

# 2012 Nebraska Tax Burden Study

November 1, 2015

## Executive Summary

The Nebraska Department of Revenue (Department) has completed the 2012 Nebraska Tax Burden Study (study). While the study was performed in 2015, it utilizes economic data from 2012. Consequently, 2012 is used to define the study's year. The study is composed of two separate parts. The first analysis examines a \$100 million reduction in sales and use tax. The second analysis examines a \$100 million reduction in individual income tax. The study examines the economic impact of these tax changes, and the shift of "tax incidence" between income groups. Tax incidence is defined as which group of taxpayers ultimately bears the burden of, or has to pay, the tax.

**Sales and Use Tax Reduction.** The study estimates that a hypothetical \$100 million reduction in sales and use tax would result in an \$84 million decline in state revenue, due to an expected increase in economic activity. The simulation also estimates increases in personal disposable income of \$184 million, private investment of \$113 million, and 2,155 new jobs. Because most retail transactions are subject to sales tax, the retail industry would see most of the impact from the decrease in sales and use tax (\$44 million in output). The burden index (the share of the tax reduction divided by the share of income) for sales and use tax exhibits a slightly regressive nature with the income increase.

**Individual Income Tax Reduction.** Similarly, the study estimates that a hypothetical \$100 million reduction in individual income tax would result in a \$94 million decline in state revenue, with an expected increase in economic activity offsetting \$6 million of the initial \$100 million decrease. The simulation also estimates increases in personal disposable income of \$113 million, private investment of \$30 million, and 1,199 new jobs. In comparison to the sales and use tax decrease, which results in the retail industry absorbing much of the positive impact, the income tax reduction results in a more even distribution of the impact across all industries. The burden index for individual income tax reduction presents a progressive nature - the burden index values ranging from 0.13 for the lowest income group to 1.79 for the second-highest income group.

## I. Introduction

Pursuant to Neb. Rev. Stat. §§ 77-3,115 and 77-3,116, the Nebraska Department of Revenue (Department) has completed the *2012 Nebraska Tax Burden Study*. The Legislature directed the Department to gather, prepare, and study material that could be used as a basis for developing tax policy. The intentions of the Legislature are to study the impact of taxes on different economic sectors and to determine the impact of tax policy changes on those sectors.

This study provides insight into the economic welfare effects of tax policy changes in Nebraska. Economic theory tells us that the impact of taxes on economic welfare often extends beyond the businesses or individuals who are legally required to remit the tax. The tax burden may be shifted from businesses to households in the form of lower wages to workers or higher prices to consumers. Conversely, taxes on individuals may be shifted to businesses in the form of a reduced level of demand for goods and services and reduced profits. The study uses a computable general equilibrium (CGE) model to determine the true economic incidence of taxes in Nebraska. The genesis of this custom-built model was LB 1373, passed by the Nebraska Legislature in 1996. The resulting model is referred to as the TRAIN (Tax and Revenue Analysis in Nebraska) model and is currently used by Department economists for the analysis in this study. The key determinants in assessing tax burden are the sensitivities of individuals and businesses to changes in prices, wages, and income (i.e., elasticity).

In a state-wide economy, there are many economic interactions between business sectors and individuals which must be accounted for and examined to determine where the tax burden falls. To deal with this complexity, the study utilizes the TRAIN model, which uses statewide data and economic theory to simultaneously simulate the effects of changes in tax policy. Thus, the study gives policy makers an understanding of how changes in tax policy would affect the Nebraska economy taking into account the economic consequences of the tax policy changes on businesses and individuals.

The study is presented in three major sections:

- Section I presents the economic concepts of tax incidence and general equilibrium analysis on which the TRAIN model is built, then discusses the model in more detail.
- Section II discusses the 2012 tax burden case studies and explores the changes in tax incidence from two separate, hypothetical reductions in the sales tax and the individual income tax.
- In Section III, the report presents a historical analysis of income share, effective tax rate, and income tax burden paid by income group deciles from 1995 through 2012.

The Department thanks the Legislative Fiscal Office for its assistance in providing state expenditure data necessary for this analysis.

## **i. Tax Incidence and General Equilibrium Analysis**

State statutes specify who must pay taxes, file tax returns, and remit money to the Department. However, the individuals or businesses that bear the statutory incidence may not bear the whole tax burden, which is the economic incidence of a tax. For example, when the government introduces a new tax that firms are required to remit, the firms may pass that tax along to their customers in the form of higher prices, to their employees in the form of lower wages or reduced hours, to their suppliers in the form of reduced purchases, and to their shareholders through reduced dividends and profits. Tax laws, in some cases, specify who should pay the tax with an eye toward making the tax collection process less costly for government agencies. This is a pragmatic determination of the statutory incidence of a tax law.<sup>1</sup>

Consequently, a distinction exists between statutory incidence and economic incidence of a tax. Since a true measure of tax incidence would determine who really bears the tax burden, this study is interested in the economic incidence of taxation. Economic incidence of tax is concerned with how the tax burden is distributed among economic sectors as determined by market forces, not by law. An analysis of economic tax incidence must measure the final share of costs imposed on the economy beyond the legal liability.

Many tax incidence analyses examine comparative statics before and after a tax change is directly imposed on a single market.<sup>2</sup> However, this simple analysis, which is called a partial equilibrium analysis, may ignore feedback into other markets. Consequently, partial equilibrium analyses often lead to an incomplete analysis of tax incidence and may not reveal all economic consequences.

For reviewing a current tax system and providing a dependable tax policy guideline, measurement of true economic incidence is important. By simultaneously analyzing the interrelationships between various markets, general equilibrium theory seeks to provide measurement of true economic incidence.<sup>3</sup>

## **ii. Computable General Equilibrium (CGE) Model**

Computable General Equilibrium (CGE) model analysis, based on general equilibrium theory, seeks to comprehensively describe the economic interactions in and between different markets. Using actual economic data, CGE models estimate how an economy will react to an external shock, such as a change in the tax code. The advantage of CGE models is that, in principle, they can be applied to any combination of demand and supply-side shocks.<sup>4</sup> Therefore, CGE models are a standard tool of empirical analysis and are widely used to analyze the welfare and

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<sup>1</sup> Anderson, John E. 2003. *Public Finance*: Houghton Mifflin Company.

<sup>2</sup> Rosen, Harvey S. 1995. *Public Finance 4<sup>th</sup> edition*: Irwin Mcgraw-Hill.

<sup>3</sup> Rosen, Harvey S. 1995. *Public Finance 4<sup>th</sup> edition*: Irwin Mcgraw-Hill.

<sup>4</sup> McGregor, Peter G., Mark D. Partridge, and Dan S. Rickman. 2010 Innovations in Regional Computable General Equilibrium (CGE) Modelling. *Regional Studies* 44 : 1307-10.

distributional impacts of policies, whose effects may be transferred through multiple markets or contain menus of different tax, subsidy, quota, or transfer instruments.<sup>5</sup>

A CGE model is able to account for structural changes in the economy because it is sensitive to a wide range and scale of policies and projects. Using a numerical solution algorithm, the CGE model solves for new levels of supply, demand, and price, which results in a new and unique equilibrium solution across all the economic sectors in the model. Equilibrium is an economic principle which states that, under certain conditions, market-clearing combinations of prices and quantities exist, which result in all available goods and services being sold. At these prices and quantities, individuals and firms maximize their utility and profits, respectively. These conditions result in all markets clearing.

A CGE model considers, implicitly or explicitly, all sectors of the economy simultaneously. From the initial equilibrium, the economy is “shocked” by external changes. Then, the model finds a new equilibrium. The shock occurs outside the model and may be in the form of a new or reduced tax, a change in monetary policy, a change in technology, or an increase or decrease in quantities of some good due to outside influences such as a natural disaster. Measuring the changes in prices and quantities of goods and services between the initial equilibrium and the new equilibrium provides information on how the shock affected economic welfare in each sector of the economy.

Figure 1 illustrates a typical CGE model for economic impact analysis. It describes the flow of money and resources between the two major types of economic agents: firms and households. Firms are represented in the model as sectors, and each sector is treated as a representative firm. The model assumes perfect competition in the economy, that is, firms treat the prices for its inputs and products as given. Also, the model assumes each firm chooses input and output levels that maximize profits. The firm’s inputs are labor, capital, and intermediate goods. Similarly, the model assumes that the other economic agent, the household, will maximize its utility by deciding how many goods and services to buy and how much labor and capital services to provide to firms. Like firms, households face fixed prices and wages.

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<sup>5</sup> Wing, Ian Sue. 2004. Computable General Equilibrium Models and Their Use in Economy-Wide Policy Analysis. *MIT Joint Program on the Science and Policy of Global Change, Technical Note Number 6*.



the funds to purchase final goods and services as household consumption, which is distinct from government consumption of goods and services. The middle section of the diagram demonstrates the myriad of ways in which the government raises revenue through taxation.

### **iii. TRAIN Model**

The TRAIN model, a CGE model for the Nebraska economy, can be used to estimate the economic impact of changes in tax policies in Nebraska.<sup>6</sup> The TRAIN model is comprehensive because it describes all major economic activities performed by consumers, firms, governments, and trades occurring in Nebraska.

The TRAIN model, like all economic models, relies on assumptions about the economy. While the assumptions about functional forms and equations are described below, the most important assumption of the TRAIN model, and all CGE models, is that the economy is in equilibrium. For the assumption of equilibrium to hold, all markets in the economy must clear (i.e., supply equals demand) and this must occur while consumers and firms maximize utility and profits, respectively. This assumption may not hold in real economic markets, where excess supply and excess demand both occur. However, if excess supply in inventory occurred regularly, one would expect firms to eventually close due to poor management. On the other hand, if excess demand occurred regularly, one would expect firms to enter the market to alleviate shortages. Consequently, this assumption does not seem unreasonable to impose on an economy in the long-run.

With the TRAIN model starting at a point of economic equilibrium, the economy is then “shocked” with a change in policy, technology, or quantity of goods due to an external source. The TRAIN model then calculates a new equilibrium. While the TRAIN model measures the true economic incidence for all sectors over time, it solves for these equations simultaneously. Constructed with over 1,300 mathematical equations and identities, the TRAIN model is implemented using the General Algebraic Modeling System (GAMS) programming language.

As mentioned, the TRAIN model uses mathematical equations for specifying the economic behavior of agents. Consumers maximize utility subject to a budget constraint. The model is nonlinear and uses Cobb-Douglas technology to describe consumer behavior. Household savings is treated as a residual of after-tax income less consumption. Consequently, investment in the TRAIN model, unlike a national model,<sup>7</sup> is independent from savings formation. Moreover, investment is determined by the differences between rates of return in Nebraska and the rest of the world.

Similar to the economic behavior of consumers, the TRAIN model assumes that firms maximize profits by producing outputs from the most economical combination of labor and capital inputs. The functional form adopted by the TRAIN model for production is constant elasticity of substitution (CES) for primary factors of production and fixed-shares for intermediate inputs.

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<sup>6</sup> [A full detailed description of the TRAIN model is available here.](#)

<sup>7</sup> In many national-level CGE models, the volume of total savings in the national economy determines total investment. Investment in these models is said to be “savings-driven.”

Foreign trade is modeled using Armington's CES formulation. Implicit in this assumption is the notion that products from different geographic locations that compete in the same market are imperfect substitutes.

Finally, the population of each household group is a function of existing population in Nebraska. Therefore, changes in population are limited to the natural rate of population growth and net migration. The working population in the TRAIN model is a function of after-tax returns to labor—the higher the after-tax income, the greater the workforce.

Like all other simulation models, the TRAIN model uses aggregates rather than individual agents. A correct aggregation or sectoring is a critical element in the development of any CGE model, because the aggregation determines the flows that the model will be able to trace explicitly. In the TRAIN model, the Nebraska economy has been divided into 74 distinct sectors: 28 industrial sectors; two factor sectors (labor and capital); nine household sectors; one investment sector; 33 government sectors; and one sector that represents the rest of the world. Table 1 briefly describes each sector.

**Table 1: Economic Sectors in TRAIN**

| Sector            | Description                           | Sector                    | Description                            | Sector                  | Description                          |
|-------------------|---------------------------------------|---------------------------|--|-------------------------|--------------------------------------|
| <b>Industrial</b> |                                       | <b>Federal Government</b> |  | <b>Local Government</b> |                                      |
| AGCRO             | Crops                                 | FTSOC                     | Social Security Tax                    | LTPRP                   | Property Tax                         |
| AGLIV             | Livestock                             | FTPIT                     | Personal Income Tax                    | L TSAU                  | Local Sales and Use Tax              |
| OTHPR             | Primary Resources                     | FTPRO                     | Corporate Income Tax                   | LTMSC                   | Miscellaneous Taxes                  |
| UTILI             | Utility                               | FTDUT                     | Import Duty Tax                        | LSTRA                   | Local Transportation Expenditure     |
| CONST             | Construction                          | FTMSC                     | Miscellaneous Taxes                    | LSCOR                   | Local Corrections Expenditure        |
| FOODS             | Food Manufacturing                    | FSDNO                     | Federal Non-Defense Spending           | LSK12                   | K-12 Education Expenditure           |
| MEATS             | Meat Processing                       | FSDDE                     | Federal Defense Spending               | LSHAW                   | Local Health and Welfare Expenditure |
| MFRCO             | Manufacturing - Construction Oriented |                           |  | LSOTH                   | Other Expenditure                    |
| CHEMS             | Basic Chemical Manufacturing          | <b>State Government</b>   |  | <b>Household</b>        |                                      |
| METAL             | Metals and Machinery                  | NTINS                     | Insurance Tax                          | 1                       | \$0–\$10,000                         |
| FARMM             | Farm Machinery                        | NTMVS                     | Motor Vehicle Tax                      | 2                       | \$10,000–\$15,000                    |
| ELECT             | Electronic Technology                 | NTGAS                     | Gasoline Tax                           | 3                       | \$15,000–\$25,000                    |
| TRANM             | Transportation Equipment              | NTSAU                     | Sales and Use Tax                      | 4                       | \$25,000–\$35,000                    |
| OTHMA             | Other Manufacturing                   | NTPRO                     | Corporation Tax                        | 5                       | \$35,000–\$50,000                    |
| WHOLE             | Wholesale Trade                       | NTLAB                     | Unemployment Insurance Tax             | 6                       | \$50,000–\$75,000                    |
| RETAI             | Retail Trade                          | NTPIT                     | Personal Income Tax                    | 7                       | \$75,000–\$100,000                   |
| TRAST             | Transportation                        | NTUNI                     | University Fees                        | 8                       | \$100,000–150,000                    |
| INFOR             | Information                           | NTINH                     | Inheritance Tax                        | 9                       | Above \$150,000                      |
| BANKS             | Banking                               | NTSIN                     | Alcohol, Tobacco, and Horse Racing Tax | <b>Factor</b>           |                                      |
| INSUR             | Insurance Carriers                    | NTMSC                     | Miscellaneous Taxes                    | LABOR                   | Labor                                |
| REALE             | Real Estate                           | NGENF                     | General Revenue Fund                   | CAPIT                   | Capital                              |
| PSERV             | Professional Services                 | NSTRA                     | Transportation Expenditures            | <b>Other Sectors</b>    |                                      |
| BSERV             | Business Services                     | NSCOR                     | Corrections Expenditure                | ROW                     | Other States and Foreign Countries   |
| ESERV             | Educational Services                  | NSK12                     | Educational Expenditure                |                         |                                      |
| OSERV             | Other Services                        | NSUNI                     | Higher Educational Expenditure         |                         |                                      |
| HEALT             | Health Services                       | NSHAW                     | Health and Welfare Expenditure         |                         |                                      |
| ENTER             | Entertainment                         | NSOTH                     | Other Expenditures                     |                         |                                      |
| AFSER             | Accommodation                         |                           |  |                         |                                      |

Another crucial element for modeling is the construction and collection of the data, because the data provides the TRAIN model with the initial equilibrium conditions of the economy. The data sets for this study consist of a social accounting matrix (SAM), a capital coefficient matrix (CCM), and a miscellaneous data set. As the primary data set, the SAM is constructed to satisfy the general equilibrium of the model in the base year. The CCM and other miscellaneous data provide important parameters to solve the model.

Constructing a SAM for Nebraska requires data from various sources. The data for the industrial and household sectors are from IMPLAN,<sup>8</sup> which is a commercial economic impact model and database program. IMPLAN provides the transaction matrix of goods and services among industries, gross output, and final demand. IMPLAN also provides the transaction matrix for final payments by sectors, imports, and factor incomes. These transaction matrices are required for constructing the SAM. Factor incomes are updated by data obtained from the Bureau of Economic Analysis (BEA). The Internal Revenue Service provides the federal government revenue data, and federal government expenditure data was obtained from the BEA. Finally, the Department and the Nebraska Legislative Fiscal Office provide revenue and expenditure data for state and local governments. All of these data sources are utilized in the construction of a SAM for Nebraska.

For the 2012 TRAIN model, the method used to estimate the amount of sales tax paid by each industry sector has been revised resulting in a change to the SAM database. The previous SAM database obtained sales tax data for each industry directly from the Department. However, the sales tax data from the Department overestimates the portion of the tax burden falling onto the retail sector. For instance, when consumer purchases furniture in a retail store, all the sales tax revenue related to the transaction is reported to the Department as paid by the retail sector. However, it is more appropriate to have a portion of the tax burden fall onto the furniture manufacturing industry. The 2012 SAM estimated the amount of sales taxes paid by industry, adjusting initial sales tax revenue by industry with industrial output.

A CCM for Nebraska is aggregated and updated from a national CCM provided by the BEA. Furthermore, capital stocks and depreciation rates for Nebraska are estimated from data on fixed reproducible tangible wealth of the U.S. also provided by the BEA.

For this study, the TRAIN model uses 2012 as the base year because it is the most recent year for which all the necessary information is available. Table 2 summarizes the 2012 Nebraska economy. The estimated 2010 total population in Nebraska was 1,827,306 with 1,234,908 employed and an unemployment rate of 3.9%. The GDP for Nebraska in 2012 was \$102.82 billion with a per capita personal income of \$45,914.

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<sup>8</sup> [implan.com/V4/Index.php](http://implan.com/V4/Index.php).

**Table 2: 2012 Nebraska Economy**

|                            |                |
|----------------------------|----------------|
| Population                 | 1,827,306      |
| Households Units           | 793,551        |
| Total Employment           | 1,234,908      |
| Unemployment Rate          | 3.90 %         |
| <br>                       |                |
| GDP                        | \$102,823.00 M |
| Personal Income            | \$85,187.38 M  |
| Personal Taxes             | \$8,275.07 M   |
| Per Capita Personal Income | \$45,914.00    |
| <br>                       |                |
| Net State Tax Revenue      | \$3,828.27 M   |
| Income Tax                 | \$1,910.83 M   |
| Sales and Use Tax          | \$1,462.00 M   |
| Corporate Income Tax       | \$259.84 M     |

Table 3 presents the number of households and total household incomes for each income group. Table 4 presents industrial output, employment in 2012, NAICS (North American Industrial Classification System) codes, and a full description for each sector in the model.

**Table 3: Characteristics of Households in TRAIN**

| Household sector | Income Group        | Number of Households | Percent of Households | Total Household Income (\$ Million) | Percent of Income in Sector |
|------------------|---------------------|----------------------|-----------------------|-------------------------------------|-----------------------------|
| 1                | \$0 - 10,000        | 49,390               | 6.22%                 | 1,929.45                            | 2.18%                       |
| 2                | \$10,000 - 15,000   | 51,289               | 6.46%                 | 1,849.03                            | 2.09%                       |
| 3                | \$15,000 - 25,000   | 93,207               | 11.75%                | 4,800.33                            | 5.42%                       |
| 4                | \$25,000 - 35,000   | 94,223               | 11.87%                | 5,785.25                            | 6.53%                       |
| 5                | \$35,000 - 50,000   | 119,167              | 15.02%                | 8,588.53                            | 9.69%                       |
| 6                | \$50,000 - 75,000   | 160,445              | 20.22%                | 15,292.40                           | 17.26%                      |
| 7                | \$75,000 - 100,000  | 101,262              | 12.76%                | 13,484.80                           | 15.22%                      |
| 8                | \$100,000 - 150,000 | 83,885               | 10.57%                | 16,408.18                           | 18.52%                      |
| 9                | Over \$150,000      | 40,683               | 5.13%                 | 20,470.62                           | 23.10%                      |

**Table 4: Industrial Sectors and Base Industrial Output and Employment**

| TRAIN Sector | Description  | NAICS                 | Industrial Output* (\$ Million) | Employment (Persons) |
|--------------|--|-----------------------|---------------------------------|----------------------|
| AGCRO        | Crop Production  | 111                   | 13,344.35                       | 40,401               |
| AGLIV        | Animal Production  | 112                   | 11,772.51                       | 18,966               |
| OTHPR        | Forestry and Logging; Fishing, Hunting, and Trapping; Supporting Activities for Agriculture and Forestry; Mining                                     | 113, 114, 115, 21     | 911.29                          | 13,216               |
| UTILI        | Utility  | 22                    | 2,388.87                        | 1,732                |
| CONST        | Construction   | 23                    | 10,247.05                       | 64,802               |
| FOODS        | Food Manufacturing   | 3111-3115, 3117-3121  | 8,321.88                        | 9,169                |
| MEATS        | Meat Processing  | 3116                  | 8,394.13                        | 25,196               |
| MFRCO        | Wood and Paper Manufacturing; Nonmetallic Mineral Production; Furniture and Related Production   | 321-322, 327, 337     | 1,952.47                        | 7,797                |
| CHEMS        | Petroleum and Coal Production; Chemical Manufacturing; Plastics and Rubber Production  | 324, 325, 326         | 9,020.53                        | 10,350               |
| METAL        | Primary Metal Manufacturing; Fabricated Metal Production; Machinery Manufacturing  | 331, 332, 33312-33399 | 4,658.51                        | 13,370               |
| FARMM        | Agriculture Implement Manufacturing  | 333111                | 3,848.03                        | 6,499                |
| ELECT        | Computer and Electronic Production; Electrical Equipment, Appliance and Component Manufacturing  | 334,335               | 1,975.94                        | 5,630                |
| TRANM        | Transportation Equipment Manufacturing   | 336                   | 3,855.81                        | 8,282                |
| OTHMA        | Tobacco, Textile Mills and Production; Apparel, Leather, and Allied Production; Printing and Related Support Activities; Miscellaneous Manufacturing | 3122-3169, 323,339    | 2,988.88                        | 10,375               |
| WHOLE        | Wholesale Trade  | 42                    | 8,142.36                        | 42,878               |
| RETAI        | Retail Trade   | 44-45                 | 8,054.94                        | 129,398              |
| TRAST        | Transportation and Warehousing Except Postal Services  | 48-49                 | 12,416.43                       | 57,520               |
| INFOR        | Information  | 51                    | 5,402.25                        | 18,867               |
| BANKS        | Finance and Related Activities   | 521, 522, 523, 525    | 9,134.57                        | 45,234               |
| INSUR        | Insurance Carriers and Related Activities  | 524                   | 8,261.78                        | 32,916               |
| REALE        | Real Estate  | 531                   | 4,956.12                        | 35,858               |
| PSERV        | Professional, Scientific, and Technical Services   | 54                    | 7,890.49                        | 65,404               |
| BSERV        | Management of Companies and Enterprises; Administrative and Support; Waste Management and Remediation Services                                       | 55                    | 7,204.40                        | 77,037               |
| ESERV        | Educational Services   | 61                    | 1,388.40                        | 21,719               |
| OSERV        | Other Services   | 532, 533, 81          | 5,241.98                        | 74,614               |
| HEALT        | Health Care and Social Assistance  | 62                    | 11,941.76                       | 133,082              |
| ENTER        | Arts, Entertainment, and Recreation  | 71                    | 1,028.99                        | 21,336               |
| ACCOM        | Accommodation and Food Services  | 72                    | 4,265.79                        | 78,263               |

\*Source: IMPLAN 2012 database

## **II. Burden Impact Analysis of a Tax Reduction**

This section analyzes the impact of a hypothetical reduction in the sales and use tax and the individual income tax. These two taxes represent the major sources of state revenue in Nebraska. The case studies simulate a revenue reduction of \$100 million in each of these taxes, independently of each other. Net sales and use tax receipts in calendar year 2012 were \$1.46 billion, and net individual income tax paid by Nebraskan resident taxpayers was \$1.91 billion. Therefore, the hypothetical reduction is approximately 6.84% of net sales and use tax receipts and 5.23% of net individual income tax receipts.

It is assumed that the hypothetical tax reduction was achieved by means of across-the-board reductions in tax rates. This assumption does not allow the policy change to directly affect the relationships between taxed goods in the case of the sales tax, or between households in the case of the income tax. However, the simulation results demonstrate that an interaction exists between sectors by indirect and induced effects. It is also assumed that state government keeps a balanced budget, which means that the state reduces \$100 million in its spending to offset the tax cut. Again, the TRAIN model is run separately for each case study.

A change in a tax rate alters the prices and relationships among goods and services throughout the economy. A tax reduction provides consumers and businesses with more disposable income, resulting in increased economic activity. An increase in economic activity partially offsets the tax reduction by creating additional income and taxable sales. In the case of a reduction in the sales and use tax rate, there are two economic effects, substitution and income effects. The substitution effect is the result of a tax cut reducing the price of taxable goods and services relative to nontaxable goods and services. Consequently, taxable goods become cheaper and the price of non-taxable goods remain unchanged. This effect will result in a change in the bundle of goods a consumer buys. The income effect is the change seen in real income from the reduction in sales tax, allowing households and businesses to purchase more goods and services. Furthermore, additional purchases of taxable goods and services result in additional tax collections. While consumers only realize the savings from a sales tax reduction if they are consuming taxable goods, in the case of the individual income tax, a tax cut allows individual to buy more goods, or to save. The ability to save increases investment from businesses. Then businesses may boost economic activities, which results in additional tax collections. Those additional tax collections reduce an initial budget gap resulting from the tax cut.

### **i. Analysis of a \$100 Million Sales and Use Tax Reduction**

A change in the sales and use tax rate immediately impacts the relative prices of all goods and services in the economy. This impact affects consumers' purchasing patterns, which in turn affects the entire economy.

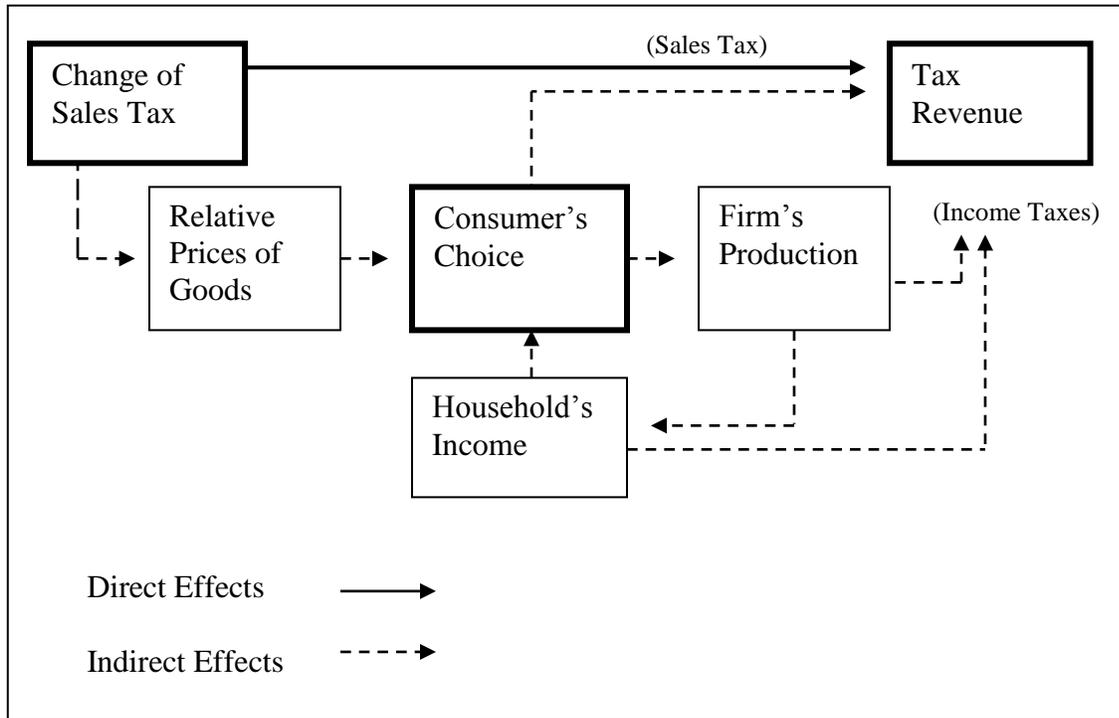
When a tax rate is reduced on a specified set of goods and services, the prices of the untaxed goods rise relative to the prices of taxed goods and services. For example, a sales tax rate decrease may induce consumers to purchase taxed manufactured goods instead of untaxed food. As a result, the demand for food decreases and the demand for manufactured goods increases, which leads to a decrease in the production of food and an increase in the production of

manufactured goods. As the production of manufactured goods rises, some of the capital and labor formerly employed in the food industry are forced to find employment in the manufacturing sector. For the manufacturing industry to be willing to absorb the newly-unemployed capital and labor from food production following the sequence of economic impacts, the relative prices of capital and labor have to change, assuming that capital-labor ratios differ between the two sectors. Assuming that the manufacturing sector is the capital-intensive sector, relatively larger amounts of capital must be absorbed in the manufacturing production sector. The only way for the capital to move into the manufacturing sector, and for the markets to reach a new equilibrium, is for the relative price of capital to increase. At the new equilibrium position, all capital is relatively better off, not just capital in the manufacturing sector.

In general, a tax cut on the output of a particular sector results in an increase in the relative price of the inputs used intensively in that sector. A tax cut on manufactured goods tends to benefit households who receive a proportionately larger share of their income from capital. In addition, households that consume a proportionately larger amount of manufactured goods tend to bear a relatively smaller share of the tax burden. The total incidence of the tax on manufactured goods depends on the characteristics of both the household and the firm sides of Figure 1. For example, a household that supplies capital and consumes a relatively large amount of manufactured goods is better off due to both its household preferences and the relative price increase of capital. Following the same rationale, a household supplying labor to firms and consuming relatively smaller amounts of manufactured goods is worse off.

Figure 2 depicts the economic consequences of a sales tax rate reduction. The solid line at the top represents the tax reduction. The change in the sales tax rate results in a change in the relative price of taxed and untaxed goods and services. This change in the relative prices affects consumers' choices. The tax rate cut has two effects on consumers. First, taxed goods become relatively less expensive; and second, consumers have more disposable income because the tax is reduced. Furthermore, consumers' purchasing decisions affect the production decisions of firms. Changes in firms' production decisions affect both household income and the income taxes paid by firms. Additionally, increased household income affects consumers' choices, which, in this case, results in more relative price changes and increased disposable income. These effects lead to tax revenue increases in future years, which further impact firms' production decisions.

**Figure 2: Economic Consequences of a Sales and Use Tax Rate Reduction**



Tables 5 through 8 present the simulation results of a hypothetical \$100 million reduction in sales and use tax. Table 5 presents the revenue impact and economic consequences of the \$100 million tax cut in sales and use tax. With a hypothetical tax cut of \$100 million, the simulation results in a \$83.65 million decline in state revenues. As mentioned above, this hypothetical tax cut results in increased economic activity, which offsets \$16.35 million of the tax cut. Additionally, the simulation estimates that personal disposable income, private investment, and the number of new jobs would increase by \$184.47 million, \$113.66 million, and 2,155, respectively.

**Table 5: The Impact of a \$100 Million in Sales and Use Tax Reduction**

|                                   |              |
|-----------------------------------|--------------|
| Economic Impact                   |              |
| Personal Income                   | \$184.47 M   |
| Investment                        | \$113.66 M   |
| Persons Employed                  | 2,155        |
| State Revenue Impact              |              |
| Initial Reduction                 | (\$100.00 M) |
| Revenue Offset by Economic Impact | \$16.35 M    |
| Net Revenue Impact                | (\$83.65 M)  |

Table 6 presents the impact of the hypothetical tax reduction on each household sector. The third column in Table 6, “Percentage of Income Share,” is a duplication of the last column of Table 3, the share of total income earned by each income group. The sixth column presents the sales tax reduction that accrues to each sector. The seventh column, “Share of Sales and Use Tax Reduction,” presents the share of the total sales tax reduction to households received by each sector. Finally, the last column of Table 6, “Burden Index,” is the share of the sales tax reduction for each income group divided by the percentage of total household income for the same group.

**Table 6: Effect of a Sales and Use Tax Reduction by Household Group**

| Household Sector | Household Characteristics |                            | Economic Impact    |                       | Tax Reduction and Burden    |                                      |              |
|------------------|---------------------------|----------------------------|--------------------|-----------------------|-----------------------------|--------------------------------------|--------------|
|                  | Income Level              | Percentage of Income Share | Real Income Change | Nominal Income Change | Sales and Use Tax Reduction | Share of Sales and Use Tax Reduction | Burden Index |
| 1                | \$0 - 10,000              | 2.18%                      | 0.43               | -0.12                 | -3.10                       | 2.92%                                | 1.34         |
| 2                | \$10,000 - 15,000         | 2.09%                      | 1.09               | 0.00                  | -2.78                       | 2.44%                                | 1.17         |
| 3                | \$15,000 - 25,000         | 5.42%                      | 4.83               | 1.05                  | -7.90                       | 7.25%                                | 1.34         |
| 4                | \$25,000 - 35,000         | 6.53%                      | 7.77               | 2.08                  | -9.35                       | 7.98%                                | 1.22         |
| 5                | \$35,000 - 50,000         | 9.69%                      | 15.30              | 5.04                  | -12.90                      | 15.53%                               | 1.60         |
| 6                | \$50,000 - 75,000         | 17.26%                     | 31.50              | 8.97                  | -21.62                      | 22.69%                               | 1.31         |
| 7                | \$75,000 - 100,000        | 15.22%                     | 29.92              | 8.81                  | -16.71                      | 14.80%                               | 0.97         |
| 8                | \$100,000 - 150,000       | 18.52%                     | 38.87              | 9.87                  | -18.43                      | 12.74%                               | 0.69         |
| 9                | Over \$150,000            | 23.10%                     | 54.76              | 22.00                 | -13.31                      | 13.08%                               | 0.57         |

The average value of the burden index for low and middle-income groups, groups with income less than or equal to \$75,000, is 1.33. Meanwhile, the average value of the burden index for high-income groups, groups with income more than \$75,000, is 0.74. Therefore, the burden index for sales and use tax exhibits the slightly regressive nature with the income increase. That is, since consumption represents a larger portion of spending for middle and low-income groups, these groups receive greater benefits from a reduction in the sales and use tax than higher income groups. This result may imply that a reduction in the sales and use tax in Nebraska benefits middle and low-income groups more than high-income groups.

In the sixth column, the total reduction in sales taxes paid by households is \$106.10 million. Note that the final revenue impact in Table 5 is only \$83.65 million. Table 5 presents the final amount of reduction in state revenue after all the economic impacts of the sales and use tax reduction have been included in the model. This implies that the ultimate tax savings by households is more than the amount of revenue foregone by the state. This difference is the result of the extra economic activities generated by the tax reduction.

The fourth column in Table 6, “Real Income Change,” presents the real economic benefits for each income group by tax reduction; and the fifth column, “Nominal Income Change,” demonstrates the amount of cash each income group would receive from a tax reduction. Note that the first income group experiences a decline in cash income even though their real economic

benefits are positive. While the first income group would receive a reduced cash transfer from the government, they would receive more economic benefits from the reduced price of taxed commodities.

Table 7 presents the share of a \$100 million sales and use tax reduction by industrial sector, and Table 8 presents the economic consequences of a sales and use tax reduction. Because most retail transactions are subject to tax, it is not surprising that the major portion (40.1%) of the impact of a sales and use tax reduction falls on the retail sector. Note that the total employment in Table 8 differs from “Persons Employed” in Table 5 because the figure in Table 8 only presents changes in private sectors while “Persons Employed” in Table 5 presents changes in total employment including a reduction of 73 employees in the government sectors.

**Table 7: Sales and Use Tax Reduction by Industrial Sector**

| Sector | Description  | Sales Tax<br>(\$ Million) | Share of Cut<br>(Percent Share) |
|--------|--|---------------------------|---------------------------------|
| AGCRO  | Crop Production  | -\$0.51                   | 0.47%                           |
| AGLIV  | Animal Production  | -0.05                     | 0.05%                           |
| OTHPR  | Forestry and Logging; Fishing, Hunting, and Trapping; Supporting Activities for Agriculture and Forestry; Mining                                     | -0.01                     | 0.01%                           |
| UTILI  | Utility  | -5.76                     | 5.40%                           |
| CONST  | Construction   | 0.00                      | 0.00%                           |
| FOODS  | Food Manufacturing   | -1.73                     | 1.62%                           |
| MEATS  | Meat Processing  | -1.24                     | 1.17%                           |
| MFRCO  | Wood and Paper Manufacturing; Nonmetallic Mineral Production; Furniture and Related Production   | -0.76                     | 0.72%                           |
| CHEMS  | Petroleum and Coal Production; Chemical Manufacturing; Plastics and Rubber Production  | -3.17                     | 2.97%                           |
| METAL  | Primary Metal Manufacturing; Fabricated Metal Production; Machinery Manufacturing  | -0.18                     | 0.17%                           |
| FARMM  | Agriculture Implement Manufacturing  | 0.00                      | 0.00%                           |
| ELECT  | Computer and Electronic Production; Electrical Equipment, Appliance and Component Manufacturing  | -1.17                     | 1.09%                           |
| TRANM  | Transportation Equipment Manufacturing   | -1.49                     | 1.39%                           |
| OTHMA  | Tobacco, Textile Mills and Production; Apparel, Leather, and Allied Production; Printing and Related Support Activities; Miscellaneous Manufacturing | -2.02                     | 1.89%                           |
| WHOLE  | Wholesale Trade  | -6.22                     | 5.83%                           |
| RETAI  | Retail Trade   | -43.20                    | 40.49%                          |
| TRAST  | Transportation and Warehousing Except Postal Services  | -1.91                     | 1.79%                           |
| INFOR  | Information  | -4.15                     | 3.89%                           |
| BANKS  | Finance and Related Activities   | -2.19                     | 2.05%                           |
| INSUR  | Insurance Carriers and Related Activities  | -1.91                     | 1.79%                           |
| REALE  | Real Estate  | -2.00                     | 1.88%                           |
| PSERV  | Professional, Scientific, and Technical Services   | -0.63                     | 0.59%                           |
| BSERV  | Management of Companies and Enterprises; Administrative and Support; Waste Management and Remediation Services                                       | -0.33                     | 0.31%                           |
| ESERV  | Educational Services   | -0.91                     | 0.85%                           |
| OSERV  | Other Services   | -4.52                     | 4.24%                           |
| HEALT  | Health Care and Social Assistance  | -7.54                     | 7.06%                           |
| ENTER  | Arts, Entertainment, and Recreation  | -1.42                     | 1.33%                           |
| ACCOM  | Accommodation and Food Services  | -11.69                    | 10.96%                          |
| Total  |  | -\$106.68                 | 100.00%                         |

**Table 8: Economic Effect of a \$100 Million in Sales and Use  
Tax Reduction by Industrial Sector**

| Sector       | Description  | Output<br>(\$ Million) | Employment<br>(Persons) |
|--------------|--|------------------------|-------------------------|
| AGCRO        | Crop Production  | -\$0.84                | -4                      |
| AGLIV        | Animal Production  | 0.34                   | 0                       |
| OTHPR        | Forestry and Logging; Fishing, Hunting, and Trapping; Supporting Activities for Agriculture and Forestry; Mining                                     | 0.10                   | 1                       |
| UTILI        | Utility  | 5.95                   | 5                       |
| CONST        | Construction   | 4.11                   | 27                      |
| FOODS        | Food Manufacturing   | 1.74                   | 2                       |
| MEATS        | Meat Processing  | 1.51                   | 5                       |
| MFRCO        | Wood and Paper Manufacturing; Nonmetallic Mineral Production; Furniture and Related Production   | 0.37                   | 2                       |
| CHEMS        | Petroleum and Coal Production; Chemical Manufacturing; Plastics and Rubber Production  | -0.29                  | -1                      |
| METAL        | Primary Metal Manufacturing; Fabricated Metal Production; Machinery Manufacturing  | -0.55                  | -2                      |
| FARMM        | Agriculture Implement Manufacturing  | -0.26                  | -1                      |
| ELECT        | Computer and Electronic Production; Electrical Equipment, Appliance and Component Manufacturing  | -0.17                  | -1                      |
| TRANM        | Transportation Equipment Manufacturing   | -0.04                  | 0                       |
| OTHMA        | Tobacco, Textile Mills and Production; Apparel, Leather, and Allied Production; Printing and Related Support Activities; Miscellaneous Manufacturing | 0.47                   | 2                       |
| WHOLE        | Wholesale Trade  | 10.95                  | 68                      |
| RETAI        | Retail Trade   | 44.09                  | 815                     |
| TRAST        | Transportation and Warehousing Except Postal Services  | 4.65                   | 24                      |
| INFOR        | Information  | 7.63                   | 29                      |
| BANKS        | Finance and Related Activities   | 11.76                  | 64                      |
| INSUR        | Insurance Carriers and Related Activities  | 6.26                   | 26                      |
| REALE        | Real Estate  | 7.81                   | 65                      |
| PSERV        | Professional, Scientific, and Technical Services   | 7.93                   | 69                      |
| BSERV        | Management of Companies and Enterprises; Administrative and Support; Waste Management and Remediation Services                                       | 5.10                   | 57                      |
| ESERV        | Educational Services   | 2.24                   | 38                      |
| OSERV        | Other Services   | 8.80                   | 133                     |
| HEALT        | Health Care and Social Assistance  | 27.95                  | 318                     |
| ENTER        | Arts, Entertainment, and Recreation  | 2.25                   | 51                      |
| ACCOM        | Accommodation and Food Services  | 14.26                  | 289                     |
| <b>Total</b> |  | <b>\$174.1</b>         | <b>2,082</b>            |

## ii. Analysis of a \$100 Million Individual Income Tax Reduction

The analysis of an individual income tax reduction is more straightforward than that of a sales and use tax reduction. In the simulation, an income tax is a tax on labor and capital in all sectors. As a result, an income tax reduction creates no incentive to change labor or capital usage between industrial sectors in the model. Reducing income taxes increases disposable income, hence individuals spend their additional income on activities that stimulate the Nebraska economy.

Nevertheless, an extra portion of savings may not directly relate with investment in Nebraska since individuals seek investment opportunities, not only within the state, but also in other states and other countries. Since the TRAIN model assumes perfect mobility of capital, the rate of return is the only factor influencing investment.

Table 9 presents the revenue impact and economic consequences of a \$100 million reduction in individual income tax. The simulation results in a \$94.21 million decline in the state revenue balance. Once again, a hypothetical income tax cut would stimulate economic activity and result in the state collecting \$5.80 million in additional taxes. The simulation also estimates that personal disposable income, private investment, and the number of new jobs would increase by \$112.7 million, \$29.69 million, and 1,199, respectively.

**Table 9. Impact of a \$100 Million in Individual Income Tax Reduction**

|                                   |             |
|-----------------------------------|-------------|
| Economic Impact                   |             |
| Personal Income                   | \$112.70 M  |
| Investment                        | \$29.69 M   |
| Persons Employed                  | 1,199       |
| State Revenue Impact              |             |
| Initial Reduction                 | -\$100.00 M |
| Revenue Offset by Economic Impact | \$5.80 M    |
| Net Revenue Impact                | -\$94.21 M  |

Table 10 demonstrates the impact of an income tax reduction on each household group. The third column in Table 10, “Percentage of Income Share,” is a duplication of the last column of Table 3, the share of total income earned by each income group. The sixth column presents an income tax reduction that accrues to each income group. The seventh column, “Share of Income Tax Reduction,” presents the share of the total income tax reduction for households in each income group. Finally, the last column of Table 10, “Burden Index,” is the share of the income tax reduction for each group divided by the percentage of total household income for the same group.

**Table 10: Effect of an Individual Income Tax Reduction by Household Group**

| Household Sector | Household Characteristics |                            | Economic Impact    |                       | Tax Reduction and Burden |                               |              |
|------------------|---------------------------|----------------------------|--------------------|-----------------------|--------------------------|-------------------------------|--------------|
|                  | Income Level              | Percentage of Income Share | Real Income Change | Nominal Income Change | Income Tax Reduction     | Share of Income Tax Reduction | Burden Index |
| 1                | \$0 - 10,000              | 2.18%                      | 0.02               | -0.01                 | -0.28                    | 0.29%                         | 0.13         |
| 2                | \$10,000 - 15,000         | 2.09%                      | 0.09               | 0.01                  | -0.43                    | 0.44%                         | 0.21         |
| 3                | \$15,000 - 25,000         | 5.42%                      | 1.16               | 0.89                  | -2.02                    | 2.05%                         | 0.38         |
| 4                | \$25,000 - 35,000         | 6.53%                      | 1.56               | 1.15                  | -3.50                    | 3.56%                         | 0.55         |
| 5                | \$35,000 - 50,000         | 9.69%                      | 5.36               | 4.60                  | -6.42                    | 6.53%                         | 0.67         |
| 6                | \$50,000 - 75,000         | 17.26%                     | 10.46              | 8.78                  | -12.21                   | 12.42%                        | 0.72         |
| 7                | \$75,000 - 100,000        | 15.22%                     | 20.16              | 18.59                 | -12.42                   | 12.64%                        | 0.83         |
| 8                | \$100,000 - 150,000       | 18.52%                     | 25.34              | 23.35                 | -20.26                   | 20.61%                        | 1.11         |
| 9                | Over \$150,000            | 23.10%                     | 48.55              | 46.00                 | -40.76                   | 41.46%                        | 1.79         |

Note that the burden index, the share of income tax reduction divided by percentage of income share for each income group, gradually increases from 0.13 for the lowest income group, to 1.79 for the highest income group and exhibits the progressive nature associated with the income increase. It implies that a tax policy, which reduces the income tax rate, would have more economic benefit for higher income groups. When considering the progressive nature of the Nebraska income tax system, this finding seems consistent with the expected results of the simulation. In the sixth column of Table 10, the total reduction in income tax paid by households is \$98.31 million. Note that the final revenue impact as shown in Table 9 is \$94.21 million because Table 9 presents the net reduction in state revenue after all the economic impacts of an individual income tax reduction have been accounted for by the model. Additionally, the result indicates that the ultimate tax savings by households is more than the amount of revenue foregone by the state. This difference is the result of the extra economic activity generated by the income tax reduction.

Resulting from an individual income tax reduction, the fourth column in Table 10, “Real Income Change,” presents the real economic benefits for each income group, and the fifth column, “Nominal Income Change,” demonstrates the amount of cash each income group would receive. Note that the first income group experiences a decline in cash income even though their real economic benefits are positive. While the first income groups would receive a reduced cash transfer from the government, they would receive more economic benefits from the extra economic activities occurring in Nebraska.

Table 11 presents the economic consequences of an income tax reduction. The economic impact of an income tax reduction is smaller than the impact of a sales tax reduction; however, total economic benefits are spread more evenly among all industries under the income tax reduction simulation. Note that the total employment in Table 11 differs from “Persons Employed” in

Table 9 because the figure in Table 11 only presents changes in private sectors while “Persons Employed” in Table 9 presents changes in total employment including 114 fewer employed in the government sectors.

**Table 11: The Effect of a \$100 Million in Individual Income Tax Reduction**

| Sector | Description  | Output<br>(\$ Million) | Employment<br>(Persons) |
|--------|--|------------------------|-------------------------|
| AGCRO  | Crop Production  | \$1.92                 | 22                      |
| AGLIV  | Animal Production  | 3.41                   | 12                      |
| OTHPR  | Forestry and Logging; Fishing, Hunting, and Trapping;<br>Supporting Activities for Agriculture and Forestry;<br>Mining                                     | 0.80                   | 15                      |
| UTILI  | Utility  | 1.71                   | 2                       |
| CONST  | Construction   | 4.72                   | 42                      |
| FOODS  | Food Manufacturing   | 3.95                   | 7                       |
| MEATS  | Meat Processing  | 3.94                   | 14                      |
| MFRCO  | Wood and Paper Manufacturing; Nonmetallic Mineral<br>Production; Furniture and Related Production  | 2.05                   | 10                      |
| CHEMS  | Petroleum and Coal Production; Chemical<br>Manufacturing; Plastics and Rubber Production   | 4.65                   | 9                       |
| METAL  | Primary Metal Manufacturing; Fabricated Metal<br>Production; Machinery Manufacturing   | 3.40                   | 13                      |
| FARMM  | Agriculture Implement Manufacturing  | 1.17                   | 4                       |
| ELECT  | Computer and Electronic Production; Electrical<br>Equipment, Appliance and Component Manufacturing   | 2.06                   | 7                       |
| TRANM  | Transportation Equipment Manufacturing   | 2.36                   | 5                       |
| OTHMA  | Tobacco, Textile Mills and Production; Apparel,<br>Leather, and Allied Production; Printing and Related<br>Support Activities; Miscellaneous Manufacturing | 1.65                   | 9                       |
| WHOLE  | Wholesale Trade  | 5.15                   | 38                      |
| RETAI  | Retail Trade   | 8.03                   | 165                     |
| TRAST  | Transportation and Warehousing Except Postal Services  | 3.50                   | 30                      |
| INFOR  | Information  | 3.58                   | 18                      |
| BANKS  | Finance and Related Activities   | 7.31                   | 51                      |
| INSUR  | Insurance Carriers and Related Activities  | 4.74                   | 29                      |
| REALE  | Real Estate  | 2.97                   | 38                      |
| PSERV  | Professional, Scientific, and Technical Services   | 6.81                   | 69                      |
| BSERV  | Management of Companies and Enterprises;<br>Administrative and Support; Waste Management and<br>Remediation Services                                       | 5.77                   | 71                      |
| ESERV  | Educational Services   | 1.45                   | 25                      |
| OSERV  | Other Services   | 4.57                   | 85                      |
| HEALT  | Health Care and Social Assistance  | 14.43                  | 175                     |
| ENTER  | Arts, Entertainment, and Recreation  | 0.99                   | 26                      |
| ACCOM  | Accommodation and Food Services  | 4.21                   | 95                      |
| Total  |  | \$111.29               | 1,085                   |

### III. Historical Analysis of Nebraska Income Tax by Decile, 1995-2012

Table 12, “Analysis by Deciles of Nebraska Income Tax Burden Ranked by Federal AGI, Resident Returns,” presents Nebraska income tax records by decile from 1995 through 2012. This table was created by sorting all Nebraska Individual Income Tax Returns, Forms 1040N, by federal adjusted gross income (AGI), dividing the sorted returns into ten groups, and summing each group. For convenience, the first seven deciles, or 70% of the returns, are treated as a single group.

Table 12 includes the number of resident returns by tax year and presents the total amounts of AGI and Nebraska individual income tax liability in four blocks. The blocks on the bottom half of Table 12 present the percentage share of total AGI for each decile report and each decile’s share of tax liability. Thus, the tenth decile in 2012 represents the 82,371 returns reporting the top 10% of federal AGI. This group reported \$21.81 billion in total AGI and \$1,099.9 million in Nebraska individual income tax liability, net of nonrefundable credits. In 2012, taxpayers in this decile reported 43.22% of the income and 59.57% of the tax liability. Reading down the columns provides a history of AGI and liability for returns in that decile. For example, AGI reported from the bottom 70% of returns increased from \$6.781 billion in 1995 to \$14.746 billion in 2012; and at the same time, Nebraska tax liability increased from \$129.8 million to \$256.0 million.

The last column in each decile group is labeled “Top 500 Returns.” This represents a portion of the tenth decile and contains the 500 returns with the highest AGI. The top 500 returns are presented separately because the characteristics of the returns at the extremes are very different from other returns in the same decile and from returns in the other deciles. Relatively large proportions of returns in the first and tenth deciles report business income for sole proprietors and “pass-through” business entities such as S corporations, partnerships, or limited liability companies. The tax code operates differently for these taxpayers than it does for those returns where the primary source of income is wages. For example, many of the returns in the first decile report negative AGI due to business losses, which is nearly impossible for taxpayers who have only wage and salary income. At the tenth decile, a relatively large share of the returns report business income tax liability offset by tax incentive credits. This has an effect on effective tax rates and on the measure of tax progressivity.

Note that income and tax liability totals for the top decile include the values for the top 500 returns. For example, in 2012 the top decile begins at an AGI of \$115,035 compared to the top 500, which begins at an AGI of \$2,368,772. This column in Table 12 indicates that in 2012, the top 500 returns reported \$3.629 billion of the \$21.81 billion of the total AGI, reported by the top decile. The top 500 returns, in terms of federal AGI, paid \$167.5 million of the \$1,099.9 million paid by the top decile. Another way to look at this is to say that the top 500 returns represent approximately 0.6% of the returns in the top decile, reported 16.6% of the federal AGI of the top decile, and pay 15.2% of the taxes paid by the top decile.

**Table 12: Analysis by Deciles of Nebraska Income Tax Burden Ranked by Federal AGI (Resident Returns Only)**

| Tax Year | Number of Returns | Federal AGI  |            |            |             |                 | Nebraska Liability Net of Non-Refundable Credits  |            |            |             |                 |
|----------|-------------------|--|------------|------------|-------------|-----------------|---|------------|------------|-------------|-----------------|
|          |                   | First 7 Deciles  | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns | First 7 Deciles   | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns |
|          |                   | \$ Million   | \$ Million | \$ Million | \$ Million  | \$ Million      | \$ Million  | \$ Million | \$ Million | \$ Million  | \$ Million      |
| 2012     | 823,713           | 14,745.60  | 5,927.80   | 7,968.10   | 21,805.30   | 3,629.10        | 256.0   | 187.4      | 303.2      | 1099.9      | 167.5           |
| 2011     | 815,071           | 14,019.60  | 5,631.40   | 7,541.50   | 18,266.90   | 2,411.20        | 234.1   | 172.6      | 279.1      | 883.5       | 100.2           |
| 2010     | 803,335           | 13,633.10  | 5,408.30   | 7,212.00   | 18,110.20   | 3,097.40        | 221.5   | 161.3      | 260.1      | 829.4       | 100.9           |
| 2009     | 797,975           | 13,072.00  | 5,207.30   | 6,955.40   | 16,335.20   | 2,288.50        | 202.7   | 150.5      | 243.8      | 756.5       | 85.9            |
| 2008     | 808,051           | 13,233.70  | 5,275.50   | 7,021.30   | 17,615.00   | 2,879.30        | 220.9   | 153.9      | 246.9      | 814.8       | 104.1           |
| 2007     | 809,583           | 12,920.20  | 5,188.00   | 6,912.00   | 19,034.70   | 3,887.70        | 215.8   | 150.6      | 242.9      | 863.9       | 125.0           |
| 2006     | 775,856           | 12,024.00  | 4,764.00   | 6,331.00   | 17,488.20   | 3,869.90        | 210.6   | 145.3      | 230.4      | 799.3       | 135.8           |
| 2005     | 762,519           | 11,042.90  | 4,482.50   | 5,948.10   | 15,114.60   | 2,582.10        | 214.2   | 137.5      | 219.4      | 722.8       | 91.7            |
| 2004     | 754,702           | 10,485.60  | 4,274.70   | 5,675.80   | 13,926.70   | 2,276.30        | 201.1   | 129.1      | 206.6      | 667.4       | 84.2            |
| 2003     | 751,000           | 9,968.10   | 4,063.90   | 5,387.40   | 12,459.80   | 1,784.30        | 190.5   | 119.3      | 190.6      | 588.5       | 62.8            |
| 2002     | 752,974           | 9,495.10   | 3,958.00   | 5,228.70   | 11,989.60   | 1,641.20        | 176.3   | 110.6      | 175.6      | 536.7       | 54.2            |
| 2001     | 757,159           | 9,476.00   | 3,965.10   | 5,224.20   | 12,205.10   | 1,717.40        | 182.6   | 112.1      | 177.4      | 553.4       | 59.2            |
| 2000     | 763,282           | 9,472.50   | 3,964.30   | 5,243.10   | 13,607.80   | 2,529.40        | 184.1   | 113.8      | 180.5      | 607.0       | 71.9            |
| 1999     | 757,222           | 9,001.70   | 3,779.80   | 4,995.60   | 12,666.50   | 2,113.20        | 167.8   | 106.6      | 168.6      | 576.7       | 69.7            |
| 1998     | 748,163           | 8,505.60   | 3,572.10   | 4,724.80   | 12,042.10   | 2,221.40        | 153.9   | 97.2       | 154.3      | 521.6       | 59.4            |
| 1997     | 739,103           | 7,976.30   | 3,372.40   | 4,448.80   | 10,586.50   | 1,564.10        | 135.2   | 84.9       | 132.8      | 427.8       | 48.8            |
| 1996     | 729,023           | 7,143.20   | 3,141.00   | 4,148.70   | 9,529.30    | 1,281.80        | 140.6   | 86.9       | 135.6      | 445.6       | 49.8            |
| 1995     | 716,195           | 6,781.40   | 2,945.40   | 3,886.90   | 8,903.50    | 1,392.10        | 129.8   | 79.5       | 123.6      | 393.4       | 39.6            |
|          |                   | <b>Federal AGI<br/>as Percent of Total (AGI Share Index)</b> |            |            |             |                 | <b>Nebraska Liability Net of Non-Refundable Credits<br/>as Percent of Total (Net-Liability Share Index)</b> |            |            |             |                 |
| Tax Year |                   | First 7 Deciles  | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns | First 7 Deciles   | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns |
| 2012     |                   | 29.23  | 11.75      | 15.80      | 43.22       | 7.19            | 13.86   | 10.15      | 16.42      | 59.57       | 9.07            |
| 2011     |                   | 30.84  | 12.39      | 16.59      | 40.18       | 5.30            | 14.92   | 11.00      | 17.79      | 56.30       | 6.39            |
| 2010     |                   | 30.73  | 12.19      | 16.26      | 40.82       | 6.98            | 15.04   | 10.96      | 17.67      | 56.33       | 6.85            |
| 2009     |                   | 31.45  | 12.53      | 16.73      | 39.30       | 5.51            | 14.98   | 11.12      | 18.01      | 55.89       | 6.35            |
| 2008     |                   | 30.67  | 12.23      | 16.27      | 40.83       | 6.67            | 15.38   | 10.71      | 17.19      | 56.72       | 7.25            |
| 2007     |                   | 29.33  | 11.78      | 15.69      | 43.21       | 8.82            | 14.65   | 10.22      | 16.49      | 58.64       | 8.48            |
| 2006     |                   | 29.61  | 11.73      | 15.59      | 43.07       | 9.53            | 15.20   | 10.49      | 16.63      | 57.69       | 9.80            |
| 2005     |                   | 30.18  | 12.25      | 16.26      | 41.31       | 7.06            | 16.55   | 10.63      | 16.96      | 55.86       | 7.09            |
| 2004     |                   | 30.51  | 12.44      | 16.52      | 40.53       | 6.62            | 16.70   | 10.72      | 17.16      | 55.42       | 6.99            |
| 2003     |                   | 31.27  | 12.75      | 16.90      | 39.08       | 5.60            | 17.49   | 10.96      | 17.50      | 54.05       | 5.77            |
| 2002     |                   | 30.96  | 12.90      | 17.05      | 39.09       | 5.35            | 17.65   | 11.07      | 17.58      | 53.72       | 5.42            |
| 2001     |                   | 30.70  | 12.84      | 16.92      | 39.54       | 5.56            | 17.81   | 10.93      | 17.30      | 53.96       | 5.77            |
| 2000     |                   | 29.34  | 12.28      | 16.24      | 42.15       | 7.83            | 16.96   | 10.48      | 16.63      | 55.92       | 6.62            |
| 1999     |                   | 29.57  | 12.42      | 16.41      | 41.61       | 6.94            | 16.45   | 10.45      | 16.53      | 56.55       | 6.83            |
| 1998     |                   | 29.49  | 12.38      | 16.38      | 41.75       | 7.70            | 16.60   | 10.49      | 16.65      | 56.27       | 6.41            |
| 1997     |                   | 30.23  | 12.78      | 16.86      | 40.12       | 5.93            | 17.32   | 10.88      | 17.01      | 54.81       | 6.25            |
| 1996     |                   | 29.81  | 13.11      | 17.31      | 39.77       | 5.35            | 17.39   | 10.75      | 16.77      | 55.10       | 6.16            |
| 1995     |                   | 30.12  | 13.08      | 17.26      | 39.54       | 6.18            | 17.87   | 10.94      | 17.02      | 54.16       | 5.45            |

Table 13, “Effective Tax Rate and Burden Index by Deciles (Resident Returns),” presents the information from Table 12 in two different formats. The first block, “Effective Tax Rate,” is calculated as a percentage of the Nebraska income tax paid by the decile class divided by the AGI total for that class. This effective tax rate reflects the rate at which all the AGI in the decile was taxed. The effective tax rate increase across all deciles in 2003 was due to the individual income tax rate increase. In 2006, the effective tax rate decrease across all deciles was due to the expansion of the bracket (LB 968), which resulted in lower tax liability for most taxpayers. Similarly, in 2007, the effective tax rate decrease across all deciles compared to 2006 was due to the elimination of the marriage penalty (LB 367).

**Table 13: Effective Income Tax Rate  
and Burden Index by Deciles (Resident Returns Only)**

| Tax Year | Effective Tax Rate <sup>9</sup> |            |            |             |                 | Nebraska Tax Burden Index <sup>10</sup> |            |            |             |                 |
|----------|---------------------------------|------------|------------|-------------|-----------------|---|------------|------------|-------------|-----------------|
|          | First 7 Deciles                 | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns | First 7 Deciles                         | 8th Decile | 9th Decile | 10th Decile | Top 500 Returns |
| 2012     | 1.74                            | 3.16       | 3.81       | 5.04        | 4.62            | 0.48                                    | 0.87       | 1.06       | 1.40        | 1.26            |
| 2011     | 1.67                            | 3.06       | 3.70       | 4.84        | 4.16            | 0.48                                    | 0.88       | 1.06       | 1.39        | 1.21            |
| 2010     | 1.62                            | 2.98       | 3.61       | 4.58        | 3.26            | 0.49                                    | 0.90       | 1.09       | 1.38        | 0.98            |
| 2009     | 1.55                            | 2.89       | 3.51       | 4.63        | 3.75            | 0.48                                    | 0.89       | 1.08       | 1.42        | 1.15            |
| 2008     | 1.67                            | 2.92       | 3.52       | 4.63        | 3.62            | 0.50                                    | 0.88       | 1.06       | 1.39        | 1.09            |
| 2007     | 1.67                            | 2.90       | 3.51       | 4.54        | 3.22            | 0.50                                    | 0.87       | 1.05       | 1.36        | 0.96            |
| 2006     | 1.75                            | 3.05       | 3.64       | 4.57        | 3.51            | 0.51                                    | 0.89       | 1.07       | 1.34        | 1.03            |
| 2005     | 1.94                            | 3.07       | 3.69       | 4.78        | 3.55            | 0.55                                    | 0.87       | 1.04       | 1.35        | 1.00            |
| 2004     | 1.92                            | 3.02       | 3.64       | 4.79        | 3.70            | 0.55                                    | 0.86       | 1.04       | 1.37        | 1.06            |
| 2003     | 1.91                            | 2.94       | 3.54       | 4.72        | 3.52            | 0.56                                    | 0.86       | 1.04       | 1.38        | 1.03            |
| 2002     | 1.86                            | 2.79       | 3.36       | 4.48        | 3.30            | 0.57                                    | 0.86       | 1.03       | 1.37        | 1.01            |
| 2001     | 1.93                            | 2.83       | 3.40       | 4.53        | 3.45            | 0.58                                    | 0.85       | 1.02       | 1.36        | 1.04            |
| 2000     | 1.94                            | 2.87       | 3.44       | 4.46        | 2.84            | 0.58                                    | 0.85       | 1.02       | 1.33        | 0.85            |
| 1999     | 1.86                            | 2.82       | 3.37       | 4.55        | 3.30            | 0.56                                    | 0.84       | 1.01       | 1.36        | 0.98            |
| 1998     | 1.81                            | 2.72       | 3.27       | 4.33        | 2.67            | 0.56                                    | 0.85       | 1.02       | 1.35        | 0.83            |
| 1997     | 1.70                            | 2.52       | 2.99       | 4.04        | 3.12            | 0.57                                    | 0.85       | 1.01       | 1.37        | 1.05            |
| 1996     | 1.97                            | 2.77       | 3.27       | 4.68        | 3.89            | 0.58                                    | 0.82       | 0.97       | 1.39        | 1.15            |
| 1995     | 1.91                            | 2.70       | 3.18       | 4.42        | 2.84            | 0.59                                    | 0.84       | 0.99       | 1.37        | 0.88            |

<sup>9</sup> Effective rate is defined as Nebraska individual income tax liability net of nonrefundable credits as percent of federal AGI.

<sup>10</sup> Tax burden index is defined as the net-liability share index weighted by the AGI share index:  
Index < 1 indicates that income share is greater than net liability share; and  
Index > 1 indicates that income share is less than net liability share.

The second block of Table 13, “Tax Burden Index,” is calculated by dividing the numbers in the lower right block of Table 12, “Nebraska Liability after Non-Refundable Credits as a Percent of Total,” by the numbers in the lower left block of Table 12, “Federal AGI as a Percent of Total.” The result is a share index that relates the percent share of income in each decile to the percent share of tax paid by the same decile group.

A hypothetical decile group with a tax burden index of 1.00 reporting 20% of the AGI would have paid 20% of the tax. Similarly, if this decile paid less than 20% of the tax, the tax burden index would be less than 1.00. This index provides a measure of the tax burden imposed on Nebraska residents as income rises. Reading across the table, the index increases from 0.48 for the bottom 70% to 1.40 for the top 10%. This also indicates that the Nebraska individual income tax is progressive, as tax liability increases faster than income.

Reading down the columns of the Nebraska burden index, we can see that the index has generally decreased for the bottom seven deciles since 1995. A possible explanation for the decrease in the burden index is that AGI for the higher income group grew more rapidly compared to the lower AGI group. Note that the index for the top 500 returns is lower than the index for the top decile as a whole. The same is true for the effective tax rate on the left side of Table 13. A possible explanation for this apparent exception to the general progressivity of Nebraska’s income tax code was mentioned earlier. The top 500 resident returns are much more likely to report pass-through income from business investment. Therefore, taxpayers are also much more likely to report large amounts of capital gains from the sale of businesses or business assets. In addition, these taxpayers are also more likely to have benefited from Nebraska’s economic development programs – including the Employment and Investment Growth Act (LB 775) and the Nebraska Advantage Act (LB 312) – reducing tax liability for individuals.

Finally, Table 14 presents the starting points for the relevant deciles by AGI for selected years. The starting point for the eighth decile, which is also the ending point for the seventh decile, decreased from \$56,281 to \$55,859 between 2003 and 2007; however, it increased in subsequent years to \$62,484 in 2012. The starting point for the ninth and tenth deciles increased in every year of the study. The starting point for the top 500 returns increased from 1996 to 1999, decreased in 2003, increased dramatically in 2007, slightly decreased in 2010, and increased significantly in 2012. The decline in 2010 is likely due to the negative impact on business incomes and capital gains during the Great Recession of 2008.

**Table 14: Beginning AGI Level (Dollars)**

| <b>Tax Year</b> | <b>8th Decile</b> | <b>9th Decile</b> | <b>10th Decile</b> | <b>Top 500</b> |
|-----------------|-------------------|-------------------|--------------------|----------------|
| 2012            | 62,484            | 82,534            | 115,035            | 2,368,772      |
| 2010            | 58,613            | 77,022            | 105,937            | 1,856,509      |
| 2007            | 55,859            | 73,140            | 100,759            | 2,055,360      |
| 2003            | 56,381            | 61,698            | 84,175             | 1,121,786      |
| 1999            | 43,611            | 56,781            | 77,690             | 1,345,486      |
| 1996            | 37,687            | 48,098            | 66,701             | 907,097        |