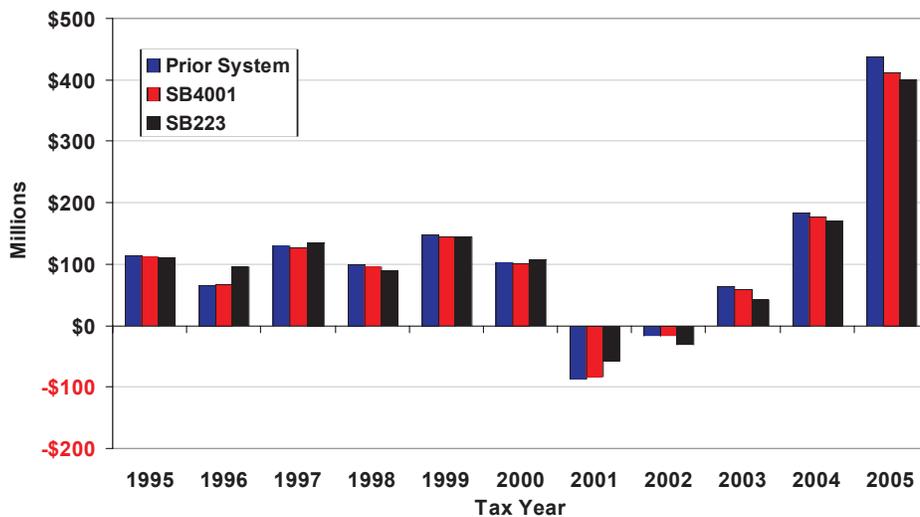
Special Session and SB223 from the 2007 General Session. The table indicates that volatility would be reduced only slightly from the dual tax system implemented under SB4001; as the tax would have declined 5.2%, instead of 5.3%, a practically insignificant change. Moving to the single rate system under SB223 revenues would have declined 3.8%, a more significant difference. In this year, the income tax elasticity (as defined by the percent change in tax over the percent change in adjusted gross income) could have been reduced in half from 2.86 to 1.90, see figure 21. This analysis shows how the growth of the income tax is highly correlated with changes in income. The large growth in the income tax experienced throughout these time periods did not seem to be significantly altered by these tax changes, see figure 22.

### Distributional Analysis

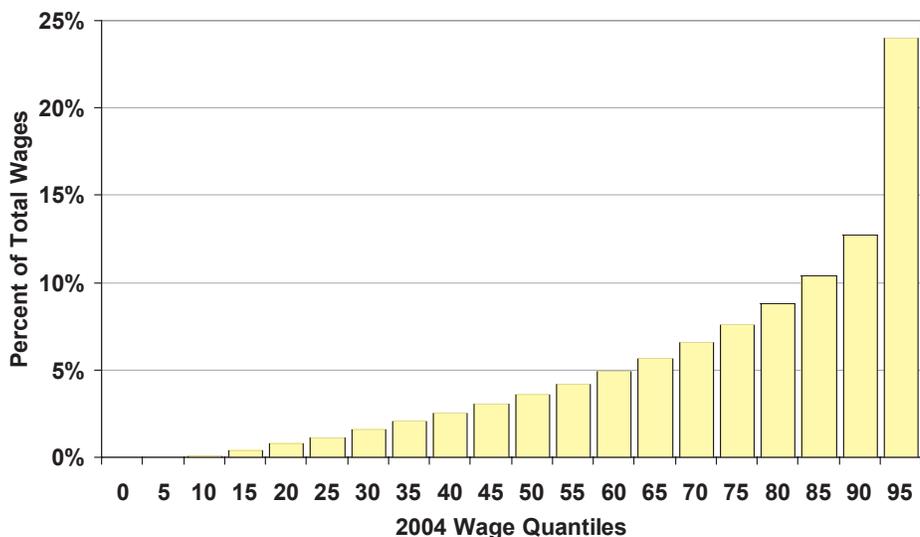
In addition to the type of analysis described earlier, more analysis was conducted to better comprehend how changes in the individual income tax would impact the state's taxpayers. Key to this effort was framing the change taxpayers could experience relative to the tax they were paying under the graduated system.

Taxes are a function of income; specifically a percentage of qualifying income less credits. The distribution of income largely determines the distribution of taxes paid. Figure 23 exhibits the share of overall wages that each wage quantile captures. In 2004, the top 5% of wage earners captured 24% of all wages and the top 25% of wage earners captured 63% of all

**Figure 22**  
Comparing Income Tax Systems Change in Revenue



**Figure 23**  
Income Tax Distribution by Wage Quantile



**Table 19**  
Income Tax Distribution by Wage Quantile

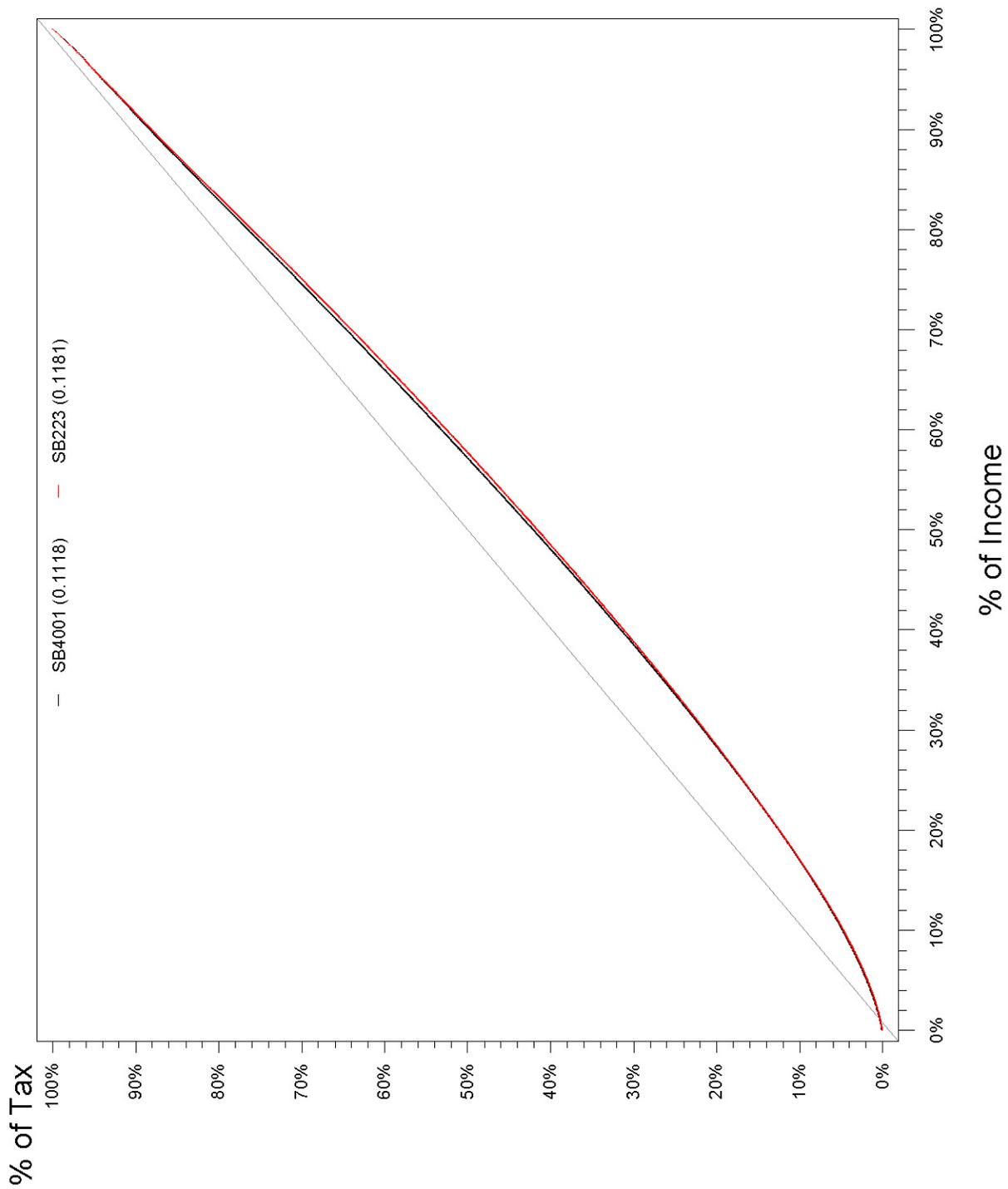
2004 Wage	Percent of Income Tax	Cumulative Percent
0	0.0%	0.0%
5	0.0%	0.0%
10	0.1%	0.1%
15	0.4%	0.5%
20	0.8%	1.3%
25	1.2%	2.4%
30	1.6%	4.0%
35	2.1%	6.0%
40	2.5%	8.6%
45	3.0%	11.6%
50	3.6%	15.2%
55	4.2%	19.5%
60	4.9%	24.4%
65	5.7%	30.0%
70	6.5%	36.6%
75	7.6%	44.1%
80	8.8%	52.9%
85	10.4%	63.3%
90	12.7%	76.0%
95	24.0%	100.0%

**Table 20**  
**2004 Tax Return Data: Taxes paid by Income Percentiles**

AGI Percentile	%	N	Taxes Paid	% of Taxes Paid	Cumulative Tax Paid	Reverse Cumulative Tax Paid	AGI Percentile	%	N	Taxes Paid	% of Taxes Paid	Cumulative Tax Paid	Reverse Cumulative Tax Paid
			Current	Current	Current	Current				Current	Current	Current	Current
00 \$0k		9988	-\$410,405	-0.02	-0.02	.	50 \$28k	50%	9989	\$7,092,990	0.41	6.16	94.24
01 \$0k		9989	-\$530,914	-0.03	-0.05	.	51 \$29k		9989	\$7,578,876	0.44	6.60	93.84
02 \$0k		9989	\$24,766	0.00	-0.05	100.05	52 \$30k		9988	\$7,914,191	0.46	7.06	93.40
03 \$1k		9989	\$52,437	0.00	-0.05	100.05	53 \$31k		9989	\$8,305,992	0.48	7.53	92.94
04 \$1k		9989	\$72,857	0.00	-0.05	100.05	54 \$31k		9989	\$8,630,731	0.50	8.03	92.47
05 \$2k		9988	\$85,123	0.00	-0.04	100.05	55 \$32k		9989	\$9,057,304	0.52	8.55	91.97
06 \$2k		9989	\$103,520	0.01	-0.03	100.04	56 \$33k		9989	\$9,547,593	0.55	9.10	91.45
07 \$3k		9989	\$118,243	0.01	-0.03	100.04	57 \$34k		9989	\$9,927,377	0.57	9.67	90.90
08 \$3k		9989	\$132,927	0.01	-0.02	100.03	58 \$35k		9988	\$10,464,050	0.60	10.27	90.33
09 \$4k		9989	\$158,480	0.01	-0.01	100.02	59 \$36k		9989	\$10,901,337	0.63	10.90	89.73
10 \$4k		9989	\$164,643	0.01	0.00	100.01	60 \$37k		9989	\$11,550,488	0.66	11.57	89.10
11 \$5k		9988	\$188,278	0.01	0.01	100.00	61 \$38k		9989	\$11,891,896	0.68	12.25	88.43
12 \$5k		9989	\$187,006	0.01	0.02	99.99	62 \$39k		9989	\$12,474,396	0.72	12.97	87.75
13 \$6k		9989	\$245,919	0.01	0.03	99.98	63 \$40k		9989	\$13,125,339	0.76	13.72	87.03
14 \$6k		9989	\$315,706	0.02	0.05	99.97	64 \$41k		9988	\$13,602,170	0.78	14.51	86.28
15 \$6k		9989	\$356,491	0.02	0.07	99.95	65 \$43k		9989	\$14,219,447	0.82	15.32	85.49
16 \$7k		9989	\$401,586	0.02	0.10	99.93	66 \$44k		9989	\$14,763,050	0.85	16.17	84.68
17 \$7k		9988	\$429,304	0.02	0.12	99.90	67 \$45k		9989	\$15,431,549	0.89	17.06	83.83
18 \$8k		9989	\$556,411	0.03	0.15	99.88	68 \$46k		9989	\$16,241,416	0.93	18.00	82.94
19 \$9k		9989	\$688,993	0.04	0.19	99.85	69 \$47k		9989	\$16,862,475	0.97	18.97	82.00
20 \$9k		9989	\$791,830	0.05	0.24	99.81	70 \$49k		9988	\$17,490,774	1.01	19.97	81.03
21 \$10k		9989	\$886,193	0.05	0.29	99.76	71 \$50k		9989	\$18,248,087	1.05	21.02	80.03
22 \$10k		9989	\$1,028,246	0.06	0.35	99.71	72 \$51k		9989	\$18,881,112	1.09	22.11	78.98
23 \$11k		9988	\$1,136,042	0.07	0.41	99.65	73 \$53k		9989	\$19,742,181	1.14	23.25	77.89
24 \$11k		9989	\$1,263,140	0.07	0.49	99.59	74 \$54k		9989	\$20,516,077	1.18	24.43	76.76
25 \$12k	75%	9989	\$1,408,873	0.08	0.57	99.51	75 \$56k	25%	9989	\$21,346,364	1.23	25.65	75.57
26 \$12k		9989	\$1,589,185	0.09	0.66	99.43	76 \$57k		9988	\$22,104,700	1.27	26.93	74.35
27 \$13k		9989	\$1,720,423	0.10	0.76	99.34	77 \$59k		9989	\$22,946,530	1.32	28.25	73.07
28 \$14k		9989	\$1,833,564	0.11	0.86	99.24	78 \$60k		9989	\$23,908,372	1.38	29.62	71.75
29 \$14k		9988	\$1,978,523	0.11	0.98	99.14	79 \$62k		9989	\$24,861,455	1.43	31.05	70.38
30 \$15k		9989	\$2,168,104	0.12	1.10	99.02	80 \$64k		9989	\$25,961,894	1.49	32.55	68.95
31 \$15k		9989	\$2,279,369	0.13	1.23	98.90	81 \$66k		9989	\$27,000,463	1.55	34.10	67.45
32 \$16k		9989	\$2,411,934	0.14	1.37	98.77	82 \$68k		9988	\$28,127,293	1.62	35.72	65.90
33 \$16k		9989	\$2,642,968	0.15	1.52	98.63	83 \$70k		9989	\$29,239,756	1.68	37.40	64.28
34 \$17k		9989	\$2,866,938	0.17	1.69	98.48	84 \$72k		9989	\$30,473,084	1.75	39.15	62.60
35 \$18k		9988	\$2,969,476	0.17	1.86	98.31	85 \$74k		9989	\$31,914,055	1.84	40.99	60.85
36 \$18k		9989	\$3,205,589	0.18	2.04	98.14	86 \$77k		9989	\$33,165,637	1.91	42.90	59.01
37 \$19k		9989	\$3,394,533	0.20	2.24	97.96	87 \$80k		9989	\$34,598,082	1.99	44.89	57.10
38 \$20k		9989	\$3,751,052	0.22	2.46	97.76	88 \$83k		9988	\$36,274,965	2.09	46.98	55.11
39 \$20k		9989	\$3,944,362	0.23	2.68	97.55	89 \$86k		9989	\$38,113,945	2.19	49.17	53.02
40 \$21k		9989	\$4,115,090	0.24	2.92	97.32	90 \$89k	10%	9989	\$39,995,473	2.30	51.47	50.83
41 \$21k		9988	\$4,370,121	0.25	3.17	97.08	91 \$93k		9989	\$42,141,925	2.42	53.90	48.53
42 \$22k		9989	\$4,638,249	0.27	3.44	96.83	92 \$98k		9989	\$44,777,043	2.58	56.47	46.10
43 \$23k		9989	\$4,858,392	0.28	3.72	96.56	93 \$104k		9989	\$47,793,796	2.75	59.22	43.53
44 \$24k		9989	\$5,104,879	0.29	4.01	96.28	94 \$111k		9988	\$51,594,613	2.97	62.19	40.78
45 \$24k		9989	\$5,468,101	0.31	4.33	95.99	95 \$121k	5%	9989	\$56,533,799	3.25	65.45	37.81
46 \$25k		9989	\$5,763,743	0.33	4.66	95.68	96 \$134k		9989	\$63,565,674	3.66	69.10	34.55
47 \$26k		9988	\$5,999,283	0.35	5.00	95.34	97 \$158k		9989	\$75,840,293	4.36	73.47	30.90
48 \$27k		9989	\$6,367,059	0.37	5.37	95.00	98 \$209k		9989	\$102,390,672	5.89	79.36	26.53
49 \$27k		9989	\$6,734,305	0.39	5.76	94.63	99 \$737k	1%	9989	\$358,715,083	20.64	100.00	20.64

# Tax Reform: 2008 Resident Taxpayers

Lorentz Curves and the Suits Index



**Table 21**  
**2008 Distributional Impacts of Senate Bill 223**

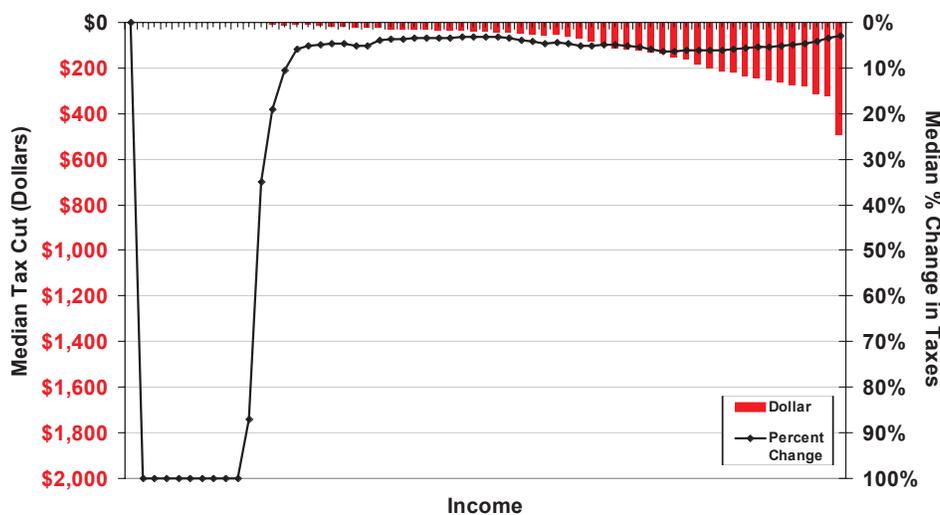
Category	Mean Tax				Share of Tax Paid			% of Cut
	Current	Proposed	Change	% Change	Current	Proposed	Change	
<= \$50,000	\$495	\$473	-\$22	-4%	12.0%	12.0%	-0.1%	14%
> \$50,000	\$6,030	\$5,817	-\$213	-4%	88.0%	88.0%	0.1%	86%
<=\$5k	\$3	\$1	-\$2	-62%	0.0%	0.0%	0.0%	0%
\$5 - 15k	\$147	\$128	-\$19	-13%	0.6%	0.5%	-0.1%	2%
\$15 - 25k	\$477	\$448	-\$29	-6%	1.9%	1.8%	0.0%	3%
\$25 - 40k	\$1,298	\$1,252	-\$47	-4%	5.1%	5.1%	0.0%	5%
\$40 - 70k	\$3,742	\$3,576	-\$165	-4%	14.8%	14.7%	-0.1%	18%
\$70 - 100k	\$3,913	\$3,699	-\$214	-5%	15.5%	15.2%	-0.3%	23%
>\$100k	\$15,669	\$15,230	-\$439	-3%	62.1%	62.6%	0.5%	48%
Single	\$1,109	\$1,079	-\$30	-3%	16.8%	17.0%	0.2%	12%
HofH	\$256	\$249	-\$7	-3%	3.9%	3.9%	0.0%	3%
MFJ	\$5,102	\$4,902	-\$200	-4%	77.3%	77.0%	-0.2%	84%
MFS	\$135	\$133	-\$2	-2%	2.0%	2.1%	0.0%	1%
0	\$49	\$45	-\$4	-8%	0.7%	0.7%	0.0%	2%
1	\$1,145	\$1,119	-\$25	-2%	17.3%	17.6%	0.3%	11%
2	\$2,246	\$2,206	-\$40	-2%	34.0%	34.7%	0.7%	17%
3	\$907	\$870	-\$37	-4%	13.7%	13.7%	-0.1%	16%
4	\$995	\$939	-\$56	-6%	15.1%	14.8%	-0.3%	24%
5	\$649	\$609	-\$40	-6%	9.8%	9.6%	-0.3%	17%
>=6	\$612	\$575	-\$37	-6%	9.3%	9.0%	-0.2%	15%
All	\$2,568	\$2,475	-\$93	-4%	100.0%	100.0%	0.0%	100.0%

how the distribution of tax changes among tax payers is an important element in evaluating the equity of tax changes. It is often difficult to compare two curves to decide which is more convex. A numerical measure called the Suits Index was developed to compare the change in tax incidence, see figure 24. The Suits Index provides a point estimate of the degree of progressivity or regressivity in the income tax system. The Suits Index of the dual tax system (2006 4th Special Session Senate Bill 4001) in 2008 was forecast at 0.1118, the single rate system (SB223) was forecast to be 0.1181; based on this measure, the single rate system is more progressive than the dual tax system (which was slightly more progressive than the graduated rate system).

A more intuitive chart describing the distribution of the income tax changes is described in absolute and relative terms in figure 25. The median tax change by income percentiles is graphed against the percent change and dollar change in taxes. Though the dollar change in taxes appears to be shaped similarly to figure 24, on a percentage basis it appears that those who currently pay taxes receive around the same share of tax cut in percentage terms.

A more detailed description of how the tax burden changes under different tax regimes is found in table 21. Tax changes are summarized by income group, filing status, and household size. On average, those making under \$50,000 of federal adjusted gross income would pay \$495 in state income tax under the dual tax system, under the single rate system they would pay \$473; the average tax change being a reduction of \$22. Taxpayers with income above \$50,000 would pay, on average, \$6,030 under the dual tax system and \$5,817 under the single rate system; an average

**Figure 25**  
**Median Change in Income Tax**



wages, see table 19. In 2004, the top 5% of taxpayers (based on federal adjusted gross income) paid 38% of the income tax; the top 25% of taxpayers paid nearly 76% of the income tax, see table 20. The distribution of non-wage income is similar, but even more exaggerated. If taxes were only based on wages, and everyone paid the same share of tax from their wages, the tax distribution would be identical to figure 23. The graduated rate and single rate systems are progressive in nature, meaning those with more income pay a higher percentage of their total income in taxes; resulting in a tax distribution that is more skewed than that of figure 23. Comparing

tax reduction of over \$200. These absolute tax changes are not very informative when ascertaining the fairness of tax changes. The change in the share of taxes paid addresses this equity concern with more sharpness. The group of taxpayers making less than \$50,000 would pay 12% of the tax burden and receive 14% of the total aggregate reduction in income tax (\$109 million). Their total burden changes very slightly, less than 0.1%, with a commensurate increase in the group making over \$50,000. These comparisons are dependent upon how categories are defined. Categories at other levels of detail provide more scope for understanding how the tax

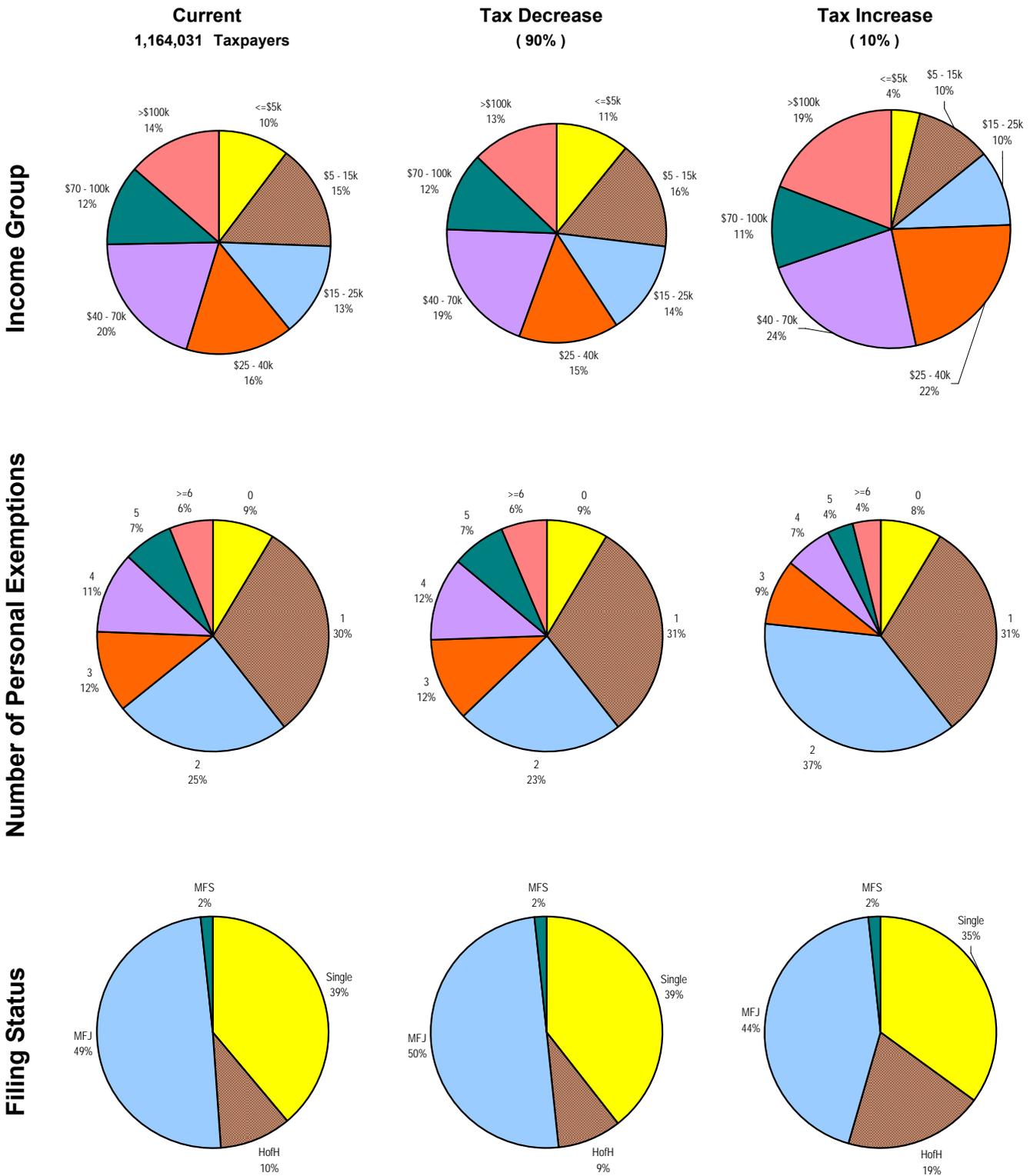
**Table 22**  
**2008 Top 10 Groups with Tax Increases and Accompanying Cohorts**

Status	Filing Status	Exemptions	Standard Deduction	Retired	Income Group	Taxpayers	Group Share	Average Effective Rate	Average Current Tax	Average Income	Average Deduction	Median Change
1 Increase	Married Filing Joint	2	No	No	>\$100k	10,640	21%	4.1%	\$14,458	\$353,670	\$91,795	\$182
Decrease	Married Filing Joint	2	No	No	>\$100k	39,176	79%	4.7%	\$12,469	\$258,622	\$32,918	-\$144
Everyone	Married Filing Joint	2	No	No	>\$100k	49,816	100%	4.6%	\$12,894	\$278,923	\$45,493	-\$123
2 Increase	Single	0	Yes	No	>\$5k and <=\$15k	9,343	27%	1.4%	\$128	\$9,172	\$5,409	\$5
Decrease	Single	0	Yes	No	>\$5k and <=\$15k	25,386	73%	1.4%	\$153	\$9,051	\$5,384	-\$14
Everyone	Single	0	Yes	No	>\$5k and <=\$15k	34,729	100%	1.4%	\$146	\$9,084	\$5,391	-\$8
3 Increase	Married Filing Joint	2	No	No	>\$40k and <=\$70k	6,635	25%	2.6%	\$1,479	\$56,347	\$20,711	\$147
Decrease	Married Filing Joint	2	No	No	>\$40k and <=\$70k	20,033	75%	3.5%	\$2,006	\$58,072	\$18,969	-\$96
Everyone	Married Filing Joint	2	No	No	>\$40k and <=\$70k	26,668	100%	3.2%	\$1,875	\$57,643	\$19,402	-\$78
4 Increase	Single	1	No	No	>\$70k and <=\$100k	5,770	45%	4.2%	\$3,538	\$84,978	\$23,330	\$25
Decrease	Single	1	No	No	>\$70k and <=\$100k	6,973	55%	4.8%	\$3,793	\$79,607	\$14,420	-\$25
Everyone	Single	1	No	No	>\$70k and <=\$100k	12,743	100%	4.5%	\$3,678	\$82,039	\$18,454	-\$3
5 Increase	Single	1	No	No	>\$40k and <=\$70k	5,509	16%	3.4%	\$1,851	\$54,364	\$19,338	\$47
Decrease	Single	1	No	No	>\$40k and <=\$70k	28,995	84%	4.3%	\$2,306	\$53,673	\$13,275	-\$40
Everyone	Single	1	No	No	>\$40k and <=\$70k	34,504	100%	4.2%	\$2,233	\$53,783	\$14,243	-\$35
6 Increase	Married Filing Joint	2	No	Yes	>\$40k and <=\$70k	4,742	79%	1.4%	\$639	\$45,046	\$17,374	\$399
Decrease	Married Filing Joint	2	No	Yes	>\$40k and <=\$70k	1,256	21%	2.5%	\$939	\$45,035	\$22,855	-\$90
Everyone	Married Filing Joint	2	No	Yes	>\$40k and <=\$70k	5,998	100%	1.6%	\$702	\$45,044	\$18,521	\$374
7 Increase	Single	1	No	No	>\$100k	4,628	48%	4.2%	\$9,518	\$236,340	\$65,835	\$121
Decrease	Single	1	No	No	>\$100k	4,993	52%	5.0%	\$18,153	\$367,160	\$32,230	-\$413
Everyone	Single	1	No	No	>\$100k	9,621	100%	4.6%	\$13,999	\$304,232	\$48,395	-\$19
8 Increase	Married Filing Joint	2	No	Yes	>\$25k and <=\$40k	4,354	38%	0.4%	\$97	\$35,458	\$15,169	\$261
Decrease	Married Filing Joint	2	No	Yes	>\$25k and <=\$40k	7,201	62%	0.7%	\$64	\$30,106	\$20,309	\$0
Everyone	Married Filing Joint	2	No	Yes	>\$25k and <=\$40k	11,555	100%	0.5%	\$77	\$32,123	\$18,372	\$0
9 Increase	Married Filing Joint	2	No	No	>\$70k and <=\$100k	4,125	13%	3.4%	\$2,836	\$83,987	\$26,925	\$101
Decrease	Married Filing Joint	2	No	No	>\$70k and <=\$100k	28,761	87%	4.2%	\$3,552	\$84,462	\$20,994	-\$132
Everyone	Married Filing Joint	2	No	No	>\$70k and <=\$100k	32,886	100%	4.1%	\$3,462	\$84,402	\$21,738	-\$125
10 Increase	Single	1	No	Yes	>\$25k and <=\$40k	3,347	48%	1.8%	\$540	\$29,453	\$10,029	\$41
Decrease	Single	1	No	Yes	>\$25k and <=\$40k	3,643	52%	3.1%	\$949	\$33,515	\$13,581	-\$39
Everyone	Single	1	No	Yes	>\$25k and <=\$40k	6,990	100%	2.4%	\$753	\$31,570	\$11,880	\$0

**Table 23**  
**2008 Top 10 Groups with Tax Decreases and Accompanying Cohorts**

Status	Filing Status	Exemptions	Standard Deduction	Retired	Income Group	Taxpayers	Group Share	Average Effective Rate	Average Current Tax	Average Income	Average Deduction	Median Change
1 Increase Single	Single	1	Yes	No	>\$5k and <=\$15k	489	1%	1.3%	\$131	\$12,008	\$4,838	\$44
1 Decrease Single	Single	1	Yes	No	>\$5k and <=\$15k	63,320	99%	1.3%	\$111	\$9,887	\$5,135	-\$14
Everyone Single	Single	1	Yes	No	>\$5k and <=\$15k	63,809	100%	1.3%	\$111	\$9,904	\$5,133	-\$14
Increase Single	Single	1	Yes	No	>\$15k and <=\$25k	948	2%	2.5%	\$489	\$19,749	\$5,391	\$91
2 Decrease Single	Single	1	Yes	No	>\$15k and <=\$25k	53,328	98%	3.2%	\$647	\$19,828	\$5,363	-\$27
Everyone Single	Single	1	Yes	No	>\$15k and <=\$25k	54,276	100%	3.2%	\$644	\$19,827	\$5,364	-\$27
Increase Single	Single	1	Yes	No	>\$25k and <=\$40k	874	2%	3.9%	\$1,207	\$31,313	\$5,411	\$73
3 Decrease Single	Single	1	Yes	No	>\$25k and <=\$40k	45,735	98%	4.4%	\$1,385	\$31,388	\$5,577	-\$44
Everyone Single	Single	1	Yes	No	>\$25k and <=\$40k	46,609	100%	4.4%	\$1,382	\$31,386	\$5,574	-\$44
Increase Single	Single	0	No	No	<=\$5k	25	0%	1.0%	\$28	\$2,385	\$1,873	\$3
4 Decrease Single	Single	0	No	No	<=\$5k	42,287	100%	1.3%	\$5	\$2,366	\$2,875	\$0
Everyone Single	Single	0	No	No	<=\$5k	42,312	100%	1.3%	\$5	\$2,366	\$2,874	\$0
Increase Married Filing Joint	Married Filing Joint	2	No	No	>\$100k	10,640	21%	4.1%	\$14,458	\$353,670	\$91,795	\$182
5 Decrease Married Filing Joint	Married Filing Joint	2	No	No	>\$100k	39,176	79%	4.7%	\$12,469	\$258,622	\$32,918	-\$144
Everyone Married Filing Joint	Married Filing Joint	2	No	No	>\$100k	49,816	100%	4.6%	\$12,894	\$278,923	\$45,493	-\$123
Increase Single	Single	1	No	No	>\$40k and <=\$70k	5,509	16%	3.4%	\$1,851	\$54,364	\$19,338	\$47
6 Decrease Single	Single	1	No	No	>\$40k and <=\$70k	28,995	84%	4.3%	\$2,306	\$53,673	\$13,275	-\$40
Everyone Single	Single	1	No	No	>\$40k and <=\$70k	34,504	100%	4.2%	\$2,233	\$53,783	\$14,243	-\$35
Increase Married Filing Joint	Married Filing Joint	2	No	No	>\$70k and <=\$100k	4,125	13%	3.4%	\$2,836	\$83,987	\$26,925	\$101
7 Decrease Married Filing Joint	Married Filing Joint	2	No	No	>\$70k and <=\$100k	28,761	87%	4.2%	\$3,552	\$84,462	\$20,994	-\$132
Everyone Married Filing Joint	Married Filing Joint	2	No	No	>\$70k and <=\$100k	32,886	100%	4.1%	\$3,462	\$84,402	\$21,738	-\$125
Increase Married Filing Joint	Married Filing Joint	4	No	No	>\$100k	1,621	6%	4.0%	\$20,900	\$510,357	\$120,177	\$253
8 Decrease Married Filing Joint	Married Filing Joint	4	No	No	>\$100k	25,493	94%	4.6%	\$9,952	\$213,283	\$34,498	-\$384
Everyone Married Filing Joint	Married Filing Joint	4	No	No	>\$100k	27,114	100%	4.5%	\$10,606	\$231,044	\$39,620	-\$378
Increase Single	Single	0	Yes	No	>\$5k and <=\$15k	9,343	27%	1.4%	\$128	\$9,172	\$5,409	\$5
9 Decrease Single	Single	0	Yes	No	>\$5k and <=\$15k	25,386	73%	1.4%	\$153	\$9,051	\$5,384	-\$14
Everyone Single	Single	0	Yes	No	>\$5k and <=\$15k	34,729	100%	1.4%	\$146	\$9,084	\$5,391	-\$8
Increase Single	Single	1	Yes	No	<=\$5k	239	1%	3.0%	\$22	-\$7,561,486	-\$2,273,340	\$0
10 Decrease Single	Single	1	Yes	No	<=\$5k	24,326	99%	2.7%	\$14	\$203	\$4,262	\$0
Everyone Single	Single	1	Yes	No	<=\$5k	24,565	100%	2.7%	\$14	-\$73,367	-\$17,897	\$0

**Figure 26**  
**Taxpayers divided by type of Tax Change**



burden changes among different types of taxpayers and various income levels. In general this shows that those making over \$100,000 in income will pay a slightly higher share from 62.1% to 62.6%, an increase in share of 0.5% of taxes, while receiving 48% of the \$109 million tax reduction. In addition, single filers will bear a slightly higher share of aggregate tax, from 16.8% to 17.0%, up 0.2% with a commensurate reduction for those married filing jointly. Additionally, those filing with 1 or 2 exemptions will pay a higher share, from 17.3% to 17.6%, up 0.3% and 34.0% to 34.7%, up 0.7% respectively, with those with 3 or more exemptions paying a lower share of taxes.

Comparing the type of tax change, whether a tax reduction or a tax increase among the different classes of taxpayers reveals how the single rate tax system treated taxpayers relative to the dual tax system, see figure 26. These pie charts confirm the suppositions made from table 21. Nearly 90% of taxpayers were projected to realize reductions in tax liability while 10% of tax payers would realize moderate tax increases. While 14% of taxpayers made more than \$100,000; 13% of taxpayers with tax reductions made more than \$100,000 while 19% of the taxpayers with tax increases made more than \$100,000. Similarly, while 25% of taxpayers file with 2 exemptions; 23% of taxpayers with reductions had 2 exemptions with 37% of the taxpayers with tax increases having 2 deductions. Though this information provides a better understanding of how the aggregate tax burden is shifting among classes of taxpayers, it does not explain in detail what is happening to individual taxpayers.

The prior groups were separated exclusively by a given type of class; whether it was income, filing status, or exemption size. These classes were cross tabulated to enable examination of the impacts to smaller groups of taxpayers. This enabled comparing the impacts of tax changes between those who were married filing jointly, with the standard deduction, who were not retired, at a specific income group, with 3 exemptions to similar taxpayers with 4 exemptions. These cross tabulations enabled a comparison of thousands of different groups of taxpayers, some of which were too small to disclose. A sample of this data containing the largest groups of taxpayers with tax increases and decreases is found in tables 22 and 23.

One of the most descriptive methods of describing how the tax distribution changes under SB223 is to compare how individual taxpayer's effective tax rates change en masse. The effective tax rate is the tax divided by income and provides a measure that normalizes the amount of tax owed compared to the amount of income so that high, low and middle incomes are on same scale. Figures 27 to 29 provide the effective tax rates of the taxpayers under the graduated rate, dual, and single rate tax systems. Figure 30 provides nearly 3 million dots worth of information regarding the amount of taxes paid by Utah taxpayers under the graduated rate system (green dots), dual tax system (red dots), and the single rate tax system (blue dots). In figure 29, the effects of SB223 show the income level where the credit begins to phase out. Taxpayers with little income pay no tax so they have an effective tax rate of zero. As income increases for taxpayers of different filing status lines begin to form which are tightly bunched points representing similar taxpayers. Each apparent line represents taxpayers with different filing status and number of personal exemptions. The dispersion in the chart is largely the result of the variability of itemized deductions among taxpayers at

similar income amounts. The chart exhibits the progressive nature of the single rate system, the rate at which the credits phase out, and ultimately, the flat nature of the single rate system.

In addition to the micro simulation modeling that depended upon actual tax records, analysis was also conducted with other models that used synthetic data by picking a class of taxpayers and comparing the tax systems. The data was generated by growing income from \$1 to \$149,001 at \$1,000 increments for single taxpayers with and without an exemption; married taxpayers filing jointly with 2, 3, 4, 5, and 6 exemptions; and those filing as head of household with 3 exemptions. The federal and state tax codes were applied to this data to calculate the tax under the dual and single rate systems. Itemized deductions were assumed at a given percent of income which diminished as income increased. The results of this approach were consistent with the micro simulation models, see figure 31. The tax credits phase out as income increases; meaning, up to a certain amount of income (\$12,000 Single or Married Filing Separately, \$18,000 Head of Household, \$24,000 Married Filing Jointly) the credits are a constant dollar amount after which, the credits are reduced at 1.3 cents for each additional dollar of income. The tax credits effectively phase out more slowly in this model when taxpayers begin to itemize because the itemized deductions are a function of income. In percentage terms, most taxpayers realize tax reductions between 1% and 6.5%. As a percent of income this ranges from a decrease of 0% to 0.35%. The effective tax rates are similar to but cleaner than figures 27 to 30 because of the consistent method of applying itemized deductions. The change in tax liability, depending on filing status and household size, moves between \$100 and \$200 for most taxpayers. The marginal tax rates fluctuate at lower income levels where the tax credits begin to phase out; at upper income levels there is generally a marginal rate reduction of 0.5%. The use of an alternate model enabled comparison with the micro simulation model to ensure errors in programming were discovered and mitigated, see Appendix F for a sample of the SAS code generating the micro simulations. Additionally, these model results were compared to the results of legislative and tax commission models to validate results.

## Summary

An integral component of the tax reform debate was modeling impacts of various tax proposals against the existing tax system. These models produced information which helped inform and guide policy makers in weighing the costs and benefits of changing the individual income tax.

Models utilizing actual taxpayer records adjusted for timing changes simulated the impacts to individual taxpayers. Preliminary exploration of Utah's income dynamics resulted in improved forecasting of taxpayer income. Fiscal analysis estimated the impact to future revenues from tax changes. Volatility analysis determined the amount of risk mitigated by moving to an income tax with a larger base and lower rate. The distributional analysis showed that tax reductions were roughly distributed proportionally to the amount of tax currently paid, though the income tax was marginally more progressive.

Figure 27  
2008 Projected Effective Income Tax Rates Under the Graduated Rate System

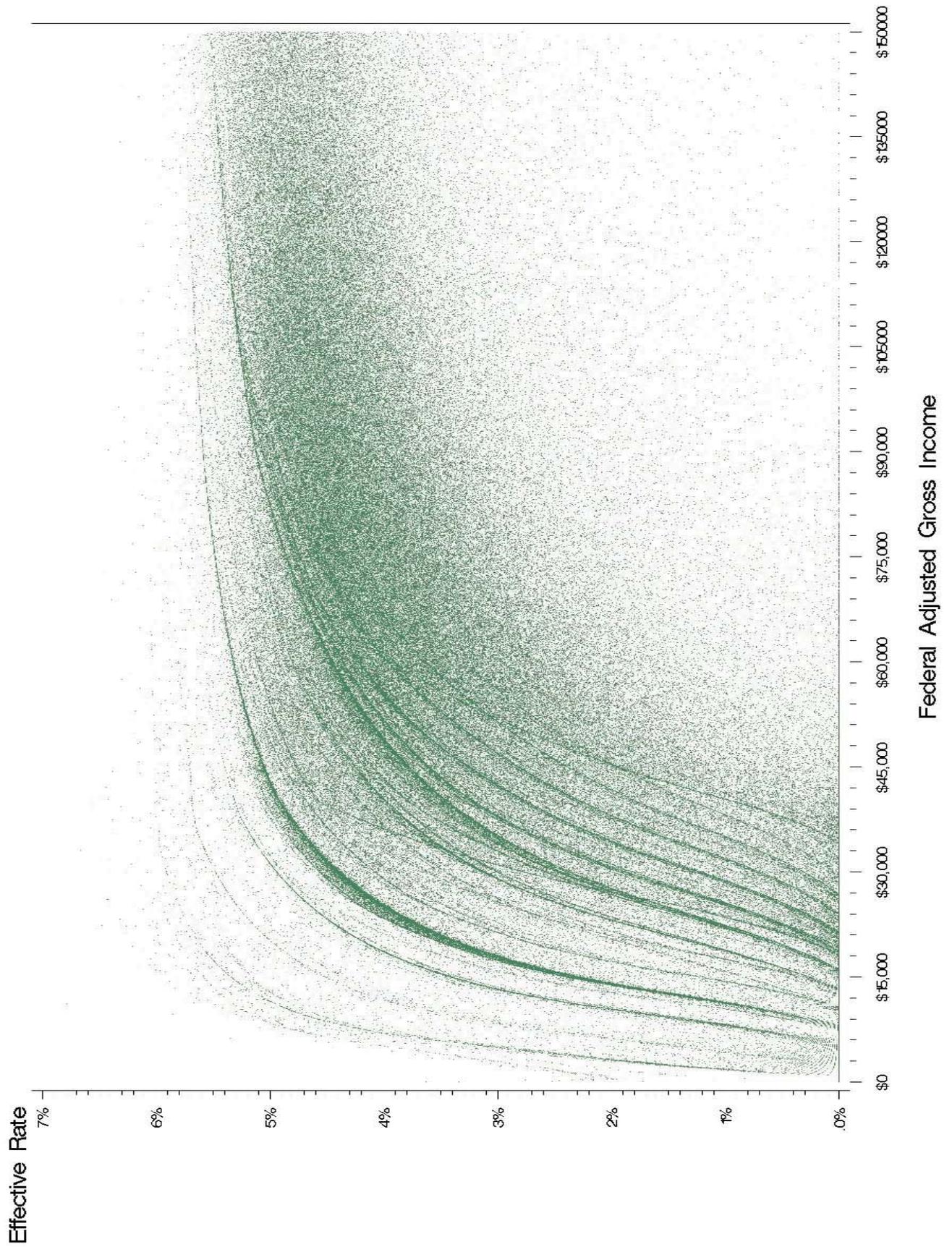


Figure 28  
2008 Projected Effective Income Tax Rates Under the Dual Tax System

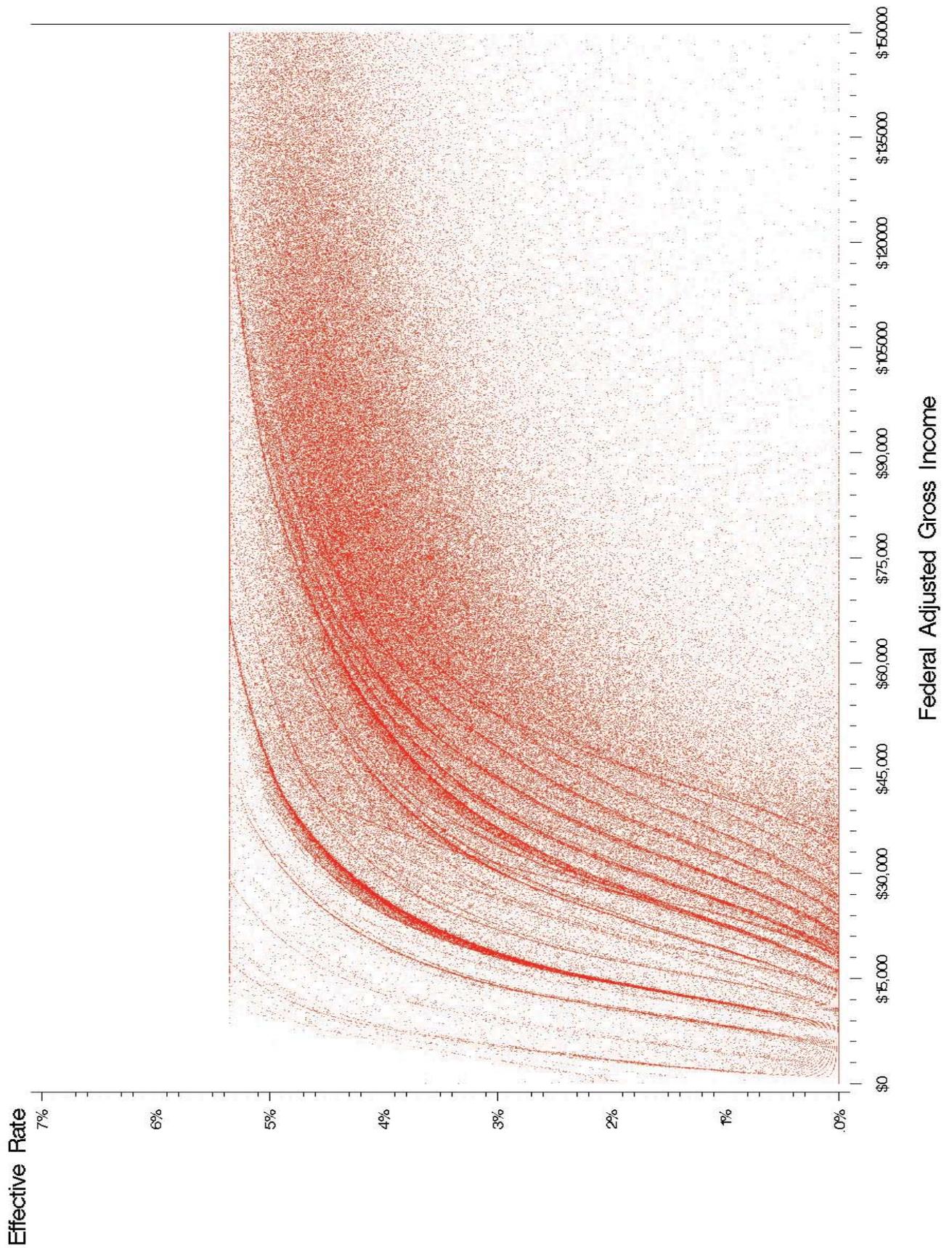


Figure 29  
2008 Projected Effective Income Tax Rates Under the Single Rate Tax System

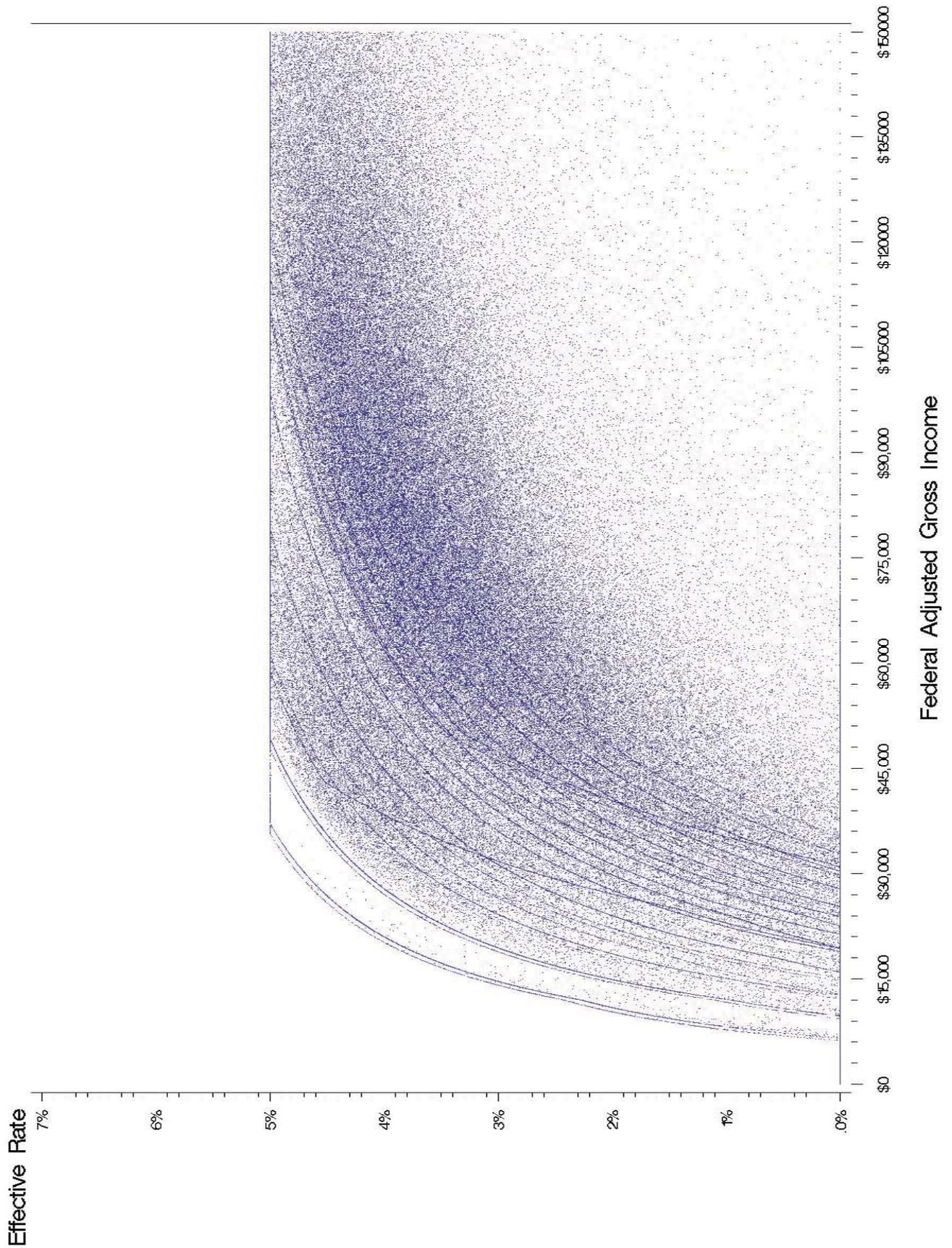


Figure 30

2008 Projected Effective Income Tax Rates: Graduated Rate, Dual, Single Rate Tax Systems

Green = Graduated Rate, Red = Dual System (SB4001), Blue = Single Rate System (SB2223)

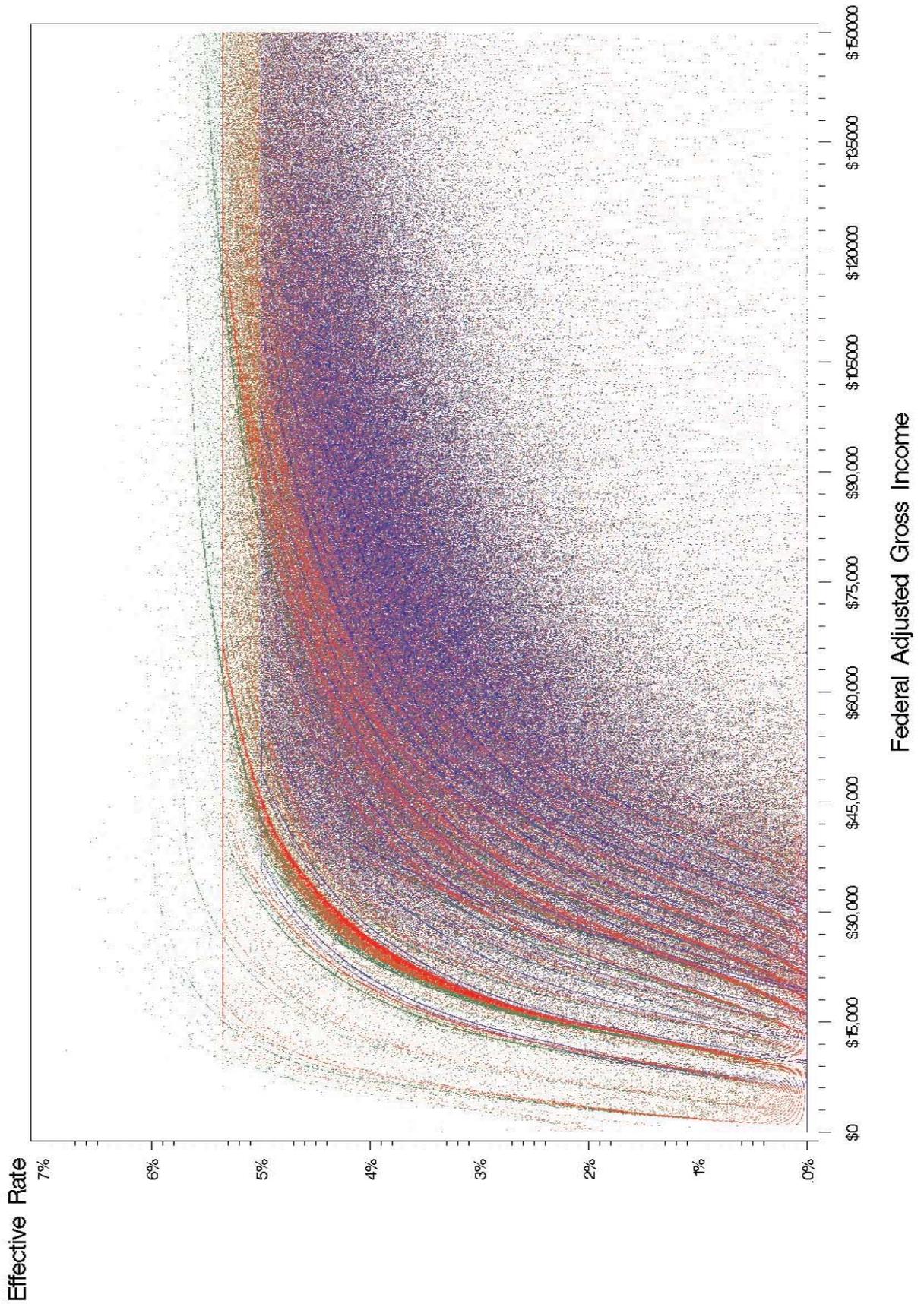
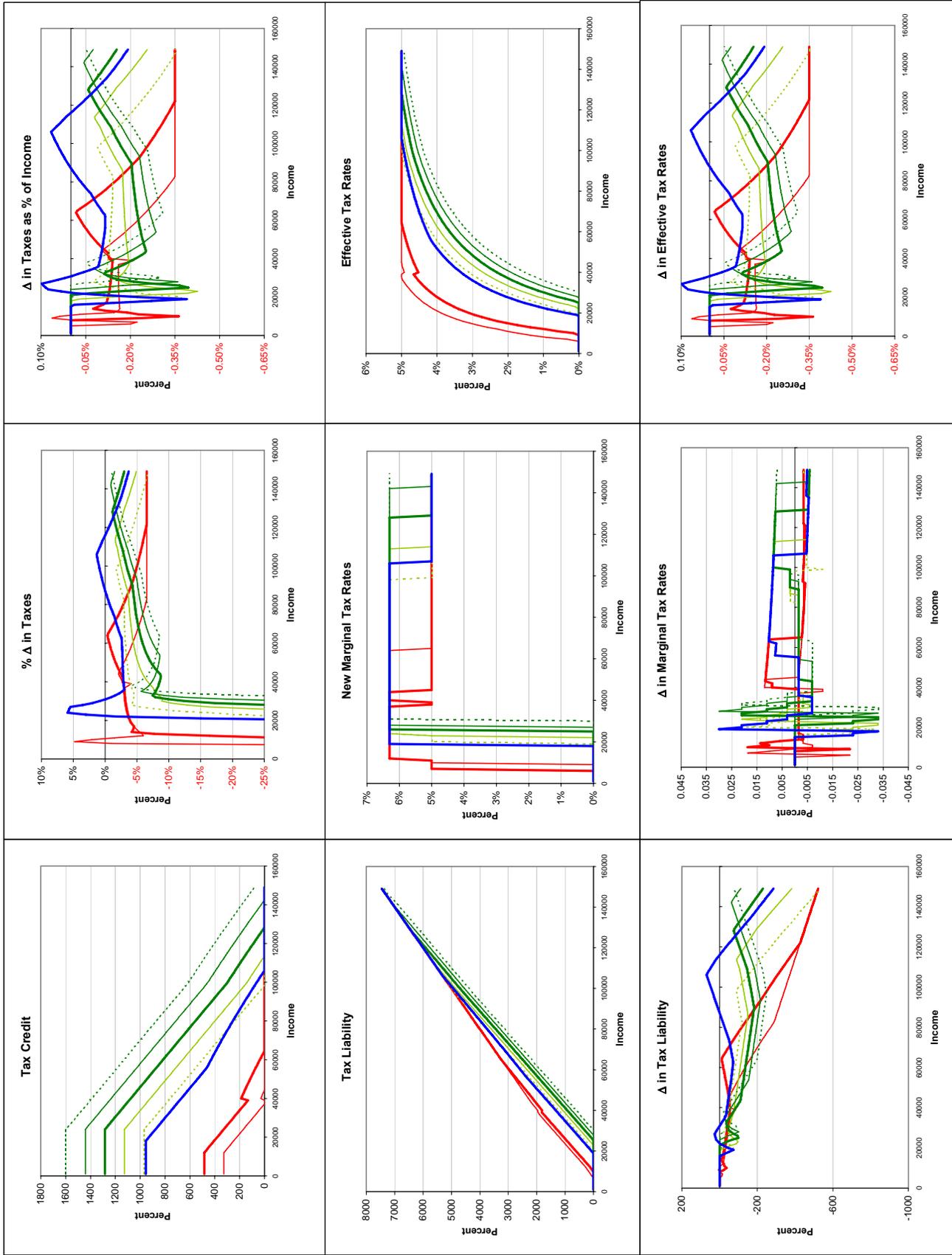


Figure 31 Effects of Tax Reform: SB4001 to SB223 in the Year 2008





# Appendices

**Appendix A - Governor Jon Huntsman Ten Point Economic Revitalization Plan**

**Appendix B - Governor Olene Walker Tax Reform Recommendations**

**Appendix C - 2006 Economic Report to the Governor, Tax Reform Chapter**

**Appendix D - Individual Income Tax Reform under Governor Huntsman**

**Appendix E - History of Tax Bills during the Huntsman Administration**

**Appendix F - Tax Model SAS Code**



# **Appendix A**

## **Governor Jon Huntsman Ten Point Economic Revitalization Plan**



# EXECUTIVE SUMMARY

### *A MESSAGE FROM JON HUNTSMAN, JR.*

Building a stronger economy is the key to Utah's future, and the key to funding a quality education for our children and our grandchildren.

Over the past eight months, I have traveled around Utah listening to and learning from the numerous citizens of our great state. No matter where I have been, the questions and issues are virtually the same. People are concerned about Utah's near-term economic outlook, but also about the future of their children.

Most families I have met with want to believe we will be able to afford a quality education for our children. They also want to believe there will be a place for their children to live and work in Utah. Unfortunately, too many of our young men and women are being forced to seek opportunity elsewhere, simply because there are not enough good jobs in Utah. I fear our talented and educated youth have become Utah's #1 export, and for Utah, whose very motto is "industry," this is unacceptable and unsustainable.

We must not allow this new century to begin without recognizing that economic development is critical to covering our costs going forward. Getting us there will require leadership, vision and a realistic plan.

As we begin this journey, it is helpful to put our current economic situation in perspective. Simply put, Utah's economy is in the worst shape it has been in since World War II. Our overall state tax burden is one of the highest in the nation (7th highest), and our per capita income is among the lowest. We are spending every available dollar of state tax funds on education, yet we are still dead last in per-pupil spending statistics and our recent test results are slipping. Many of our best companies have moved to other states, and have taken their high-paying jobs with them, further reducing the state's tax base and the ability to fund education or grow.

If we remain on our current trajectory, I believe we will be unable to afford the hopes, dreams and aspirations of the next generation. Our already burdened public education system is expecting an additional 144,000 new students over the next ten years. I believe this inevitable boom in our school-age population is going to be the most important challenge for Utah's public policy makers during the next decade. We must plan for this growth.

What Utah's economy needs is a positive new direction. If we stay on our current path, we will be unable to fund education and support Utah's working families in the years ahead. We need a Governor who will lead the charge in rejuvenating and expanding the state's economic base.

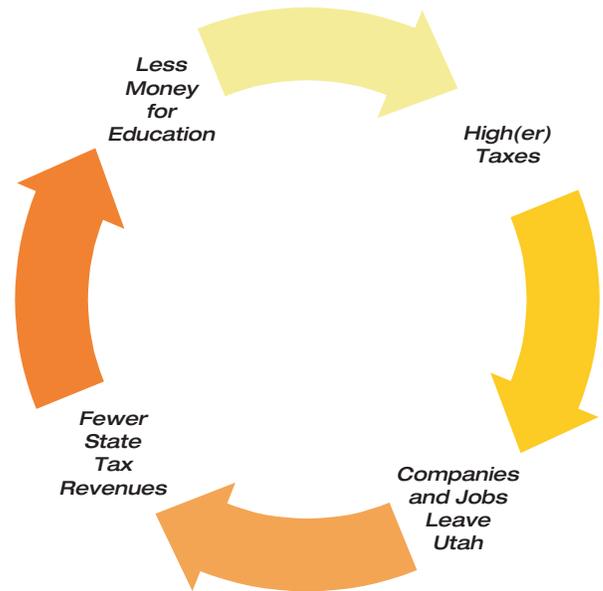
In short, we need more high-paying jobs in our state, and we need them now. Economic development is the critical link that will allow Utah to pay for education by raising overall revenues – not by raising taxes.

In conjunction with many of Utah's best and brightest private sector leaders, I have developed a plan. This is a plan to revitalize Utah's economic base and provide the long-term funding required to educate our children.

# Appendix A

The plan to revitalize Utah's economic base centers on creating an environment that will allow Utah to attract and retain good businesses. In order to do this the state's tax and policy environment must be more appealing, if businesses are going to choose to locate here or remain here. If Utah is successful in attracting and retaining good businesses, then job growth and long-term economic prosperity will follow naturally.

In order to deliver economic development for Utah, we need a Governor who is capable of working effectively with both state officials and industry leaders to create a more business-friendly environment; an atmosphere in which companies can thrive and grow. We need a Governor with extensive private sector experience and contacts, who can reach out to national and international industry leaders, and attract companies (and jobs) to Utah. And finally, we need a Governor who cares about the businesses that are already located here in Utah, and will do what it takes to keep them here for the long haul.



I do not believe the government should be in the job-creating business, but together we can improve the environment in which our state's private sector operates and thrives. Identified below are the keys of my ten-point economic plan. When these ten initiatives are implemented in a timely, effective and coordinated manner, they will dramatically strengthen Utah's economy for the years ahead:

- # 1 Revamp Utah's Tax Structure
- # 2 Improve the Competitive Environment for Small- & Medium-Sized Companies
- # 3 Recruit Businesses to Our State
- # 4 Attract More Capital
- # 5 Promote Growth in Target Industries
- # 6 Enhance Utah's National and International Image
- # 7 Capture Global Opportunities for Utah Companies
- # 8 Promote Tourism
- # 9 Energize Economic Development in Rural Communities
- # 10 Make State Government More Efficient



# Appendix A

All of these initiatives are interrelated with one another. As we generate success in one area, that success will lead to success in other areas. Historically, our economic development efforts have lacked the required coordination to deliver long-term job growth in Utah. The coordinated implementation of this comprehensive set of initiatives will provide for greater economic success and momentum for Utah.

We need to elect a Governor who has a specific plan and the experience and leadership to implement that plan. I believe you will find I have the experience and desire to execute this plan for Utah. As Governor, I will leverage the relationships and experience I have gained from serving in senior positions within the U.S. Department of Commerce, as a U.S. Trade Ambassador responsible for all U.S. trade relationships with Asia and Africa, and as the U.S. Ambassador to Singapore. These experiences have given me a wealth of contacts and relationships in many foreign countries; countries that represent prime market opportunities for Utah goods and services. I will also bring to bear all of my private sector experience, and relationships with national and international business leaders, to attract companies to Utah. I will fight for Utah's interests here and abroad.

Rebuilding our economy is the only way to ensure that Utah will have enough good jobs, and the funding to support our children's futures and increase the quality of their education.

I am asking for your vote,



Jon Huntsman, Jr.



▶ ***“If Utah is going to attract the business leaders of this country, Utah needs a man like Jon Huntsman, Jr. He is a savvy businessman with the working knowledge it takes to bring better paying jobs to Utah.”***

▶ ***Kevin Rollins,  
CEO and President of Dell Computers***



## **Appendix B**

# **Governor Olene Walker Tax Reform Recommendations**



# Governor Olene S. Walker's Recommendations on a Tax Structure for Utah's Future



## EXECUTIVE SUMMARY

Utah's economic future is tied to a well-balanced tax structure. The tax structure needs to encourage economic development while supporting our citizens' need for education, roads, and other vital public services.

This report reflects a one-year, in-depth study of Utah's tax structure and gives recommendations on how it can be improved.

The first step in analyzing Utah's tax structure was to look at the tax base. We used techniques commonly used to analyze risks of investments and applied them to Utah's four major taxes: sales, individual income, corporate income, and property.

We made two important discoveries. First, the core base of most of our taxes, adjusted for economic growth, is declining. The sales tax base is declining at a rate of 1.3% per year, the individual income tax base is declining 1.4% per year, and the corporate income tax base is declining 8% per year. Only property tax is increasing at 3.8% per year.

Second, there is a substantial amount of volatility in the sales, individual income, and corporate income tax. If the Utah economy increases 1.0%, individual income tax grows 1.4%. But, if the Utah economy decreases 1.0%, individual income tax shrinks 1.4%. The problem is much worse for corporate income tax. Sales tax tends to track the economy. Property tax is fairly stable.

These findings show that Utah's tax base is eroding and volatile. Now, while the Utah economy is recovering, changes to the state's tax structure should be made.

The recommended changes are guided by the following principles. Utah taxes should:

- Be fair, just and balanced
- Support a business friendly economic environment
- Focus on funding critical needs
- Have structural balance
- Be a tax system for the 21<sup>st</sup> Century
- Balance state and local obligations and revenue sources

The recommendations are revenue neutral. They also take the approach of broadening the base and lowering the rate. It is important to broaden the base because it gives greater stability and flexibility to meet future needs. Lower rates encourage economic development and are less likely to distort business decision-making.

With these principles in mind, we submit this report. It is our hope that these recommendations will stimulate a state-wide discussion and debate so that crucial decisions to chart Utah's course in the coming years will be made.



## **Appendix C**

# **2006 Economic Report to the Governor, Tax Reform Chapter**



## Tax Reform

### Overview

Following the economic fluctuations of the past ten years and the impact of those fluctuations on state revenues, Utah's legislative and executive branches undertook a comprehensive study of the state's tax system. Topics examined include the income tax, sales and use tax, property tax, local government taxes, and other taxes. Heading into the 2006 General Session, tax reform appears to be one of the major issues likely to be considered by the Legislature and Governor. Depending on which proposals are ultimately enacted into law, the tax reform effort could result in a major impact on individuals, businesses, and state and local governments.

### 2005 Summary

#### Background

The remarkable economic upsurge in the 1980s and 1990s was followed by a dramatic economic downturn in the early 2000s. This caused major fiscal impacts for the states and the federal government. Years of slower revenue growth and even revenue decreases forced state governments nationwide to grapple with difficult spending and tax decisions. These difficult decisions prompted states to examine the outcomes of tax and budget policies over the economic cycle.

Although Utah fared well compared to many states, elected officials were still required to make many difficult fiscal decisions when revenues did not meet expectations. As the state started to emerge from the economic downturn, many people began closely examining the state's tax policies, and the extent to which adjustments to those policies could better help the state meet its goals and challenges in the 21st century.

In 2004, the Utah State Legislature established a task force to study the individual income tax and the corporate franchise and income taxes. In November 2004, Governor Olene Walker issued a report highlighting problems with the state's existing revenue portfolio and made 16 recommendations to address a declining tax base. As part of his campaign, Governor Huntsman highlighted tax reform as a way to improve the state's overall economic climate and to attract higher wage industries to the state.

#### Tax Reform Task Force

In the 2005 General Session, the Legislature and Governor Huntsman established a task force to study tax reform and make recommendations based on its study. The task force was comprised of four senators, nine representatives, and two gubernatorial appointees. In May 2005, it began examining the major components of Utah's tax structure in order to make recommendations to the Revenue and Taxation Interim Committee of the Legislature by November 2005. The task force began by adopting a set of guiding principles, which included treating taxpayers in similar situations similarly, establishing the amount of revenue to be generated by taxes, and creating a simple, stable, broad-based, and responsive tax system for the state. To facilitate a more in-depth review of the tax system, the task force divided itself into four working groups: income tax, sales and use tax, property tax, and RDA/other taxes. These working groups studied issues with existing tax policies in their respective areas and made recommendations to the full task force. After initial deliberations, the task force held public hearings in Logan, Salt Lake, Provo, Vernal, Price, Cedar City, and St. George to receive citizen feedback. Including the public hearings and working group meetings, the task force held over 50 meetings in its comprehensive review of the state's tax system.

### Significant Issues

#### Income Tax

- Individual income tax - Major proposals considered: a flat tax; low-income exemptions; family size exemptions; retirement exemptions; deductions or credits for mortgage interest and charitable contributions; sales tax refund credits; expanding tax brackets; adjusting tax rates.
- Corporate franchise and income and gross receipts taxes - Major proposals considered: elimination of the corporate franchise and income tax; apportionment formula adjustments such as a single sales factor; repeal and reduction of a gross receipts tax on electrical utilities; a minimum filing threshold; adjusting tax rates.
- Earmarking of income taxes for education - A major proposal considered would eliminate the constitutional earmarking of income taxes for education.

#### Sales and Use Tax

- Major sales and use tax issues considered: modifying the sales and use tax on food; expansion of the tax base to include consumer services; tax exemptions for business inputs; a uniform statewide rate; changes to local government sales and use taxes; existing tax exemptions; including the motor fuel exemption; various confusing inconsistent tax issues.

#### Property Tax

- Major property tax issues considered: taxation of personal property; property tax rebates for elderly individuals with lower income; changes to truth in taxation processes; including advertisements and property tax inflation adjustments; property tax exemptions, including the 45% primary residential exemption.

#### Local Government and Other Taxes

- Major local government and other taxes issues considered: redevelopment agency reform; changes to local government sales and use taxes; including distribution methods and a shift from sales and use taxes to the property tax; modifying insurance premium taxes; decreasing taxes on cable companies and airlines.

#### Final Recommendations

The task force adopted 16 draft bills and six conceptual proposals. The following is a summary of the final recommendations.

#### Income Tax

- Individual income tax - Establish a tax based on federal adjusted gross income with a rate of 5.0% or less with non-refundable credits based on filing status, family size, charitable contributions, and mortgage interest.
- Corporate franchise and income tax - Allow electable single sales factor.
- Gross receipts tax on electrical corporations - Repeal and reduce tax rates commensurately.

# Appendix C

## Sales and Use Tax

- Sales and use tax on food - Eliminate the sales and use tax on unprepared food (i.e., groceries).
- Business input exemptions - Expand the existing manufacturing exemption, revise the existing semiconductor industry exemption, exempt certain telecommunication inputs with a one year life or greater, and exempt certain mining, computer system design, and biotech inputs with a three year life or greater.
- 1% local option sales and use tax - Phase out "hold harmless" provision.
- Uniform statewide rate - Adopt a uniform statewide sales and use tax rate of 6.4%.
- Confusing and inconsistent sales and use tax issues - Address various confusing and inconsistent issues, including (a) isolated and occasional sales, (b) car washes, laundry facilities, and amusement devices, (c) transportation exemptions, and (d) certain agricultural product sales.

## Property Tax

- Circuit breaker - Increase eligibility and benefit amounts for property tax credits for elderly individuals with low income.
- Personal property taxation - Propose constitutional amendment providing legislative discretion on how to impose the property tax on personal property.
- Truth in taxation - Clarify truth in taxation newspaper advertisements and provide a four year newspaper advertisement exemption for certain school district levies approved by citizen vote.
- Commercial aviation - replace the current ad valorem property tax with a uniform fee for certain commercial airlines with headquarters in the state.

## Local Government and Other Taxes

- Redevelopment agencies - Restructure redevelopment agency processes into three tracks, with separate conditions and requirements.
- Insurance premium tax - Reduce the tax on certain insurance premiums.
- Cable tax credit - Provide a credit for cable providers against a state tax to offset local franchise fees imposed on cable providers.

The task force also recommended that various local government tax issues be studied further in 2006.

Tax reform will be one of the major issues to be considered by the Legislature and the Governor during the 2006 General Session. Many of the proposals, if enacted, would have a significant impact on the level and types of taxes paid by individuals and businesses, and the revenues available to the state and local governments to provide services.

Further information on the task force, including audio recordings of meetings, can be accessed on the legislature's website <http://www.le.utah.gov>

## **Appendix D**

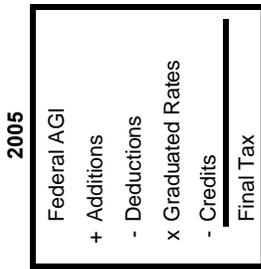
# **Individual Income Tax Reform under Governor Huntsman**



# Appendix D

## Individual Income Tax Reform under Governor Huntsman

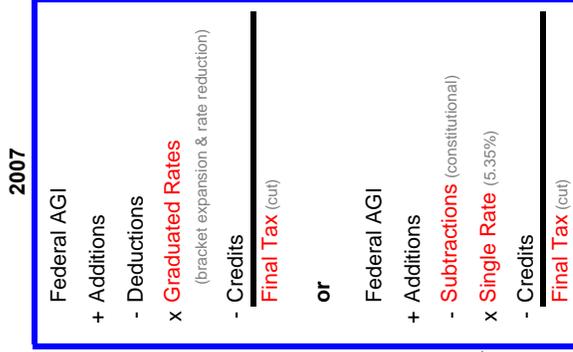
### Graduated Rate System



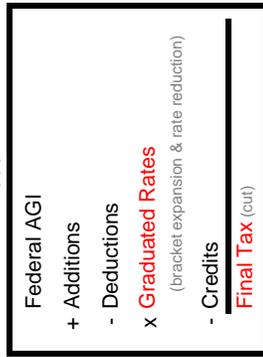
2005

4th Special Session: SB4001

### Dual Tax System



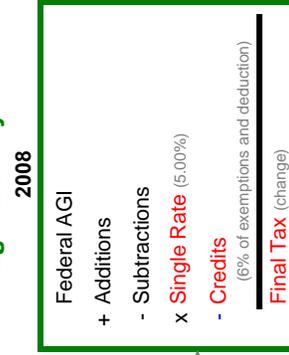
2006



2007

General Session: SB223

### Single Rate System



red identifies a change to a component of the individual income tax.



## **Appendix E**

### **History of Tax Bills during the Huntsman Administration**



# Appendix E

## History of Tax Bills

Session and Bill Number	Bill Title	Rank	Fund Impacted
<b>2005 General Session</b>			
HB 0078S01	Corporate Franchise and Income Tax Amendments	(\$7,000,000)	Education Fund
SB 0127	Tax, Fee, or Charge Amendments	(\$1,350,000)	General Fund
SB 0013S02	Individual Income Tax - Subtraction for Certain Military Income	(\$1,100,000)	Education Fund
HB 0053	Tax Treatment of Personal Property	(\$611,000)	Education Fund
SB 0164S01	Individual Income Tax- Subtraction for Live Organ Donation Expenses	(\$50,000)	Education Fund
HB 0009	Sale and Use Tax - Agricultural Exemption Vehicle Limitation	\$0	General Fund
HB 0011	Economic Development Incentives	\$0	Local Revenues
HB 0045S02	Assessment of Property Affected By Business Interruption	\$0	Local Revenues
HB 0107	Tax Law Amendments	\$0	General Fund
HB 0171	Calculation of Mining Severance Tax on Beryllium	\$0	General Fund
HB 0247S01	Credit or Refund for Tax Paid on Cigarette or Tobacco Product Destroyed or Returned to the Manufacturer	\$0	General Fund
SB 0006	Sales and Use Tax Agricultural Exemptions	\$0	General Fund
SB 0013S02	Individual Income Tax - Subtraction for Certain Military Income	\$0	Education Fund
SB 0036	Sales and Use Taxation of Pawn Transactions	\$0	General Fund
SB 0053	Land Value Property Tax Study	\$0	Local Revenues
SB 0057S01	Funding for Business Development in Disadvantaged Rural Communities	\$0	General Fund
SB 0061S05	Gross Receipts Tax on Privately Owned Health Care Organizations	\$0	General Fund
SB 0121	Property Tax Exemption Amendments	\$0	None
SB 0125	Amendments to Individual Income Tax Credit for Special Needs Adoptions	\$0	Local Revenues
SB 0153	Tax Reform Task Force	\$0	Education Fund
SB 0161	Amendments to the Property Tax Valuation Agency Fund Assessing and Collecting Levy	\$0	General Fund
SB 0194	Sales and Use Tax Exemption for Mailing Lists	\$0	Education Fund
SB 0023S01	Property Tax Treatment of Tangible Personal Property	\$176,000	General Fund
SB 0211S01	Funding for Convention Facilities	\$2,900,000	Education Fund
SB 0185	Taxes, Fees, and Charges Related to Video and Cable Services	\$5,879,000	Local Revenues
SB 0189	Property Tax- Certified Tax Rate Inflationary Adjustment	\$10,000,000	Local budgets Local Revenues
<b>2005 1st Special Session</b>			
HB1006S01	Changes in Task Force Membership	\$0	General Fund
SB1003	Property Tax- County Services Areas	\$11,500,000	Local Revenues

# Appendix E

Session and Bill Number	Bill Title	Rank	Fund Impacted
<b>2006 General Session</b>			
HB0109S03	Sales and Use Tax - Food and Food Ingredients and Local Taxes	(\$70,000,000)	General Fund
SB0242S02	Tax Revisions	(\$65,614,000)	Education Fund
SB0029	Sales and Use Tax Exemption - Telecommunications	(\$7,200,000)	General Fund
SB0031S02	Sales and Use Tax - Manufacturing Exemptions Amendments	(\$5,995,000)	General Fund
SB0034	Gross Receipts Tax Amendments, Repeal and Public Utility Tariffs	(\$5,500,000)	Education Fund
HB0055S03	Property Tax - Circuit Breaker Qualifying Limits	(\$580,000)	General Fund
HB0338S02	Property Tax Exemption for Business Personal Property	(\$136,800)	Local Revenues
SB0179	Amendments to Sales and Use Tax Exemptions for Certain Vehicles, Boats, Boat Trailers, and Motors	(\$50,000)	General Fund
SB0241S01	Natural Resources Development	(\$40,000)	General Fund
HB0052	Sales and Use Tax Exemption for Transportation	(\$10,000)	General Fund
SB0030	Sales and Use Tax Exemption for Semiconductor Fabricating, Processing, Research, or Materials	(\$7,200)	General Fund
HB0051	Sales and Use Taxation of Amusement Devices and Cleaning or Washing of Tangible Personal Property	(\$5,000)	General Fund
HB0054	Sales and Use Tax Exemption for Sales of Certain Agricultural Products	\$0	General Fund
HB0193	Sales and Use Tax Funding for Health Care	\$0	Local Revenues
HB0291	State Tax Commission Bonding and Licensing Amendments	\$0	Education Fund
HB0309S02	Municipal Energy Sales and Use Tax Amendments	\$0	Local Revenues
HB0396	Amendments to the Property Tax Exemption for Disabled Veterans	\$0	Local Revenues
HJR001S02	Resolution Regarding Property Tax on Personal Property	\$0	Education Fund
SB0028	Sales and Use Tax - Exemption for Isolated or Occasional Sales	\$0	General Fund
SB0035S01	Local Option Sales and Use Tax Distribution Amendments	\$0	Local Revenues
SB0037S01	Income Tax - Taxation of Individuals, Estates, and Trusts	\$0	Education Fund
SB0038	Individual Income Taxation of Certain Trust Distributions	\$0	Education Fund
SB0089	Sales and Use Tax - Attachment of Tangible Personal Property to Real Property	\$0	None
SB0136	Tax on Insurance Premiums	\$0	General Fund
SB0198	Property Tax - Intangible Property	\$0	Local Revenues
SB0221S02	Levies for the Assessment and Collection of Property Taxes	\$0	Local Revenues
SB0225	Payment of Tax or Bonding in Tax Cases	\$0	General Fund
SB0233S01	Sales and Use Tax Revisions	\$0	General Fund
HB0371	Transient Room Taxes Amendments	\$4,953,000	Local Revenues
<b>2006 3rd Special Session</b>			
HB3004	Sales and Use Tax Relating to Food	\$0	General Fund
<b>2006 4th Special Session</b>			
SB4001	Income Tax Amendments	(\$78,000,000)	Education Fund
HB4001	County Option Funding for Regionally Significant Transportation Infrastructure	\$166,000,000	Local Revenues

# Appendix E

Session and Bill Number	Bill Title	Rank	Fund Impacted
<b>2007 General Session</b>			
SB0223S2	Tax Amendments	(\$219,341,800)	Education Fund
SB0022	Sales and Use Tax Exemptions for Certain Governmental Entities and Entities Within Higher Education	(\$20,000)	General Fund
HB0036S2	Income Tax Additions and Subtractions for Higher Education Savings	(\$14,000)	Education Fund
SB0100	Motor Vehicle License and Registration Fees Exemption for Purple Heart License Plates	(\$10,800)	Education Fund
HB0026	Property Tax Exemption for Personal Property	\$0	General Fund
HB0027	Sales and Use Tax Modifications	\$0	General Fund
HB0033	Sales and Use Tax Exemptions for Vehicles, Boats, Boat Trailers, Not Registered in the State	\$0	General Fund
HB0034S1	Sales and Use Tax Exemptions for Certain Property Brought into the State	\$0	Local Revenues
HB0037	Cigarette and Tobacco Tax and Licensing Amendments	\$0	General Fund
HB0038S1	Tourism, Recreation, Cultural, and Convention Facilities Tax Amendments	\$0	Local Revenues
HB0041	Sales and Use Tax - Common Carriers	\$0	General Fund
HB0042	Sales and Use Tax Exemption for Authorized Carriers	\$0	General Fund
HB0111S2	Personal Property - Certified Tax Rate Amendments	\$0	Local Revenues
HB0142S1	Fee in Lieu of Property Tax Amendments	\$0	Local Revenues
HB0238	Municipal Telecommunications License Tax Amendments	\$0	Local Revenues
SB0096	Sales and Use Tax Exemption for Disposable Home Medical Equipment or Supplies	\$0	General Fund
SB0119	Municipal License Fee or Tax on Public Assembly Facilities	\$0	Local Revenues
SB0203S1	Disclosure of Property Tax Information	\$0	Education Fund
SB0260	Property Tax - Definition of Goodwill	\$0	General Fund
HB0087S2	Severance Tax Related Amendments	\$177,500	General Fund



# **Appendix F**

## **Tax Model SAS Code**



## Appendix F

\*Programmer: David Stringfellow - Economist 538-1855;

\*2005 Tax Model:

This program takes existing state & federal tax records, synthesizes future tax records using population projections by age in a monte carlo sampling approach, then utilizes the sample closest to the average tax and agi of the group to eliminate outliers. It then grows income by source according to RAC & Tax Commission growth parameters, recalculates federal adjusted gross income, recalculates federal and state income taxes, and applies to these records various tax reform ideas. Subsequently, fiscal impacts are estimated, as are the distributional effects on taxpayers at large and in particular.;

```
libname rsrc "E:\Taxes\Data";
```

```
libname temp "E:\Taxes\Data\Temp";
```

```
*Imports State Tax Data;
```

```
%macro sdata(YR);
```

```
data rsrc.D&YR;
```

```
infile "E:\Taxes\Data\period_&YR.txt" delimiter=',' dsd missover;
```

```
format LNAME $15. ZIP $9. SSN $9. SSN2 $9. PNAA 8. INAA 8. PNPA 8. INPA 8. TXPAID 8. DTFILED $9. DTRETDUE 8. DTFILED2 8.  
DTFILED3 8. FTYPE $1. UTAX 8. WITHELD 8. REFUND 8. RINT 8. FAGI 8. DED 8. PE 8. PEAMT 8. UTI 8. FEDTAX 8.  
REFX 8. RTYPE $1. SPOUSE 8. RECTYPE $2. RETIRE 8. PREPAY 8. UAGI 8. TAGI 8. OVER65 8. OVER65S 8. HANDICAP 8.  
STAXREF 8. STAXADD 8. DTFPER $1. DTAMEND 8. TXEXMPT $1. CTNG 8. CTHL 8. CTOR 8. CTRG 8. CTSD 8. CTAT 8. CTSF 8.  
CTWF 8. CTIV 8. ADLS 8. ADET 8. ADMS 8. ADUESP 8. ADAP 8. ADCI 8. ADMB 8. ADRT 8. ADNT 8. ADUI 8. ADIC 8. DDUI 8.  
DDMS 8. DDUESP 8. DDHI 8. DDLI 8. DDAE 8. DDNA 8. DDRR 8. DDEA 8. DDCG 8. DDNMIL 8. DDRMIL 8. DDIC 8. NRSHP 8.  
NRQW 8. NRRES 8. NRCFA 8. NRCFV 8. NRHP 8. NREZ 8. NRLIH 8. NRHD 8. NRRCM 8. NRTD 8. NRRA 8. NRRSM 8. NRTAX 8.  
NRQR 8. NROD 8. NRIC 8. TAXED 8. TAXMSA 8. TAXRC 8. TAXUSE 8. RCTB 8. RCSNA 8. RCFR 8. RCNR 8. RCTR 8. RCBT 8.  
RCMRW 8. RCGAS 8. RCFRM 8. RCVC 8. RCIC 8.;
```

```
input LNAME ZIP SSN SSN2 PNAA INAA PNPA INPA TXPAID DTFILED DTRETDUE DTFILED2  
DTFILED3 FTYPE UTAX WITHELD REFUND RINT FAGI DED PE PEAMT UTI FEDTAX  
REFX RTYPE SPOUSE RECTYPE RETIRE PREPAY UAGI TAGI OVER65 OVER65S HANDICAP  
STAXREF STAXADD DTFPER DTAMEND TXEXMPT CTNG CTHL CTOR CTRG CTSD CTAT CTSF  
CTWF CTIV ADLS ADET ADMS ADUESP ADAP ADCI ADMB ADRT ADNT ADUI ADIC DDUI  
DDMS DDUESP DDHI DDLI DDAE DDNA DDRR DDEA DDCG DDNMIL DDRMIL DDIC NRSHP  
NRQW NRRES NRCFA NRCFV NRHP NREZ NRLIH NRHD NRRCM NRTD NRRA NRRSM NRTAX  
NRQR NROD NRIC TAXED TAXMSA TAXRC TAXUSE RCTB RCSNA RCFR RCNR RCTR RCBT  
RCMRW RCGAS RCFRM RCVC RCIC;
```

```
run;
```

```
%mend;
```

```
*Imports Federal Tax Data;
```

```
%macro fdata(YR);
```

```
filename cimportd "E:\Taxes\Data\FTPIMF&YR..DATA" LRECL=80 BLKSIZE=8000;
```

```
proc cimport data=rsrc.IMF&YR infile=cimportd;
```

```
run;
```

```
filename cimportd "E:\Taxes\Data\FTPIRTF&YR..DATA" LRECL=80 BLKSIZE=8000;
```

```
proc cimport data=rsrc.IRTF&YR infile=cimportd;
```

```
run;
```

```
%mend;
```

```
*This macro will pull the requisite data from state and federal records for tax reform analysis;
```

```
%macro mrgdata;
```

```
*Utah State Tax Data 2005;
```

```
data rsrc.d05;
```

```
format TAXYEAR 8.;
```

```
set rsrc.d05;
```

```
TAXYEAR=floor(DTRETUE/100);
```

```
ADTOT=sum(STAXADD,ADLS,ADET,ADMS,ADUESP,ADAP,ADCI,ADMB,ADRT,ADNT);
```

```
DDFLT=sum(STAXREF,DDUI,DDNA,DDRR);
```

```
DDTOT=sum(DDUI,DDMS,DDUESP,DDHI,DDLI,DDAE,DDNA,DDRR,DDEA,DDCG,DDNMIL,DDRMIL,DDIC);
```

```
NRTOT=sum(NRSHP,NRQW,NRRES,NRCFA,NRCFV,NRHP,NREZ,NRLIH,NRHD,NRRCM,NRTD,NRRA,NRRSM,NRTAX,NRQR,NROD,NRIC);
```

```
RCTOT=sum(RCTB,RCSNA,RCFR,RCNR,RCTR,RCBT,RCMRW,RCGAS,RCFRM,RCVC,RCIC);
```

```
run;
```

```
proc sort data=rsrc.d05;
```

```
by SSN TAXYEAR;
```

```
run;
```

```
*Federal Tax Data 2005 (Sources of Income);
```

## Appendix F

```
data rstc.irtf05;
set rstc.irtf05;
TAXYEAR=floor(TAXYEAR/100);
SCDF=sum(SCDF1,SCDF2);
SCDC=sum(SCDC1,SCDC2,SCDC3);
run;
```

```
proc sort data=rstc.irtf05;
by SSN TAXYEAR;
run;
```

\*Federal Tax Data 2005 (Taxes Paid, Wages, Interest, Demographics);

```
proc sort data=rstc.imf05;
by SSN TAXYEAR;
run;
```

\*Combine the state and federal records, create matched and unmatched files;

```
data rstc.utax05 rstc.ftax05;
merge rstc.d05 (in=in1 keep=TAXYEAR SSN UTAX FTYPE FAGI DED PE PEAMT UTI FEDTAX RTYPE RETIRE UAGI TAGI TXEXMPT RECTYPE ADTOT
DDFLT DDTOT NRTOT RCTOT STAXREF STAXADD DDUESP)
rstc.imf05 (in=in2 keep=TAXYEAR SSN FTI FAGI WAGES ITEMIZED INTEREST FEDTAX SETAX DOB ZIPCODE rename=(FAGI=FAGI2
FEDTAX=FEDTAX2))
rstc.irtf05 (in=in3 keep=TAXYEAR SSN STLCTAX DIVND ALIMONY SCDC CAPGAIN OTHGAIN IRA PENSION E1040 SCDF UNEMPCMP SSBEN
OTHER TOTINC AINT ACONT TOTITEM AMT EITC CRDTOT);
by SSN TAXYEAR;
if in1=1 then output rstc.utax05;
*if in1=0 then output rstc.ftax05;
run;
%mend;
```

**%macro clean;**

```
data rstc.utax05;
set rstc.utax05;
TOTINC2=sum(WAGES,INTEREST,DIVND,STLCTAX,ALIMONY,SCDC,CAPGAIN,OTHGAIN,IRA,PENSION,E1040,SCDF,UNEMPCMP,SSBEN,OTHER);
AGE=yrdif(MDY(substr(left(trim(DOB)),5,2),substr(left(trim(DOB)),7,2),substr(left(trim(DOB)),1,4)), '15APR2006'd,'ACT/ACT');
AGES=yrdif(MDY(substr(left(trim(DOBS)),5,2),substr(left(trim(DOBS)),7,2),substr(left(trim(DOBS)),1,4)), '15APR2006'd,'ACT/ACT');
format AGE3 $3.;
if AGE^=. then AGECE=left(min(floor(AGE/5)*5,85)); else AGECE="TOT";
*Flags records in different tax year;
if TAXYEAR^=2005 then ERYR="X";
if ZIPCODE="" then do;
*Flags state records with no federal match;
ERMFD="X";
end;
else do;
*Flags records where state and federal reported AGI is 20% off;
if FAGI2^=. and (FAGI/FAGI2)>1.2 or (FAGI/FAGI2)<0.8 then ERAGI="X";
*Flags records where state and federal reported Income is 20% off;
if (TOTINC2/TOTINC)>1.2 or (TOTINC2/TOTINC)<0.8 then ERINC="X";
end;
run;
```

```
proc datasets library=rstc;
modify utax05;
index create AGECE;
quit;
%mend;
```

\*These macros import the 2005 tax data, merge them together and performs data integrity checks;

```
%sdata(05);
%fdata(05);
%mrdata;
%clean;
```

**%macro** sample(YR,SMPSK,ITN,RV);

```
proc freq data=rstc.utax05 noprint;
```

## Appendix F

```
tables AGECE / out=temp.pop05 ;  
run;
```

```
proc import out=temp.popx datafile="E:\Taxes\Data\Baseline Age Projections.xls" dbms=excel replace;  
sheet="data$"; getnames=YES; mixed=YES; Scantext=YES;  
run;
```

```
data temp.popx(keep=AGECE P20&YR P2005 GPOP);  
set temp.popx;  
GPOP=((P20&YR/P2005)-1);  
if AGECE="20 " then do;  
  GPOP=0.00;  
  P20&YR=P2005*(1+GPOP);  
end;  
run;
```

```
proc sort data=temp.popx;  
by AGECE;  
run;
```

```
data temp.pop&YR;  
merge temp.pop05 temp.popx;  
by AGECE;  
REC=ceil(GPOP*COUNT);  
if REC<0 then MARK="X"; else MARK="A";  
RVPOP=abs(REC/COUNT);  
run;
```

```
data temp.smpadd&YR(drop=RVPOP) temp.smpdel&YR(drop=RVPOP);  
merge rsrc.utax05 temp.pop&YR(keep=AGECE MARK RVPOP);  
by AGECE;  
if ranuni(&RV)<RVPOP and MARK="A" then output temp.smpadd&YR;  
if ranuni(&RV)<RVPOP and MARK="X" then output temp.smpdel&YR;  
run;
```

```
data rsrc.utax&YR;  
merge rsrc.utax05 (in=in1) temp.smpdel&YR (in=in2 keep=SSN TAXYEAR);  
by SSN TAXYEAR;  
if in2=1 then delete;  
MARK="S";  
run;
```

```
proc append base=rsrc.utax&YR data=temp.smpadd&YR;  
run;
```

```
%if &SMPSK=Y %then %do;  
proc means data=rsrc.utax05(keep=FAGI UTAX RTYPE where=(RTYPE="L")) noprint;  
var FAGI UTAX;  
output out=temp.it(drop=_TYPE_ rename=( _FREQ_=N)) sum(FAGI)=TAGI sum(UTAX)=TAX mean(FAGI)=MAGI mean(UTAX)=MTAX;  
run;
```

```
proc means data=rsrc.utax&YR(keep=FAGI UTAX RTYPE where=(RTYPE="L")) noprint;  
var FAGI UTAX;  
output out=temp.it&RV(drop=_TYPE_ rename=( _FREQ_=N)) sum(FAGI)=TAGI sum(UTAX)=TAX mean(FAGI)=MAGI mean(UTAX)=MTAX;  
run;
```

```
%if &ITN=1 %then %do;  
data rsrc.mc&YR;  
length RV 8;  
set temp.it;  
RV=2005;  
run;  
%end;
```

```
data temp.it&RV;  
length RV 8;  
set temp.it&RV;
```

## Appendix F

```
RV=&RV;
run;

proc append base=rstc.mc&YR data=temp.it&RV;
run;
%end;
%mend;

%macro montcar(Y,seed);
%sample(&Y,Y,1,&seed);
%do i=1 %to 29;
%let seed2=%eval(&seed+&i);
%sample(&Y,Y,0,&seed2);
%end;

proc means data=rstc.mc&Y(where=(RV^=2005)) noprint;
var MAGI MTAX;
output out=rstc.mcavg median(MAGI)=AGI median(MTAX)=TAX;
run;

data _null_;
set rstc.mcavg;
call symput('AGI',AGI);
call symput('TAX',TAX);
run;

data rstc.mc&Y;
set rstc.mc&Y;
if _N_>1 then do;
CAGI=((MAGI-&AGI)/&AGI);
CTAX=((MTAX-&TAX)/&TAX);
COMP=(CAGI**2+CTAX**2)**(1/2);
end;
run;

proc means data=rstc.mc&Y noprint;
var COMP;
output out=temp.mcmrg min(COMP)=COMP;
run;

data temp.mcmrg;
set temp.mcmrg(drop=_TYPE__FREQ_);
USE="Y";
run;

proc sort data=temp.mcmrg;
by COMP;
run;

proc sort data=rstc.mc&Y;
by COMP;
run;

%global RV&Y;
data rstc.mc&Y;
merge rstc.mc&Y temp.mcmrg;
by COMP;
if USE="Y" then call symput("RV&Y",compress(RV));
run;
%mend;
```

\*These macros create a framework for drawing a better sample through time. 30 Monte Carlo experiments are performed expanding tax records into the future, using current records as proxy while benching to demographic projections. The simulations are analyzed for the experiment which minimizes the error between the median tax and agi, all the results are located at rstc.mc<YEAR>;

```
*%montcar(06,6001);
```

```
*%montcar(07,7001);
```

## Appendix F

```
*%montcar(08,8001);
*%montcar(09,9001);
*%montcar(10,10001);
```

```
*Analyze AGI histograms;
```

```
%macro agihst(AGI,YR);
```

```
*Cap histograms for future binning;
```

```
data temp.hist(where=(CAT="X" and CAT2="X"));
```

```
set rstc.UTAX&YR(keep=ERGAGI ERMFD FAGI FAGI2 FAGIX where=(ERGAGI^="X"));
```

```
DAGI=FAGIX-FAGI;
```

```
PAGI=FAGIX/FAGI-1;
```

```
LPAGI=log(FAGIX/FAGI);
```

```
if (FAGI>0 and FAGI<=&AGI) and (FAGI2>0 and FAGI2<=&AGI) and (LPAGI<0.5 and LPAGI>-.1) then CAT="X";
```

```
CAT2="X";
```

```
label DAGI="Difference in Forecast and Actual AGI"
```

```
PAGI="Percent Change in Forecast and Actual AGI"
```

```
LPAGI="Log of the Percent Change in Forecast and Actual AGI";
```

```
run;
```

```
*Create data set for proper univariate use;
```

```
data rstc.hist2;
```

```
format VAR $8.;
```

```
set temp.hist(in=in1 keep=FAGI CAT rename=(FAGI=AGI) where=(CAT="X"))
```

```
temp.hist(in=in2 keep=FAGI2 CAT rename=(FAGI2=AGI) where=(CAT="X"))
```

```
temp.hist(in=in3 keep=FAGIX CAT rename=(FAGIX=AGI) where=(CAT="X"))
```

```
temp.hist(in=in4 keep=DAGI CAT2 where=(CAT2="X"))
```

```
temp.hist(in=in5 keep=PAGI CAT2 where=(CAT2="X"))
```

```
temp.hist(in=in6 keep=LPAGI CAT2 where=(CAT2="X"));
```

```
if in1=1 then VAR="State";
```

```
if in2=1 then VAR="IRS";
```

```
if in3=1 then VAR="Forecast";
```

```
label AGI="Federal Adjusted Gross Income: State & Federal";
```

```
run;
```

```
*Graph Absolute AGI levels, differences, percent changes, etc.;
```

```
goptions reset=all ctext=BLACK ftext="Swiss"
```

```
rotate=LANDSCAPE vsize=7.5 in hsize=10 in vorigin=0.5 in horigin=0.5 in device=gif;
```

```
title "Distribution of Forecast AGI: 20&YR";
```

```
ods pdf file="E:\Taxes\Charts\AGI Growth Histogram &YR..pdf";
```

```
proc univariate data=rstc.hist2(where=(CAT="X")) noprint;
```

```
format AGI dollar15.0;
```

```
class VAR;
```

```
var AGI;
```

```
histogram AGI /endpoints=0 to %eval(&AGI*275/%substr(&AGI,1,3)) by 1000 nrows=3 grid cgrid=grayda cfill=grayba lgrid=1;
```

```
run;
```

```
proc univariate data=rstc.hist2 noprint;
```

```
format DAGI dollar15.0 PAGI percent6.1 LPAGI comma6.2;
```

```
where CAT2="X";
```

```
var DAGI PAGI LPAGI;
```

```
histogram DAGI /endpoints=-%eval(&AGI/3) to %eval(&AGI*2/3) by 1000 grid cgrid=grayda cfill=grayba lgrid=1;
```

```
histogram PAGI /endpoints=-.40 to 0.80 by .01 grid cgrid=grayda cfill=grayba lgrid=1;
```

```
histogram LPAGI /endpoints=-.20 to 0.60 by .01 grid cgrid=grayda cfill=grayba lgrid=1;
```

```
run;
```

```
ods pdf close;
```

```
%mend;
```

```
%macro calc(YR);
```

```
*Import Income Growth Assumptions for given year;
```

```
proc import out=rstc.GINC datafile="E:\Taxes\Assumptions\assume_now.xls" dbms=EXCEL replace;
```

```
sheet="inc&YR$"; getnames=yes; mixed=no; scantext=yes; usedate=yes; scantime=yes;
```

```
run;
```

```
*Import Tax System Parameters Federal and State;
```

```
proc import out=rstc.GPARAM datafile="E:\Taxes\Assumptions\assume_now.xls" dbms=EXCEL replace;
```

```
sheet="sasparmimp$"; getnames=yes; mixed=no; scantext=yes; usedate=yes; scantime=yes;
```

## Appendix F

```
run;
```

```
*Produce variable list;
```

```
proc contents data=rstc.GINC noprint out=rstc.varinc(keep=name);  
run;
```

```
*Parse variable names and generate code for future income growth;
```

```
data rstc.vuse;  
format CODE1 $50.;  
set rstc.varinc(where=(NAME not in ("FILER_G","ADJUST_G","CPI","CPI_G","TAXYEAR","STLCTAX_G","FYEAR","ITEMIZED_G")));  
VAR1=scan(NAME,1,"_");  
CODE1=trim(VAR1)||"|"||trim(VAR1)||"|"||trim(NAME)||";";  
run;
```

```
*Create list of variable names to drop after the merge;
```

```
proc sql noprint;  
select NAME into :DRPINC separated by " "  
from rstc.varinc(where=(NAME not in ("TAXYEAR","FYEAR","ITEMIZED_G")));  
quit;
```

```
*Create macro variables to use in summing, dropping, and growing variables;
```

```
proc sql noprint;  
select VAR1,VAR1,CODE1 into :VS separated by " ", :VC separated by ", ", :GROWINC separated by " "  
from rstc.vuse;  
quit;
```

```
*Calculate adjustments to AGI and forecast year;
```

```
data rstc.UTAX&YR;  
format FYEAR 8.;  
set rstc.utax&YR;  
FYEAR=sum(TAXYEAR,(&YR-05));  
ADJUST=sum(FAGI2,-TOTINC2);  
run;
```

```
*Create index for efficient merge;
```

```
proc datasets library=rstc;  
modify UTAX&YR;  
index create FYEAR;  
quit;
```

```
*Merge income growth parameters to tax data;
```

```
data rstc.UTAX&YR(drop=&DRPINC);  
merge rstc.UTAX&YR (in=in1) rstc.ginc (in=in2 drop=TAXYEAR);  
by FYEAR;  
if in1^=1 and in2=1 then delete;  
if ERMFD^="X" then do;  
*Grow individual components of income;  
&GROWINC;  
*Recalculate total income;  
TOTINC=sum(&VC);  
*Grow adjustment factor;  
ADJUST=ADJUST*ADJUST_G;  
*Recalculate Federal AGI;  
FAGIX=sum(TOTINC,ADJUST);  
end;  
*Set error flag for records that could or should not be grown as a function of parameters;  
if FAGIX^=. then do;  
if log(FAGIX/FAGI)>1 or abs(log(FAGI2/FAGI))>1 or log(FAGIX/FAGI)<-0.3 or (FAGIX<0 and FAGI>0) then ERGAGI="X";  
end;  
else if FAGIX=. then ERGAGI="X";  
run;
```

```
*Analyze the average change in AGI;
```

```
proc means data=rstc.UTAX&YR noprint;  
where ERMFD^="X" and ERAGI^="X" and ERGAGI^="X";  
var FAGI FAGI2 FAGIX;  
output out=rstc.MAGI mean(FAGI)=UFAGI mean(FAGI2)=CFAGI mean(FAGIX)=AGIFR;
```

## Appendix F

run;

\*Produce macro variable for future use as a proxy for those without income components;

```
data rstc.magi;
set rstc.magi;
MAGI=AGIFR/CFAGI;
call symput('FAGI_G',MAGI);
run;
```

\*Create index for efficient merge;

```
proc datasets library=rstc;
modify UTAX&YR;
index create TYFS=(TAXYEAR FTYPE);
quit;
```

\*Merge Tax parameters of initial data year to define standard deduction users;

```
data rstc.UTAX&YR(DROP=PEAMT_G FEXMP_G FBRAC1-FBRAC5 FRATE1-FRATE6 PEPB PEPD PEPA IDPB IDPD IDPA UBRAC1-UBRAC5 URATE1-URATE6);
```

```
merge rstc.UTAX&YR (in=in1) rstc.gparm (in=in2);
by TAXYEAR FTYPE;
```

```
if in1^=1 and in2=1 then delete;
if in1=1 and in2=1 then do;
```

\*Those utilizing the standard deduction, even lacking federal match information;

```
if FEXMP_G=DED then STDED=1;
else STDED=0;
```

\*Those whose personal exemption is phasing out;

```
if FAGI>=PEPB and
PEAMT<(PEAMT_G*PE) then PEPO=1;
```

\*Counts and recalculates itemized deduction that are phasing out;

```
if FAGI>=IDPB and
DED>FEXMP_G then do;
ITPO=1;
ITEMIZEX=min((DED+(FAGI-IDPB)*IDPD),(DED/IDPA));
```

end;

\*Calculate nonresident apportionment;

```
if UAGI=. then NRTIO=1; else NRTIO=UAGI/TAGI;
```

\*Calculate FTI;

```
FTIX=max(sum(FAGI,-DED,-4/3*PEAMT),0);
```

\*Error in model versus actual FTI;

```
if FTI=0 and FTIX=0 then ERFTI=1; else ERFTI=FTIX/FTI;
```

/\*

\*Diagnostic checking how state values match to federal information;

\*Calculates federal tax from existing fed data;

```
FTAX1=sum(
max(ceil(min(max(FTI,0),FBRAC1)/25)*25*FRATE1,0),
max(ceil(min(max(FTI-FBRAC1,0),FBRAC2-FBRAC1)/25)*25*FRATE2,0),
max(ceil(min(max(FTI-FBRAC2,0),FBRAC3-FBRAC2)/25)*25*FRATE3,0),
max(ceil(min(max(FTI-FBRAC3,0),FBRAC4-FBRAC3)/25)*25*FRATE4,0),
max(ceil(min(max(FTI-FBRAC4,0),FBRAC5-FBRAC4)/25)*25*FRATE5,0),
max(ceil(max(FTI-FBRAC5,0)/25)*25*FRATE6,0),
-CRDTOT);
```

\*Difference in model versus actual tax, [Child tax credits, AMT, etc.];

\*Use to calibrate future tax changes;

```
ERDFX1=FTAX1-FEDTAX2;
```

\*Error in model versus actual tax, [Child tax credits, AMT, other credits.];

```
if FTAX1=0 and FEDTAX2=0 then ERFTX1=1; else ERFTX1=FTAX1/FEDTAX2;*/
```

\*Calculates federal tax from calculated FTI;

```
FTAX2=sum(
max(ceil(min(max(FTIX,0),FBRAC1)/25)*25*FRATE1,0),
max(ceil(min(max(FTIX-FBRAC1,0),FBRAC2-FBRAC1)/25)*25*FRATE2,0),
max(ceil(min(max(FTIX-FBRAC2,0),FBRAC3-FBRAC2)/25)*25*FRATE3,0),
max(ceil(min(max(FTIX-FBRAC3,0),FBRAC4-FBRAC3)/25)*25*FRATE4,0),
max(ceil(min(max(FTIX-FBRAC4,0),FBRAC5-FBRAC4)/25)*25*FRATE5,0),
max(ceil(max(FTIX-FBRAC5,0)/25)*25*FRATE6,0),
-CRDTOT);
```

\*Use to calibrate future tax changes;



## Appendix F

```
*Tax Value Error;
proc univariate data=rstc.utax&YR(keep=ERDFX2 where=(ERDFX2>-5000 and ERDFX2<5000)) noprint;
var ERDFX2;
histogram ERDFX2 /endpoints=-5000 to 5000 by 100 grid cgrid=grayda cfill=grayba lgrid=1 ;
run;
ods pdf close;*/

*Utilize factors to create macro itemize and CPI growth;
data _null_;
set rstc.ginc;
where TAXYEAR=20&YR;
call symput('CPI_G',CPI_G);
run;

*Create index for efficient merge;
proc datasets library=rstc;
modify UTAX&YR;
index create FYFS=(FYEAR FTYPE);
quit;

*Merge forecast tax parameters to proxy tax database;
data rstc.UTAX&YR;
merge rstc.UTAX&YR (in=in1) rstc.gparam (in=in2 drop=TAXYEAR);
by FYEAR FTYPE;
if in1^=1 and in2=1 then delete;
*Calculate AGI for those without IRS records or inconsistent information;
if ERGAGI="X" then FAGIX=FAGI*&FAGI_G;
*No parameters available for calculation;
if in1=1 and in2^=1 or
    TAXYEAR<=2000 then ERNOCALC="X";
if in1=1 and in2=1 and
    TAXYEAR>2000 then do;
*Personal Exemption amount;
PEAMTX=PE*PEAMT_G;
*Apply federal deduction for standard deduction users;
if STDED=1 then DEDX=FEXMP_G;
else if STDED=0 then DEDX=DED*ITEMIZED_G;
*Phase out the applicable personal exemption amounts;
if FAGIX>PEPB then do;
    PEPOX=1;
    PEAMTX=min(max((PE*PEAMT_G)*(1-((FAGI-PEPB)/(PEPD*PEPA))),0),(PE*PEAMT_G));
end;
*Phase out the itemized deduction;
if FAGIX>IDPB then do;
    ITPOX=1;
    if ITEMIZEX=. then DEDX=DED*ITEMIZED_G;
    if ITEMIZEX^=. then DEDX=max(((ITEMIZEX*ITEMIZED_G)-(FAGIX-IDPB)*IDPD),(ITEMIZEX*ITEMIZED_G)*IDPA);
end;
*Calculate fti;
FTIX=max(sum(FAGIX,-DEDX,-PE*PEAMTX),0);
*Calculate federal tax;
FTAX=sum(
    max(ceil(min(max(FTIX,0),FBRAC1)/25)*25*FRATE1,0),
    max(ceil(min(max(FTIX-FBRAC1,0),FBRAC2-FBRAC1)/25)*25*FRATE2,0),
    max(ceil(min(max(FTIX-FBRAC2,0),FBRAC3-FBRAC2)/25)*25*FRATE3,0),
    max(ceil(min(max(FTIX-FBRAC3,0),FBRAC4-FBRAC3)/25)*25*FRATE4,0),
    max(ceil(min(max(FTIX-FBRAC4,0),FBRAC5-FBRAC4)/25)*25*FRATE5,0),
    max(ceil(min(max(FTIX-FBRAC5,0),FBRAC6-FBRAC5)/25)*25*FRATE6,0),
    -CRDTOT,ERDFX2);
*Calculate additional loss of the retirement credit;
if RETIRE>0 and FTYPE in ("C","B") then RETIREX=max(sum(RETIRE,-(max(FAGIX,32000)-max(FAGI,32000))* .5),0);
if RETIRE>0 and FTYPE in ("A") then RETIREX=max(sum(RETIRE,-(max(FAGIX,25000)-max(FAGI,25000))* .5),0);
if RETIRE>0 and FTYPE in ("D") then RETIREX=max(sum(RETIRE,-(max(FAGIX,16000)-max(FAGI,16000))* .5),0);
*Calculate utah taxable income for graduated;
UTIX=sum(FAGIX,ADTOT*&CPI_G,-DEDX,-PEAMTX*3/4,-FTAX/2,-STAXREF*&CPI_G,-RETIREX,-DDTOT*&CPI_G);
DDUESP=DDUESP*&CPI_G;
*Calculate utah taxable income for graduated;
```

## Appendix F

```
TINC=sum(FAGIX,ADTOT*&CPL_G,-DDFLT*&CPL_G);
```

```
*Calculate utah tax on graduated system;
```

```
ATAX1=round(sum(  
    max(round((min(max(UTIX,0) ,UBRAC1 )),1)*URATE1,0),  
    max(round((min(max(UTIX-UBRAC1,0),UBRAC2-UBRAC1)),1)*URATE2,0),  
    max(round((min(max(UTIX-UBRAC2,0),UBRAC3-UBRAC2)),1)*URATE3,0),  
    max(round((min(max(UTIX-UBRAC3,0),UBRAC4-UBRAC3)),1)*URATE4,0),  
    max(round((min(max(UTIX-UBRAC4,0),UBRAC5-UBRAC4)),1)*URATE5,0),  
    max(round(( max(UTIX-UBRAC5,0)      ),1)*URATE6,0))*NRTIO,1);
```

```
*Calculate utah tax on flat system;
```

```
ATAX2=round(max(TINC,0)*0.0535*NRTIO,1);
```

```
*Define Switchers;
```

```
if ATAX2<=ATAX1 then SWITCH1=1; else SWITCH1=0;
```

```
UTAX=min(ATAX1,ATAX2);
```

```
ATAX=round(sum(max(sum(min(ATAX1,ATAX2),-NRTOT),0),-RCTOT),1);
```

```
*Diagnostics;
```

```
if FAGI=0 then GFAGI=1; else GFAGI=FAGIX/FAGI;
```

```
if FEDTAX2=0 then GFTAX=1; else GFTAX=FTAX/FEDTAX2;
```

```
if FTI=0 then GFTI=1; else GFTI=FTIX/FTI;
```

```
if UTI=0 then GUTI=1; else GUTI=UTIX/UTI;
```

```
end;
```

```
run;
```

```
goptions reset=all ctext=BLACK ftext="Arial" rotate=LANDSCAPE device=gif  
vsz=7.5 in hsz=9.0 in vorigin=0.5 in horigin=1.0 in  
htext=2pct hpos=240 vpos=200;
```

```
/*ods pdf file="E:\Taxes\Charts\Forecast Diagnostics & YR..pdf";
```

```
*Print Diagnostics for review;
```

```
*FAGI Growth;
```

```
proc univariate data=rstc.utax&YR(keep=GFAGI where=(GFAGI>1 and GFAGI<2)) noprint;
```

```
var GFAGI;
```

```
histogram GFAGI /endpoints=1 to 2 by .01 grid cgrid=grayda cfill=grayba lgrid=1 ;
```

```
run;
```

```
*FTI Growth;
```

```
proc univariate data=rstc.utax&YR(keep=GFTI where=(GFTI>1 and GFTI<2)) noprint;
```

```
var GFTI;
```

```
histogram GFTI /endpoints=1 to 2 by .01 grid cgrid=grayda cfill=grayba lgrid=1 ;
```

```
run;
```

```
*Tax Percent Growth;
```

```
proc univariate data=rstc.utax&YR(keep=GFTAX where=(GFTAX>1 and GFTAX<2)) noprint;
```

```
var GFTAX;
```

```
histogram GFTAX /endpoints=1 to 2 by .01 grid cgrid=grayda cfill=grayba lgrid=1 ;
```

```
run;
```

```
*Utah Taxable Income Growth;
```

```
proc univariate data=rstc.utax&YR(keep=GUTI where=(GUTI>1 and GUTI<2)) noprint;
```

```
var GUTI;
```

```
histogram GUTI /endpoints=1 to 2 by .01 grid cgrid=grayda cfill=grayba lgrid=1 ;
```

```
run;
```

```
ods pdf close;*/
```

```
*Produce subset data for efficient reform operations;
```

```
data rstc.utax&YR;
```

```
set rstc.utax&YR(keep=UTIX RETIREX TINC FAGIX ADTOT DEDX PEAMTX FTAX STAXREF DDTOT DDFLT UTAX AGE AGES DDUESP  
ATAX FTYPE PE RTYPE NRTIO FYEAR TAXYEAR NRTOT RCTOT UBRAC1-UBRAC5
```

```
URATE1-URATE6 STDED SWITCH1);
```

```
drop TAXYEAR;
```

```
rename UTIX=UTI RETIREX=RETIRE FAGIX=FAGI DEDX=DED PEAMTX=PEAMT PE=EXEMP FYEAR=TAXYEAR FTYPE=FS;
```

```
if RTYPE="L" then RTYPE="R";
```

```
run;
```

```
%mend;
```

```
*Revenue Forecast / Baseline for fiscal notes;
```

```
%macro ifiscal(YRB,YRE);
```

## Appendix F

\*produce baseline revenue from most current actual data;

```
data temp.utax05;
set rstc.utax05(keep=UTAX NRTOT RCTOT);
ATAX=sum(max(sum(UTAX,-NRTOT),0),-RCTOT);
run;
```

```
proc means data=temp.utax05(keep=ATAX) noprint;
output out=rstc.sumtax05(rename=( _FREQ_=RETURNS) drop=_TYPE_) sum(ATAX)=TAX;
run;
```

\*produce baseline revenue for each year;

```
%do i=%eval(&YRB+1) %to &YRE %by 1;
%if &i<10 %then %do;
proc means data=rstc.utax0&i.(keep=ATAX) noprint;
output out=rstc.sumtax0&i (rename=( _FREQ_=RETURNS) drop=_TYPE_) sum(ATAX)=TAX;
run;
%end;
%if &i>=10 %then %do;
proc means data=rstc.utax&i.(keep=ATAX) noprint;
output out=rstc.sumtax&i (rename=( _FREQ_=RETURNS) drop=_TYPE_) sum(ATAX)=TAX;
run;
%end;
%end;
```

\*merge each year of data;

```
data rstc.sumtax;
format CYEAR 8. RETURNS comma10.0 RETURNPC percent6.1 TAX dollar15.0 TAXPC percent7.1;
set %do i=&YRB %to &YRE %by 1;
%if &i<10 %then %do; rstc.sumtax0&i %end;
%if &i>=10 %then %do; rstc.sumtax&i %end; %end; ;
if _N_=1 then CYEAR=20&YRB; else CYEAR + 1;
TAXPC=TAX/lag(TAX)-1;
RETURNPC=RETURNS/lag(RETURNS)-1;
FYTAX=.82*lag(TAX)+.18*TAX;
run;

%mend;
```

\*Alter current tax structure by applying various reform ideas;

```
%macro crunch(RETAMT,RTAMT2,RPO);
data rstc.utaxc&YR;
set rstc.utaxc&YR;
*Set up credits and phase outs by filing status;
if upcase(FS) in ('E') then FS="C";
if upcase(FS) in ('A') then do;
FC=&SC;
PM=1;
if AGE>=65 then RETIREX=max(&RETAMT-max((FAGI-25000),0)*&RPO,0);
if AGES>=65 then RETIREX=max(&RETAMT-max((FAGI-25000),0)*&RPO,0);
*(min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06);
if AGE>=55 and AGE<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-25000),0)*&RPO,0);
if AGES>=55 and AGES<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-25000),0)*&RPO,0);
*if AGE=. and RETIRE>0 and sum(RETIRE,max((FAGI-25000),0)*.5)>5000 then RETIREX=max(&RETAMT-max((FAGI-25000),0)*&RPO,0);
end;
if upcase(FS) in ('B') then do;
FC=&HC;
PM=1.5;
if AGE>=65 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
if AGES>=65 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
if AGE>=55 and AGE<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-32000),0)*&RPO,0);
if AGES>=55 and AGES<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-32000),0)*&RPO,0);
*if (AGE=. or AGES=.) and RETIRE>0 and sum(RETIRE,max((FAGI-32000),0)*.5)>5000 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
end;
if upcase(FS) in ('C') then do;
FC=&MC;
PM=2;
if AGE>=65 and AGES<65 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
```

## Appendix F

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if AGES>=65 and AGE<65 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
if AGE>=65 and AGES>=65 then RETIREX=max(&RETAMT*2-max((FAGI-32000),0)*&RPO,0);
if AGE>=55 and AGES<55 and AGE<65 and AGES<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-32000),0)*&RPO,0);
if AGES>=55 and AGE<55 and AGES<65 and AGE<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-32000),0)*&RPO,0);
if AGE>=55 and AGES>=55 and AGE<65 and AGES<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)*2-max((FAGI-32000),0)*&RPO,0);
*if (AGE=. or AGES=.) and RETIRE>0 and sum(RETIRE,max((FAGI-32000),0)*.5)>5000 then RETIREX=max(&RETAMT-max((FAGI-32000),0)*&RPO,0);
*if (AGE=. or AGES=.) and RETIRE>0 and sum(RETIRE,max((FAGI-32000),0)*.5)>8000 then RETIREX=max(&RETAMT*2-max((FAGI-32000),0)*&RPO,0);
end;
if upcase(FS) in ('D') then do;
FC=&SC;
PM=1;
if AGE>=65 then RETIREX=max(&RETAMT-max((FAGI-16000),0)*&RPO,0);
if AGES>=65 then RETIREX=max(&RETAMT-max((FAGI-16000),0)*&RPO,0);
if AGE>=55 and AGE<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-16000),0)*&RPO,0);
if AGES>=55 and AGES<65 and RETIRE>0 then RETIREX=max((min(sum(RETIRE,max((FAGI-25000),0)*.5),4800)*.06)-max((FAGI-16000),0)*&RPO,0);
*if AGE=. and RETIRE>0 and sum(RETIRE,max((FAGI-16000),0)*.5)>5000 then RETIREX=max(&RETAMT-max((FAGI-16000),0)*&RPO,0);
end;
%if &CRP=N %then %do;
*MORCHR=.05*sum(ACONTX,AINTX);
*CREDIT=sum(FC,&PC*EXEMP,MORCHR);
CREDIT=MAX(sum(FC,&PC*EXEMP)-MAX(((max(TINC,0)-&BP*PM)*(&CD)),0),0);
%end;
*Alternately Calculate Credit at 6%;
%if &CRP=Y %then %do;
*RETIREX=max(RETIRE*.05,0);
if RETIRE=4800 then RETIREX=288;
*if AGE<55 and AGES<55 then RETIREX=0;
*if AGE<65 and AGES<65 then RETIREX=0;
*if RETIREAMT<5000 then RETIREX=0;
PCEXEMP=&IR*PEAMT*3/4;
*CMCRDT=&TR*sum(ACONTX,AINTX)*.5;
FC=&IR*max(DED,5150);
if STDED=0 then ITCRD=sum(DED,-STAXADD)*&IR;
FC=max(FC,ITCRD);
CREDIT=MAX(sum(FC,PCEXEMP)-MAX(((max(TINC,0)-&BP*PM)*(&CD)),0),0);
*CREDIT=sum(MAX(sum(FC,PCEXEMP)-MAX(((max(TINC,0)-&BP*PM)*(&CD)),0),0),CMCRDT);
%end;
*Change top rate of existing system;
%if &ETR=N %then %do;
URATE6=0.0698;
%end;
%if &ETR=Y %then %do;
URATE6=&TER;
%end;
*New UESP Credit;
/*if &YR=06 or &YR=07 %then %do; CDUESP=DDUESP*.0535; %end;
*if &YR>07 %then %do; CDUESP=DDUESP*.0500; %end;*/
*New flat rate with credit phasing out;
*HTAX=round(max(sum(max((max(TINC,0)*&TR),0),-CDUESP),0)*NRTIO,1);
HTAX=round(max(sum(max((max(TINC,0)*&TR2),0),-CREDIT,-RETIREX),0)*NRTIO,1);
*HTAX=round(max(sum(max((max(TINC,0)*&TR2),0),-CREDIT),0)*NRTIO,1);
*Calculate utah tax on graduated system;
ITAX=round(sum(
max(round((min(max(UTI,0),UBRAC1)),1)*URATE1,0),
max(round((min(max(UTI-UBRAC1,0),UBRAC2-UBRAC1)),1)*URATE2,0),
max(round((min(max(UTI-UBRAC2,0),UBRAC3-UBRAC2)),1)*URATE3,0),
max(round((min(max(UTI-UBRAC3,0),UBRAC4-UBRAC3)),1)*URATE4,0),
max(round((min(max(UTI-UBRAC4,0),UBRAC5-UBRAC4)),1)*URATE5,0),
max(round((max(UTI-UBRAC5,0)),1)*URATE6,0))*NRTIO,1);
*Calculate switchers from various methods;
if HTAX<=ITAX then SWITCH2=1; else SWITCH2=0;
if HTAX<ITAX then SWITCH3=1; else SWITCH3=0;
*Calculate new tax based on tax year in question;
*if TAXYEAR>=20&YR then CTAX=sum(max(sum(min(HTAX,ITAX),-NRTOT),0),-RCTOT); *Dual System;

```

## Appendix F

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if TAXYEAR>=20&YR then CTAX=sum(max(sum(HTAX,-NRTOT),0),-RCTOT); *Single System;
else CTAX=ATAX;
*Keep Flat Tax for comparison;
DTAX=sum(max(sum(HTAX,-NRTOT),0),-RCTOT);
SHIFT4=sum(DTAX,-ATAX);
*Calculate change in tax;
SHIFT2=sum(CTAX,-ATAX);
*Percent change in tax;
PC2=CTAX/ATAX-1;
*Indicate if taxpayer received flat credit;
if CREDIT>0 and SWITCH2=1 then CEIC=1; else CEIC=0;
*Calculate the effective tax rates;
ETN=ATAX/(max(TINC,0)*NRTIO);
ETH=CTAX/(max(TINC,0)*NRTIO);
DED1=DED*NRTIO;
*Income Groups;
TINC1=TINC*NRTIO;
if TINC*NRTIO<=50000 then INCG2=0;
if TINC*NRTIO>50000 then INCG2=1;
if TINC*NRTIO<=5000 then INCG=5;
else if TINC*NRTIO>5000 and TINC*NRTIO<=15000 then INCG=15;
else if TINC*NRTIO>15000 and TINC*NRTIO<=25000 then INCG=25;
else if TINC*NRTIO>25000 and TINC*NRTIO<=40000 then INCG=40;
else if TINC*NRTIO>40000 and TINC*NRTIO<=70000 then INCG=70;
else if TINC*NRTIO>70000 and TINC*NRTIO<=100000 then INCG=100;
else if TINC*NRTIO>100000 then INCG=999;
INCG=left(INCG);
*Cap exemptions for future tabulation;
EXCAP=min(max(EXEMP,0),6);
*Apply random vaules for percentile ranking;
RANDOM=ranuni(020106);
if RETIREX>0 then CAT1=1; else CAT1=0;
if ETN=0 then ETB=ETN;
if ACONTX>0 then CHRTY=1; else CHRTY=0;
*Apply sales tax amounts for future share;
STFOOD=max(exp(3.93)*max(1,EXEMP)**.53,exp(3.93)*TINC**.06*max(1,EXEMP)**.53);
STELSE=max(exp(2.77)*max(1,EXEMP)**.24,exp(2.77)*TINC**.36*max(1,EXEMP)**.24);
*Taxpayers;
if FAGI<490000 or FAGI>510000 then do;
    CLARKX1=0;
    CLARKX2=0;
end;
if FAGI>=490000 and FAGI<=510000 then do;
    CLARKX1=1;
    if DED>=120000 then CLARKX2=2;
    if DED<120000 then CLARKX2=3;
end;
run;

*Summarize impacts;
proc means data=rstc.utaxc&YR noprint;
var ATAX CTAX SWITCH2 SWITCH3;
output out=rstc.rf&YR(drop=_TYPE_ _FREQ_) sum(ATAX)=TAXA sum(CTAX)=TAXC sum(SWITCH2)=SM2 sum(SWITCH3)=SM3;
run;

data rstc.rf&YR;
set rstc.rf&YR;
CYEAR=20&YR;
run;

*Merge impacts to base fiscal results;
data rstc.sumtax;
merge rstc.sumtax (in=in1) rstc.rf&YR (in=in2);
by CYEAR;
if _N_=1 then do;
    TAXA=TAX;
    TAXC=TAX;

```

## Appendix F

```
end;
DIF=TAXC-TAXA;
FYTAX=.82*lag(TAX)+.18*TAX;
FYTAXC=.82*lag(TAXC)+.18*TAXC;
FYDIFF=sum(FYTAXC,-FYTAX);
run;

%if &YR=09 %then %do;
proc export data=rstc.sumtax dbms=excel2000 outfile="E:\Taxes\Excel\Data & Title.xls" replace;
sheet=Fiscal;
run;
%end;

%mend;

*Create Effective Rate Charts;
%macro graph4(A,SUBS,FILS,HAX);
data TEMP.AG2;
set RSTC.utaxc&YR.(keep=FS TINC SWITCH1 SWITCH2 SWITCH3 TAXYEAR RTYPE ETN ETH SHIFT2);
if ETH<=ETN then ETX=ETN; *Gray - SB4001 Effective Rate;
if ETH>ETN then ETF=ETN; *Orange - Rate cut on the top graduated rate;
*if ETH>ETN then ETH=.; *Black - Switchers, removes from those who have same tax;
run;

proc means data=RSTC.utaxc&YR(keep=SWITCH2 CEIC FAGI SHIFT2) noprint;
class SWITCH2 CEIC;
var FAGI;
output out=TEMP.AGP n=TOT sum(SWITCH2)=SFT sum(CEIC)=SEIC sum(SHIFT2)=SCST;
run;

data _null_;
set TEMP.AGP;
if _TYPE_=0 then do;
RTOT + TOT;
RCST + SCST;
ECST=round((SCST/1000000),10)*-1;
PTOT=round((SFT/TOT)*100,1);
call symput('PS',compress(PTOT));
call symput('CE',compress(ECST));
end;
if SWITCH2=1 and CEIC=0 then do;
PTOT=round((SFT/RTOT)*100,1);
call symput('PSF',compress(PTOT));
PCST=round((SCST/RCST)*100,1);
call symput('PCF',compress(PCST));

end;
if SWITCH2=1 and CEIC=1 then do;
PTOT=round((SFT/RTOT)*100,1);
call symput('PSC',compress(PTOT));
PCST=round((SCST/RCST)*100,1);
call symput('PCC',compress(PCST));
end;
run;

goptions reset=all
          ctext=BLACK
          ftext=Swiss
          rotate=LANDSCAPE
          vsize=7.5 in
          hsize=10 in
          vorigin=0.5 in
          hororigin=0.5 in
          device=gif;

%let TERP=%substr(&TER,4,1).%substr(&TER,5,2)%;
%let TRP=%substr(&TR,3,1).%substr(&TR,4,2)%;
```

## Appendix F

```

%let TR2P=%substr(&TR2,3,1).%substr(&TR2,4,2)%;
%let EITP=%substr(&PEIC,2,2);
%if &PEIC^=.00 %then %do;
%let VAX=%eval(40*&EITP/100);
%if %eval(40*&EITP/100)<10 %then %let VAX=0%eval(40*&EITP/100);
%end;
%if &PEIC=.00 %then %do;
%let VAX=0%eval(%substr(&IP,3,1)*3);
%end;
%let PAIC=%substr(&IP,3,1)%;

title1 h=3pct "20&YR.: &TITLE";
*title2 h=2pct j=l "&TR2P Flat Tax with a Credit of:" j=r "% Switch = &PS.%, $ Est. = $&CE.m";
*title2 h=2pct j=l "Top Graduated Rate = &TERP or &TR2P Flat Tax with a Credit of:" j=r "% Decrease = &PS.%, FY09 $Est. = $&CE.m";
title2 h=2pct j=l "&TR2P Flat Tax with a Credit of:" j=r "% Decrease = &PS.%, FY09 $Est. = $109m";

%let CDP=%substr(&CD,4,1).%substr(&CD,5,1);
%let BPH=%eval(&BP*3/2);
%let BPM=%eval(&BP*2);
%if %substr(&IR,3,1)^=0 %then %do;
%let IRP=%substr(&IR,3,2).%substr(&IR,5,1)%;
%end;
%if %substr(&IR,3,1)=0 %then %do;
%let IRP=%substr(&IR,4,1).%substr(&IR,5,1)%;
%end;
%put _user_;
%if &CRP=N %then %do;
title3 h=2pct j=l " [(Single=$&SC, HofH=$&HC, Married=$&MC)] - Flat Tax";
%end;
%if &CRP=Y %then %do;
title3 h=2pct j=l " 6% of Deduction and State Personal Exemption, Retirees receive a credit equivalent to 6% of the current retirement deduction";
*title3 h=2pct j=l " 50% Charity at &TR2P, 50% Mortgage Interest at &TR2P, Per Person of 17% state amount, Retirees receive a credit equivalent to the retirement deduction";
%end;
title4 h=2pct j=l " Phases out at &CDP cents on the dollar beginning at $&BP Single, $&BPH HofH, $&BPM MFJ";
*title4 h=2pct j=l " Per person Phases out at &CDP cents on the dollar beginning at $&BP Single, $&BPH HofH, $&BPM MFJ";
title6 h=2pct j=l c=GRAYDA " Gray = Prior Rate under SB4001" c=black ", " c=Black " Black = New Rate under reform";

ods pdf file="E:\Taxess\Charts\Effective Rates 20&YR &PLAN &TR2 &PEIC &IP &HAX..pdf";

axis1 label=("Federal Adjusted Gross Income" h=2.0pct) order=(0 to &HAX by %eval(&HAX/10)) value=(h=1.5pct);
axis3 label=("Effective Rate" h=2.0pct) order=(-.&VAX to .07 by .01) value=(h=1.5pct);

/* symbol value=point color=black height=1;
proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETO ETN ETH percent5.1;
plot SHIFT2*TINC/ haxis=axis1

vaxis=axis2
href=0 chref=green
vref=0 cvref=green;

run;

symbol value=point color=red height=1;
proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETO percent5.1;
plot ETO*TINC/ haxis=axis1

vaxis=axis3
href=0 chref=green;

run;*/

symbol1 value=point color=GRAYDA height=1;
symbol2 value=point color=black height=1;

proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETN ETH percent5.1;
%if &A=R %then %do; where RTYPE="R" and TAXYEAR>=20&YR; %end;

```

## Appendix F

```
%if &A=N %then %do; where RTYPE="N" and TAXYEAR>=20&YR; %end;
/*note justify=left m=(101pct,80pct) h=1.5pct "Rate" m=(106pct,80pct) "#= &PSF%" m=(106pct,78pct) "$= &PCF%";
note justify=left m=(101pct,60pct) h=1.5pct "Credit" m=(106pct,60pct) "#= &PSC%" m=(106pct,58pct) "$= &PCC%";*/
plot ETN*TINC
    ETH*TINC/    overlay
                                haxis=axis1
                                vaxis=axis3
                                href=0 chref=green;

run;

quit;
ods pdf close;
%mend;

*Create Effective Rate Charts;
%macro graph5(A,SUBS,FILS,HAX);
data TEMP.AG2;
set RSTC.utaxc&YR.(keep=FS TINC SWITCH1 SWITCH2 SWITCH3 TAXYEAR RTYPE ETN ETH SHIFT2);
if ETH<=ETN then ETX=ETN;          *Gray - SB4001 Effective Rate;
if ETH>ETN then ETF=ETN;          *Orange - Rate cut on the top graduated rate;
if ETH>ETN then ETH=.;            *Black - Switchers, removes from those who have same tax;
run;

proc means data=RSTC.utaxc&YR(keep=SWITCH2 CEIC FAGI SHIFT2) noprint;
class SWITCH2 CEIC;
var FAGI;
output out=TEMP.AGP n=TOT sum(SWITCH2)=SFT sum(CEIC)=SEIC sum(SHIFT2)=SCST;
run;

data _null_;
set TEMP.AGP;
if _TYPE_=0 then do;
    RTOT + TOT;
    RCST + SCST;
    ECST=round((SCST/1000000),10)*-1;
    PTOT=round((SFT/TOT)*100,1);
    call symput('PS',compress(PTOT));
    call symput('CE',compress(ECST));
end;
if SWITCH2=1 and CEIC=0 then do;
    PTOT=round((SFT/RTOT)*100,1);
    call symput('PSF',compress(PTOT));
    PCST=round((SCST/RCST)*100,1);
    call symput('PCF',compress(PCST));
end;
if SWITCH2=1 and CEIC=1 then do;
    PTOT=round((SFT/RTOT)*100,1);
    call symput('PSC',compress(PTOT));
    PCST=round((SCST/RCST)*100,1);
    call symput('PCC',compress(PCST));
end;
run;

goptions reset=all
    ctext=BLACK
    ftext=Swiss
    rotate=LANDSCAPE
    vsize=7.5 in
    hsize=10 in
    vorigin=0.5 in
    horigin=0.5 in
    device=gif;

%let TERP=%substr(&TER,4,1).%substr(&TER,5,2)%;
%let TRP=%substr(&TR,3,1).%substr(&TR,4,2)%;
%let TR2P=%substr(&TR2,3,1).%substr(&TR2,4,2)%;
```

## Appendix F

```

%let EITP=%substr(&PEIC,2,2);
%if &PEIC^=.00 %then %do;
%let VAX=%eval(40*&EITP/100);
%if %eval(40*&EITP/100)<10 %then %let VAX=0%eval(40*&EITP/100);
%end;
%if &PEIC=.00 %then %do;
%let VAX=0%eval(%substr(&IP,3,1)*3);
%end;
%let PAIC=%substr(&IP,3,1)%;

title1 h=3pct "20&YR.: &TITLE";
*title2 h=2pct j=l "&TR2P Flat Tax with a Credit of:" j=r "% Switch = &PS.%, $ Est. = $&CE.m";
*title2 h=2pct j=l "Top Graduated Rate = &TERP or &TR2P Flat Tax with a Credit of:" j=r "% Decrease = &PS.%, FY09 $Est. = $&CE.m";
title2 h=2pct j=l "&TR2P Flat Tax with a Credit of:" j=r "% Decrease = &PS.%, FY09 $Est. = $109m";

%let CDP=%substr(&CD,4,1).%substr(&CD,5,1);
%let BPH=%eval(&BP*3/2);
%let BPM=%eval(&BP*2);
%if %substr(&IR,3,1)^=0 %then %do;
%let IRP=%substr(&IR,3,2).%substr(&IR,5,1)%;
%end;
%if %substr(&IR,3,1)=0 %then %do;
%let IRP=%substr(&IR,4,1).%substr(&IR,5,1)%;
%end;
%put _user_;
%if &CRP=N %then %do;
title3 h=2pct j=l " [(Single=$&SC, HofH=$&HC, Married=$&MC)] - Flat Tax";
%end;
%if &CRP=Y %then %do;
title3 h=2pct j=l " 6% of Deduction and State Personal Exemption, Retirees receive a credit equivalent to the current retirement deduction";
*title3 h=2pct j=l " 50% Charity at &TR2P, 50% Mortgage Interest at &TR2P, Per Person of 17% state amount, Retirees receive a credit equivalent to the retirement deduction";
%end;
title4 h=2pct j=l " Phases out at &CDP cents on the dollar beginning at $&BP Single, $&BPH HofH, $&BPM MFJ";
*title4 h=2pct j=l " Per person Phases out at &CDP cents on the dollar beginning at $&BP Single, $&BPH HofH, $&BPM MFJ";
title6 h=2pct j=l c=GRAYDA " Gray = Prior Rate under SB4001" c=black " c=Black " Black = New Rate under reform";

ods pdf file="E:\Taxes\Charts\Effective Rates X 20&YR &PLAN &TR2 &PEIC &IP &HAX..pdf";

axis1 label=("Federal Adjusted Gross Income" h=2.0pct) order=(0 to &HAX by %eval(&HAX/10)) value=(h=1.5pct);
axis3 label=("Effective Rate" h=2.0pct) order=(-.&VAX to .07 by .01) value=(h=1.5pct);

/* symbol value=point color=black height=1;
proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETO ETN ETH percent5.1;
plot SHIFT2*TINC/ haxis=axis1

vaxis=axis2
href=0 chref=green
vref=0 cvref=green;

run;

symbol value=point color=red height=1;
proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETO percent5.1;
plot ETO*TINC/ haxis=axis1

vaxis=axis3
href=0 chref=green;

run;*/

symbol1 value=point color=GRAYDA height=1;
symbol2 value=point color=black height=1;
symbol3 value=point color=ORANGE height=1;

proc gplot data=TEMP.AG2;
format TINC dollar7.0 ETX ETN ETH ETF percent5.1;

```

## Appendix F

```

%if &A=R %then %do; where RTYPE="R" and TAXYEAR>=20&YR; %end;
%if &A=N %then %do; where RTYPE="N" and TAXYEAR>=20&YR; %end;
/*note justify=left m=(101pct,80pct) h=1.5pct "Rate" m=(106pct,80pct) "#= &PSF%" m=(106pct,78pct) "$= &PCF%" ;
note justify=left m=(101pct,60pct) h=1.5pct "Credit" m=(106pct,60pct) "#= &PSC%" m=(106pct,58pct) "$= &PCC%" ;*/
plot ETN*TINC
      ETH*TINC
      ETF*TINC/      overlay

                                haxis=axis1
                                vaxis=axis3
                                href=0 chref=green;

run;

quit;
ods pdf close;
%mend;

%macro perbytax10;
proc means data=rstc.utaxc&YR(keep=FS EXCAP SWITCH2 CEIC INCG2 SHIFT2 ATAX CTAX PC2) noprint;
class FS EXCAP SWITCH2 CEIC INCG2 / missing;
var SWITCH2 SHIFT2 ATAX CTAX;
output out=SWITCHERS mean(SHIFT2)=PSHIFT_Mean mean(PC2)=MPCTAX sum(SWITCH2)=SWITCH sum(SHIFT2)=SHIFT sum(ATAX)=TAXA
sum(CTAX)=TAXC;
run;

proc export data=SWITCHERS dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE..xls" replace;
sheet=D&YR;
run;
%mend;

%macro perbytax11;
proc format library=work;
value inc
      5='<=$5k'
      15='>$5k and <=$15k'
      25='>$15k and <=$25k'
      40='>$25k and <=$40k'
      70='>$40k and <=$70k'
      100='>$70k and <=$100k'
      999='>$100k';

value retir
      0="No"
      1="Yes";

value $fstat
      'A'='Single'
      'B'='Head of Household'
      'C'='Married Filing Joint'
      'D'='Married Filing Separate';

value switch
      0="No"
      1="Yes";

value item
      0="No"
      1="Yes";

value exemp
      0="0"
      1="1"
      2="2"
      3="3"
      4="4"
      5="5"
      6=">=6";

run;

proc means data=rstc.utaxc&YR (keep=SWITCH2 ETB CTAX ATAX CAT1 FS EXCAP STDED INCG DED1 DTAX SHIFT4 TINC1) missing noprint;
class FS EXCAP INCG CAT1 STDED SWITCH2;
output out=NOSWITCH mean(ETB)=MEANER sum(ATAX)=TAXA sum(CTAX)=TAXC sum(DED1)=DED1 sum(DTAX)=TAXD sum(SHIFT4)=ADD
P50(SHIFT4)=ADDMED P10(SHIFT4)=ADD10 P90(SHIFT4)=ADD90 sum(TINC1)=ALLINC;

```

## Appendix F

```
run;
```

```
proc export data=NOSWITCH dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE..xls" replace;
sheet=NOSWITCH&YR;
run;
```

```
proc sort data=NOSWITCH(where=( _TYPE_=63 and SWITCH2=0)) out=NOSWITCH2;
by descending _FREQ_;
run;
```

```
proc sort data=NOSWITCH(where=( _TYPE_=63 and SWITCH2=1)) out=NOSWITCH4;
by descending _FREQ_;
run;
```

```
data NOSWITCH3(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
set NOSWITCH2(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
data NOSWITCH5(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
set NOSWITCH4(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
proc export data=NOSWITCH3 dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE..xls" replace;
sheet=NOSWITCH2&YR;
run;
```

```
proc export data=NOSWITCH5 dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE..xls" replace;
sheet=NOSWITCH3&YR;
run;
```

```
data S0;
set NOSWITCH (where=(SWITCH2=0));
_TYPE_=_TYPE_-1;
run;
```

```
data S1;
set NOSWITCH (where=(SWITCH2=1));
_TYPE_=_TYPE_-1;
run;
```

```
data SP;
set NOSWITCH (where=(SWITCH2=));
run;
```

```
proc sort data=S1;
by FS EXCAP INCG CAT1 STDED;
run;
```

```
proc sort data=S0;
by FS EXCAP INCG CAT1 STDED;
run;
```

```
proc sort data=SP;
by FS EXCAP INCG CAT1 STDED;
run;
```

## Appendix F

```
data SM;
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17. LRTIO 8.;
length FS1 $1. EXCAP1 INCG1 CAT11 STDED1 _TYPE_ CNT CNT1 CNT0 MEANER MEANER1 MEANER0 TAXA TAXA1 TAXA0 TAXC TAXC1 TAXC0
      DEDC DEDC1 DEDC0 TAXD TAXD1 TAXD0 ADD ADD1 ADD0 ADDMED ADDMED1 ADDMED0 ADD10 ADD101 ADD100 ADD90 ADD901 ADD900
      ALLINC ALLINC1 ALLINC0 8.;
merge SP(drop=SWITCH2 rename=( _FREQ_=CNT EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1))
      S1(drop=SWITCH2 rename=( _FREQ_=CNT1 MEANER=MEANER1 TAXA=TAXA1 TAXC=TAXC1 DEDC=DEDC1 TAXD=TAXD1 ADD=ADD1
      ADDMED=ADDMED1 ADD10=ADD101 ADD90=ADD901 ALLINC=ALLINC1 EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1
INCG=INCG1))
      S0(drop=SWITCH2 rename=( _FREQ_=CNT0 MEANER=MEANER0 TAXA=TAXA0 TAXC=TAXC0 DEDC=DEDC0 TAXD=TAXD0 ADD=ADD0
      ADDMED=ADDMED0 ADD10=ADD100 ADD90=ADD900 ALLINC=ALLINC0 EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1
INCG=INCG1));
by FS1 EXCAP1 INCG1 CAT11 STDED1 _TYPE_;
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
LRTIO=log(CNT0/CNT1);
run;

proc sort data=SM;
by _TYPE_;
run;

proc export data=SM dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=SM&YR;
run;

proc sort data=SM out=SMX;
by LRTIO;
run;

proc export data=SMX(where=( _TYPE_=62)) dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=SMX&YR;
run;
%mend;

%macro perbytax12;
proc means data=rstc.utaxc&YR(keep=FS EXCAP SWITCH1 SWITCH2 CEIC INCG2 SHIFT2 ATAX CTAX PC2 CHRTY) noprint;
class FS EXCAP SWITCH1 CEIC INCG2 CHRTY / missing;
var SWITCH1 SHIFT2 ATAX CTAX;
output out=CHRTY mean(SHIFT2)=PSHIFT_Mean mean(PC2)=MPCTAX sum(SWITCH2)=SWITCH sum(SHIFT2)=SHIFT sum(ATAX)=TAXA sum(CTAX)=TAXC
sum(CHRTY)=TOTCHRTY;
run;

proc export data=CHRTY dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=CHRTY&YR;
run;
%mend;

%macro perbytax13;
proc means data=rstc.utaxc&YR(keep=RTYPE SWITCH2 DED CEIC SHIFT2 ATAX CTAX PC2 CLARKX1 CLARKX2 ACONTX FAGI) noprint;
class RTYPE SWITCH2 CLARKX1 CLARKX2 / missing;
output out=CLARKX mean(PC2)=MPCTAX sum(SWITCH2)=SWITCH sum(SHIFT2)=SHIFT mean(SHIFT2)=SHIFTM sum(ATAX)=TAXA sum(CTAX)=TAXC
sum(DED)=DED mean(DED)=DEDM sum(FAGI)=FAGI mean(FAGI)=FAGIM;
run;

proc export data=CLARKX(where=(RTYPE="R")) dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=CLARKX&YR;
run;
%mend;
```

## Appendix F

\*Begin Tax Refrom;

```
%macro grbt(EX0);
proc means data=rstc.utaxc&YR(keep=FS EXCAP PC2 SHIFT2 TINC SWITCH2 ATAX CTAX PC2 INCG STDED %if &EX0=E %then %do; where=(ATAX^=0)
%end; noprint;
class FS EXCAP INCG SWITCH2 /missing;
var SWITCH2 SHIFT2 ATAX CTAX;
output out=rbt(rename=( _FREQ_=N _TYPE_=TYPE)) median(SHIFT2)=MDS median(PC2)=MDPS mean(SHIFT2)=MNS mean(PC2)=MNPS
sum(SWITCH2)=SWITCH sum(ATAX)=TAXA sum(CTAX)=TAXC sum(TINC)=INC sum(SHIFT2)=SHIFT;
run;

data rbt1;
format CAT $2. GP 8.;
set rbt(where=(TYPE in (0,2,3,4,5,8,9) keep=N SWITCH TYPE FS EXCAP INCG SWITCH2 MNS MNPS MDS MDPS TAXA TAXC INC SHIFT);
if INCG^=. then GP=INCG;
if EXCAP^=. then GP=(EXCAP+1)*1000;
if FS="A" then GP=10000;
if FS="B" then GP=20000;
if FS="C" then GP=30000;
if FS="D" then GP=40000;
if TYPE=2 then CAT="C1";
if TYPE=3 and SWITCH2=1 then CAT="C2";
if TYPE=3 and SWITCH2=0 then CAT="C3";
if TYPE=4 then CAT="C4";
if TYPE=5 and SWITCH2=1 then CAT="C5";
if TYPE=5 and SWITCH2=0 then CAT="C6";
if TYPE=8 then CAT="C7";
if TYPE=9 and SWITCH2=1 then CAT="C8";
if TYPE=9 and SWITCH2=0 then CAT="C9";
if TYPE=0 then do;
ALL + N;
ALL2 + SWITCH;
end;
if TYPE in (2,4,8) then N2=round((N/ALL),.01);
if TYPE in (3,5,9) and SWITCH2=1 then N2=round((N/ALL2),.01);
if TYPE in (3,5,9) and SWITCH2=0 then N2=round((N/(ALL-ALL2)),.01);
run;

proc format library=work;
value gpf
5='<=$5k'
15='$5 - 15k'
25='$15 - 25k'
40='$25 - 40k'
70='$40 - 70k'
100='$70 - 100k'
999='>$100k'
1000='0'
2000='1'
3000='2'
4000='3'
5000='4'
6000='5'
7000='>=6'
10000='Single'
20000='HofH'
30000='MFJ'
40000='MFS';
run;

goptions reset=all ctext=BLACK ftext="Helvetica" device=gif
vsz=10.0 in hsz=7.5 in vorigin=0.5 in horigin=0.5 in
htext=1pct hpos=480 vpos=400;

ods pdf file="E:\Taxes\Charts\Pie &TITLE &EX0..pdf";
```

## Appendix F

```
*title;
title1 h=3pct "&TITLE: Effect on Taxpayers";
title3 h=2pct f=DavidB      j=1      "      Current"
                                j=c "Switch"
                                j=r "Remain      ";

goptions colors=(YELLOW LIGHTGRAYISHRED VERYLIGHTVIVIDBLUE ORANGE LIGHTMODERATEPURPLE LIGHTMODERATEGREEN LIGHTSTRONGRED);
pattern1 value=s repeat=6;

legend1 label=("Categories" justify=center position=top)
         position=(outside bottom center)
         value=(height=1pct)
         across=7
         down=3;

proc gchart data=rbt1(where=(TYPE^=0));
format GP gpf. N2 comma8.;
pie GP /      sumvar=N2
         group=CAT
         discrete
         other=2
         noheading
         nogroupheading
         nolegend
         percent=arrow
         clockwise
         angle=90
         slice=arrow
         value=none
         coutline=black
         across=3
         down=3;
note h=2pct angle=90 move=(-4,10)pct "Filing Status"
                                move=(+0,38)pct "Number of Exemptions"
                                move=(+0,73)pct "Income Group";

run;
quit;
ods pdf close;

data rbt2;
format GP gpf. GA $15.;
set rbt1;
GA=left(put(GP,gpf.));
run;

proc sort data=rbt2;
by CAT GP;
run;

proc export data=rbt2 dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=Pie&YR.&EX0.;
run;
%mend;

%macro graph6(EX1);
proc sort data=rstc.utaxc&YR(where=(RTYPE="R" and TAXYEAR=20&YR %if &EX1=E %then %do; and ATAX>0 %end;) keep=ATAX RTYPE TAXYEAR TINC
RANDOM SHIF2 SWITCH2 PC2 FS INCG EXCAP) out=temp.mper;
by TINC RANDOM;
run;

proc means data=temp.mper(keep=TINC) noprint;
var TINC;
output out=temp.pvar n=TN sum(TINC)=SUMINC;
run;

data _null_;
set temp.pvar;
```

## Appendix F

```
call symput(TINC',compress(SUMINC));
call symput(TOBS',compress(TN));
run;
```

```
data temp.MPER(drop=RANDOM CINC I CUMPER CUMINC);
set temp.MPER;
*Define Percentiles;
CUMPER=_N_/&TOBS;
CINC + TINC;
CUMINC=CINC/&TINC;
do i=0 to 1 by .01;
  if (CUMPER>i and CUMPER<=(i+.01)) then PERCENTILE=i*100;
end;
if TINC<=0 then DLR=0;
if TINC>0 and TINC<=30000 then DLR=ceil(TINC/1000)*1000;
if TINC>30000 and TINC<=70000 then DLR=ceil(TINC/2500)*2500;
if TINC>70000 and TINC<=115000 then DLR=ceil(TINC/5000)*5000;
if TINC>115000 and TINC<=125000 then DLR=125000;
if TINC>125000 and TINC<=150000 then DLR=150000;
if TINC>150000 and TINC<=175000 then DLR=175000;
if TINC>175000 and TINC<=250000 then DLR=250000;
if TINC>250000 then DLR=700000;
run;
```

```
proc means data=temp.mper noprint;
class PERCENTILE;
var TINC;
output out=temp.meaninc(where=(type_=1)) mean(TINC)=D1;
run;
```

```
*Labels Percentiles;
data temp.meaninc;
set temp.meaninc(drop=_type_ _freq_);
format PLR $9.;
if PERCENTILE<10 and D1<0 then PLR="0"||compress(PERCENTILE)||" $"||compress(round(D1/1000,1))||"k";
if PERCENTILE<10 and D1>=0 then PLR="0"||compress(PERCENTILE)||" $"||compress(round(D1/1000,1))||"k";
if PERCENTILE>=10 then PLR=compress(PERCENTILE)||" $"||compress(round(D1/1000,1))||"k";
run;
```

```
proc datasets library=temp nolist;
modify mper;
index create PERCENTILE;
run;
quit;
```

```
data temp.mper;
merge temp.mper (in=in1) temp.meaninc (in=in2);
by PERCENTILE;
run;
```

```
proc means data=temp.mper noprint;
class PERCENTILE DLR / missing;
var SHIFT2 SWITCH2 PC2;
output out=temp.gper sum(SWITCH2)=NS mean(SHIFT2)=MNS median(SHIFT2)=MDS mean(PC2)=MNPS median(PC2)=MDPS;
run;
```

```
proc export data=temp.gper dbms=excel2000 outfile="E:\Taxes\ExcelData &TITLE..xls" replace;
sheet=LINE&YR.&EX1.;
run;
```

**%mend;**

**%macro sales;**

```
proc means data=rstc.utaxc06(keep=NRTIO STFOOD STELSE) missing n sum noprint;
weight NRTIO;
var STFOOD STELSE;
output out=rstc.salestot sum(STFOOD)=TFOOD sum(STELSE)=TELSE;
```

## Appendix F

```
run;

data _null_;
set rstc.salestot;
call symput('TFOOD',TFOOD);
call symput('TELSE',TEELSE);
run;

data rstc.utaxc&YR;
set rstc.utaxc&YR;
SHFOOD=STFOOD*NRTIO/&TFOOD;
SHELSE=STELSE*NRTIO/&TEELSE;
CFOOD=-SHFOOD*&CUTFOOD*1000000;
CELSE=-SHELSE*&CUTEELSE*1000000;
SHIFT5=sum(SHIFT4,CFOOD,CELSE);
if SHIFT5<=0 then SWITCHF=1; else SWITCHF=0;
run;

proc means data=rstc.utaxc&YR(keep=FS EXCAP INCG CAT1 STDED SWITCH2 SWITCHF CFOOD CELSE SHIFT5 SHIFT4) noprint;
class FS EXCAP INCG CAT1 STDED SWITCH2 SWITCHF;
output out=rstc.wfood&YR sum(CFOOD)=FOOD sum(CELSE)=ELSE sum(SHIFT5)=SHIFT5 sum(SHIFT4)=SHIFT4;
run;

proc format library=work;
value inc
    5='<=$5k'
    15='>$5k and <=$15k'
    25='>$15k and <=$25k'
    40='>$25k and <=$40k'
    70='>$40k and <=$70k'
    100='>$70k and <=$100k'
    999='>$100k';

value retir
    0="No"
    1="Yes";

value $fstat
    'A'='Single'
    'B'='Head of Household'
    'C'='Married Filing Joint'
    'D'='Married Filing Separate';

value switch
    0="No"
    1="Yes";

value item
    0="No"
    1="Yes";

value exemp
    0="0"
    1="1"
    2="2"
    3="3"
    4="4"
    5="5"
    6=">=6";

run;

proc means data=rstc.utaxc&YR (keep=SWITCHF ETB CTAX ATAX CAT1 FS EXCAP STDED INCG DED1 DTAX SHIFT5 SHIFT4 TINC1 CFOOD CELSE)
QMETHOD=P2 missing noprint;
class FS EXCAP INCG CAT1 STDED SWITCHF;
output out=NOSWITCHF mean(ETB)=MEANER sum(ATAX)=TAXA sum(CTAX)=TAXC sum(DED1)=DEDC sum(DTAX)=TAXD sum(SHIFT5)=ADD
P50(SHIFT5)=ADDMED P10(SHIFT5)=ADD10 P90(SHIFT5)=ADD90 sum(TINC1)=ALLINC sum(CFOOD)=FOOD sum(CELSE)=ELSE sum(SHIFT4)=INCSHFT;
run;

proc export data=NOSWITCHF dbms=excel2000 outfile="E:\Taxes\ExcelData &TITLE..xls" replace;
sheet=NOSWITCHF&YR;
run;
```

## Appendix F

```
proc sort data=NOSWITCHF(where=( _TYPE_=63 and SWITCHF=0)) out=NOSWITCHF2;
  by descending _FREQ_;
run;
```

```
proc sort data=NOSWITCHF(where=( _TYPE_=63 and SWITCHF=1)) out=NOSWITCHF4;
  by descending _FREQ_;
run;
```

```
data NOSWITCHF3(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
set NOSWITCHF2(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
data NOSWITCHF5(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
set NOSWITCHF4(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
proc export data=NOSWITCHF3 dbms=excel2000 outfile="E:\Taxes\Excel\Data & TITLE..xls" replace;
sheet=NOSWITCHF2&YR;
run;
```

```
proc export data=NOSWITCHF5 dbms=excel2000 outfile="E:\Taxes\Excel\Data & TITLE..xls" replace;
sheet=NOSWITCHF3&YR;
run;
```

```
proc means data=rstc.utaxc&YR (keep=SWITCH2 ETB CTAX ATAX CAT1 FS EXCAP STDED INCG DED1 DTAX SHIFT5 SHIFT4 TINC1 CFOOD CELSE)
QMETHOD=P2 missing noprint;
class FS EXCAP INCG CAT1 STDED SWITCH2;
output out=NOSWITCHFX mean(ETB)=MEANER sum(ATAX)=TAXA sum(CTAX)=TAXC sum(DED1)=DEDC sum(DTAX)=TAXD sum(SHIFT4)=ADD
P50(SHIFT4)=ADDMED P10(SHIFT4)=ADD10 P90(SHIFT4)=ADD90 sum(TINC1)=ALLINC sum(CFOOD)=FOOD sum(CELSE)=ELSE;
run;
```

```
proc export data=NOSWITCHFX dbms=excel2000 outfile="E:\Taxes\Excel\Data & TITLE..xls" replace;
sheet=NOSWITCHFX&YR;
run;
```

```
proc sort data=NOSWITCHFX(where=( _TYPE_=63 and SWITCH2=0)) out=NOSWITCHFX2;
  by descending _FREQ_;
run;
```

```
proc sort data=NOSWITCHFX(where=( _TYPE_=63 and SWITCH2=1)) out=NOSWITCHFX4;
  by descending _FREQ_;
run;
```

```
data NOSWITCHFX3(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
set NOSWITCHFX2(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
data NOSWITCHFX5(drop=EXCAP1 FS1 CAT11 STDED1 INCG1);
format FS $20. EXCAP $3. STDED $3. CAT1 $3. INCG $17.;
```

## Appendix F

```
set NOSWITCHFX4(rename=(EXCAP=EXCAP1 FS=FS1 CAT1=CAT11 STDED=STDED1 INCG=INCG1));
EXCAP=left(put(EXCAP1,exemp.));
FS=left(put(FS1,$fstat.));
CAT1=left(put(CAT11,retir.));
STDED=left(put(STDED1,item.));
INCG=left(put(INCG1,inc.));
run;
```

```
proc export data=NOSWITCHFX3 dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=NOSWITCHFX2&YR;
run;
```

```
proc export data=NOSWITCHFX5 dbms=excel2000 outfile="E:\Taxes\Excel\Data &TITLE.xls" replace;
sheet=NOSWITCHFX3&YR;
run;
```

**%mend;**

*\*This creates the sample database to use for point estimates;*

```
%sample(06,N,0,6011);
%sample(07,N,0,7014);
%sample(08,N,0,8027);
%sample(09,N,0,9003);
```

*\*AGI growth analysis;*

```
%agihst(150000,06);
%agihst(150000,07);
%agihst(150000,08);
%agihst(150000,09);
```

*\*Calculate Tax;*

```
%calc(06);
%calc(07);
%calc(08);
%calc(09);
```

*\*Base fiscal results;*

```
%ifiscal(05,09);
```

**%macro** reforming(YR,TR,TR2,PEIC,SC,HC,MC,PC,IP,BP,EP,CD,IR,CRP,ETR,TER,CUTFOOD,CUTELSE,PLAN,TITLE);

```
%crunch(450,288,.025);
%perbytax13;
%sales;
%graph4(R,ALL,N,150000);
%graph5(R,ALL,N,150000);
%perbytax10;
%perbytax11;
%perbytax12;
%grbt(1);
%graph6(1);
%mend;
```

*\*Final Bill;*

```
%reforming(06,.0535,.0500,.00,000,000,0000,000,.00,11500,00000,0.013,0.060,Y,N,0.0698,24,24,FN,SB223);
%reforming(07,.0535,.0500,.00,000,000,0000,000,.00,11750,00000,0.013,0.060,Y,N,0.0698,25,25,FN,SB223);
%reforming(08,.0535,.0500,.00,000,000,0000,000,.00,12000,00000,0.013,0.060,Y,N,0.0698,26,26,FN,SB223);
%reforming(09,.0535,.0500,.00,000,000,0000,000,.00,12250,00000,0.013,0.060,Y,N,0.0698,27,27,FN,SB223);
```