

The Effects of Expanding North Carolina's Sales Tax Base

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Executive Summary

Policy Question (Page 6)

How should North Carolina improve its sale tax?

Policy Context (Page 6)

Since 2013, North Carolina has enacted significant tax reform. The state replaced its previous three individual income tax brackets, which ranged from 6 to 7.75 percent, with a flat rate that currently stands at 5.75 percent. Beginning in March of 2016, the state expanded its sales tax to include repair, maintenance, and installation services to offset lost income tax revenue. Although the merits of reducing income taxes are debatable, economists agree that states should levy sales taxes on both goods and services. Among other benefits, economists claim that including services in the sales tax base promotes greater tax equity and allows states to reduce rates while maintaining revenue. My analysis uses the Bureau of Labor Statistics' Consumer Expenditure Survey (CEX) to test the veracity of these claims.

Methods (Page 11)

The CEX is a national survey that tracks consumption and income for over 7000 households each year. After reweighting the CEX to match North Carolina's population, I calculated the proportion of income North Carolina households pay in sales tax. The proportion between tax expenditures and income is referred to as tax incidence. A household's tax incidence entails sales taxes paid or accrued directly out of pocket (direct sales taxes) and the sales taxes businesses pass on to consumers via higher prices (cascading sales taxes). The cascading sales tax rates were calculated using input/output tables from the Bureau of Economic Analysis.

By applying the tax rates (direct and cascading) to household purchases recorded in the CEX, I calculated the yearly total sales tax revenue collected from personal consumption and the

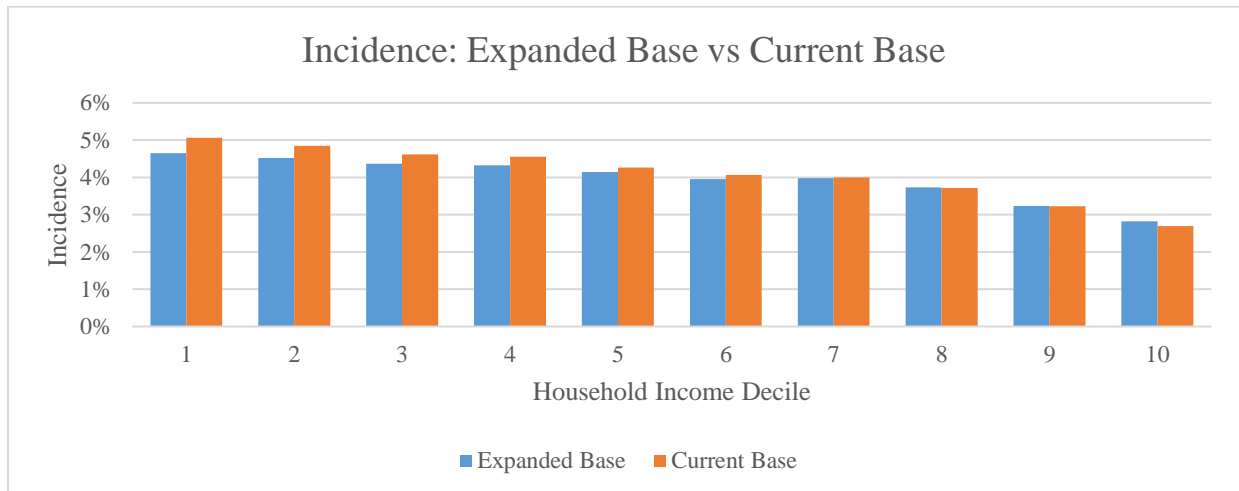
average annual tax incidence by household income decile. I then determined the hypothetical rate needed to maintain sales tax revenue if North Carolina levied taxes on both goods and most services. The hypothetical rate was then applied to goods and services to recalculate the average annual household tax incidence by income decile.

Results (Page 22)

By expanding the sales tax base to include most services, North Carolina could reduce the combined state and county sales tax rate from 6.93 to 5.42 percent while maintaining total sales tax revenue. More specifically, the North Carolina state government could reduce its sales tax rate from 4.75 to 3.71 percent and maintain current revenue.

Expanding the base and lowering the rate would result in a more progressive sales tax, with households in the poorest decile decreasing their incidence from 5.06 to 4.65 percent and households in the most affluent decile increasing their incidence from 2.70 to 2.83 percent. Enacting a broad-based sales tax at a lower rate would, on average, save households in the fourth decile \$90 per year – the largest gains among all deciles. Households in the eighth decile and higher would lose money from expanding the sales tax base, with families in the tenth decile, on average, losing \$278 dollars per year.

Household Income		Total Incidence		Annual Income Change
Decile	Average Income	Current Base	Expanded Base	Expanded Base
1	\$14,942	5.06%	4.65%	\$62
2	\$22,883	4.85%	4.53%	\$75
3	\$30,721	4.62%	4.37%	\$76
4	\$38,466	4.55%	4.32%	\$90
5	\$47,478	4.27%	4.14%	\$60
6	\$57,977	4.06%	3.96%	\$63
7	\$71,053	4.00%	3.98%	\$12
8	\$88,709	3.71%	3.73%	-\$20
9	\$116,300	3.22%	3.24%	-\$15
10	\$214,263	2.70%	2.83%	-\$278



Recommendations (Page 25)

I recommend North Carolina expand its sales tax base to include services not related to health or education. This expansion would allow the state to lower its tax rate from 4.75 percent to 3.69 percent while still maintaining current revenue. A lower tax rate would increase equity and would eliminate the current tax code's unjustified bias toward goods.

Policy Question: How should North Carolina improve its sales tax?

North Carolina should broaden its sales tax base to include services. Expanding the sales tax base to include services would allow North Carolina to reduce the combined state and county sales tax rate from 6.93 to 5.42 percent while maintaining total sales tax revenue. More specifically, the North Carolina state government could reduce its sales tax rate from 4.75 to 3.71 percent and maintain current revenue. Broadening the sales tax base would also allow local governments to reduce their municipal sales tax by an average of .48 percentage points and still remain revenue neutral. Decreasing the rate and expanding the tax base would eliminate the current system's unjustified bias toward goods and would create a less regressive tax system, saving middle-class households approximately \$90 per year on average.

Background

In 2013, North Carolina approved legislation to eliminate the state's three individual income tax brackets, which ranged from 6 to 7.75 percent, in favor of a 5.9 percent flat rate. The rate has been decreased further to 5.75 percent, and the state Senate has proposed a constitutional amendment to cap the individual income tax at 5.5 percent. North Carolina Republicans enacted the 2013 legislation with the explicit goal of working toward eliminating the state's income tax and replacing it with a broad-based sales tax or consumed income tax.^{1 2}

While the merits of cutting income taxes are debatable, one outcome is clear: States with lower income taxes have higher sales taxes. In fact, states without income taxes have sales tax rates that are 18 to 21 percent higher than the national average.⁴ North Carolina's state sales tax

¹ Consumed income taxes exempt savings from income taxation and eliminate sales taxes.

² Cordato, D. R. (2016, May 10). The best route to a real consumption tax is through the income tax.

⁴ Williams, E., & Johnson, N. (2012, March 22). Without A State Income Tax, Other Taxes Are Higher.

currently stands at 4.75 percent, with most counties levying an additional two percent.^{5 6}

Altogether, North Carolina has the 31st highest sales tax in the country.⁷

North Carolina's retail sales tax, adopted in 1933, was originally restricted to "the sale of tangible personal property." At that time, services constituted approximately one-third of the economy. Services now comprise approximately two-thirds of the economy, yet most still go untaxed.⁸ As a result, North Carolina taxes just 31 percent of personal consumption.⁹

Equity

Opponents of the 2013 state tax reform argue raising sales tax rates would disproportionately increase middle and low-income households' tax incidence/burden (interchangeable terms), which is typically defined as a household's sales tax expenditures divided by their income.¹⁰ Minnesota—one of the few states that produces its own analysis on tax incidence—reports families in the state's lowest decile incur a sales tax incidence of 10.8 percent, whereas families in the highest decile incur an incidence of 1.5 percent. Minnesota's average sales tax burden is 2.4 percent and the median is 3.4 percent, with the tax incidence

⁵ North Carolina authorizes local governments to add-on sales taxes up to 2.5 percent. Nine counties tax at higher rates, with Mecklenburg being the lone county to levy the maximum amount.

⁶ Bell, K. (n.d.). State taxes: North Carolina | Bankrate.com.

⁷ CNN/Money: Taxes state by state. (n.d.).

⁸ Hencman, J., & Drenkard, S. (2013, January 23). North Carolina Tax Reform Options: A Guide to Fair, Simple, Pro-Growth Reform.

⁹ Ibid

¹⁰ The definition of income can vary. Income, for the purposes of this analysis, is limited to wages, subsidies, and received cash transfers.

consistently decreasing among household with higher incomes.¹¹ The Institute on Taxation and Economic Policy (ITEP), a non-partisan think tank, uses IRS data to calculate states' sales tax burden. ITEP reports a sales tax incidence of 5.9 percent for North Carolina households in the poorest quintile, 4.3 percent for households in the middle quintile, and 2.5 percent for households in the highest quintile.¹²

Some economists, however, question the conventional claim that sales taxes are regressive. Their dissent is comprised of two arguments. First, tax burdens balance out over the long-run. Since younger people typically have lower wealth relative to older individuals, the effect of sales taxes tends to average out over the course of peoples' lives.¹³ Second, low-income households are more likely to engage in activities not subject to sales tax.¹⁴ The decision to eat out demonstrates this point. Unlike eating at a restaurant, the effort that goes into preparing a meal at one's home is not subject to tax. Because low-income families tend to eat at home more frequently, their real income is taxed less.

¹¹ Minnesota Department of Revenue. 2015 Minnesota Tax Incidence Study.

¹² Institute for Tax and Economic Policy

¹³ Conrad, R. (1992, January 30). Income Distributional Considerations with a Single Rate Value Added Tax [Memo to J. Gorchivkina].

¹⁴ Ibid

Tax Fairness and Economic Efficiency

While economists may disagree over the social equity implications of sales taxation, most recommend levying sales taxes on both goods and services to promote “tax fairness.”^{15 16} North Carolina, like most other states, does not comport with this recommendation.

Economists agree that failure to tax services distorts consumer behavior; discriminates against individuals who consume more goods than services; creates horizontal inequities between the supply of goods and the provision of services competing in similar markets; increases regressivity (to the extent that services are more likely consumed by the affluent); and complicates tax administration and compliance.^{17 18 19}

Many economists also agree that business-to-business transactions should be exempt from sales tax.²⁰ These economists argue that taxing business-to-business commerce is especially harmful because it results in goods being taxed repeatedly, also known as cascading or the Pyramid Effect. Besley and Rosen find cascading often shifts cost to consumers. In many cases, the price paid by consumers rise by more than the price of the taxed business transactions.²¹

¹⁵ Viard, A. D. (2011, May 16). Goods Versus Services: A Call for Sales Tax Neutrality

¹⁶ Should Sales Taxes Apply to Services? (2011). Institute on Taxation and Economic Policy.

¹⁷ Should Sales Taxes Apply to Services? (2011). Institute on Taxation and Economic Policy.

¹⁸ Viard, A. D. (2011, May 16). Goods Versus Services: A Call for Sales Tax Neutrality

¹⁹ Stark, K. J. (2003). The Uneasy Case for Extending the Sales Tax to Services.

²⁰ Viard, A. (2010, June 21). Sales Taxation of Business Purchases: A Tax Policy Distortion.

²¹ Besley, Timothy J., and Harvey S. Rosen. (1999). "Sales Taxes and Prices: An Empirical Analysis," National Tax Journal

The extent of cascading taxes is considerable. In an analysis of 26 states, Lox et. al estimate that 43 percent of sales tax collections stem from taxing business input purchases.²² ITEP reports sales taxes paid by businesses range from a quarter to half of all state and local sales taxes collected.²³ To avoid sales tax, companies may vertically integrate to bring more production within a single entity.²⁴

Exempting services while taxing business-to-business transactions also creates administrative burdens for governments and companies. Because not all business inputs are taxed, firms must verify exemption certificates. Considering exemption eligibility varies from state-to-state and even county-to-county, large transcontinental companies must dedicate significant resources deciphering and complying with local tax codes.²⁵ Moreover, state governments do not have the resources to adequately monitor whether businesses properly comply. The high volume of business filings makes audits impractical, leaving governments to rely on perfunctory numerical accuracy checks.²⁶

²² Cline, Robert; Thomas Neubig, Andrew Phillips, and William F. Fox. "Total State and Local Business Taxes: Nationally 1980-2004 and by State 2000-2004," State Tax Notes.

²³ Institute for Tax and Economic Policy

²⁴ Lox, W., & Luna, L. (2013, August 20). Tax Analysts -- How Broad Should State Sales Tax Bases Be? A Review of the Empirical Literature.

²⁵ Ibid

²⁶ Ibid

Economists agree that the current system falls well short of the ideal. By allowing exemptions and multiple tax rates, the current piecemeal approach to sales taxation in the United States creates economic burdens on business and government alike.²⁷

North Carolina, to its credit, has recently reformed its sales tax code. Beginning in March of 2016, the state expanded its sales tax to include select repair, maintenance, and installation services (RMI). These taxes were further expanded in 2017 to include RMI services on real, digital, and personal property.

Methods

Calculating the tax burden is an imperfect science limited by several real-world constraints. Ideally, the final per person, per annum tax burden would equal the ratio of total taxes paid to comprehensive income on a periodic basis. This ideal burden would be calculated in two steps. First, the sum of all annual sales taxes paid or accrued directly out of pocket per household (direct sales taxes) would be added to the household sums of annual sales taxes businesses pass on to consumers via higher prices (cascading sales taxes). These sums would then be divided by a comprehensive measure of annual household income (Haig-Simons). Data limitations, however, preclude such an exact calculation of tax incidence.

Theoretical Calculation vs Empirical Implementation

Precise information on North Carolinians' annual income and purchases (both in-state and out-of-state) would be ideal for calculating sales tax burden. The Haig-Simon definition of income, which entails an individual's ability to consume plus net increases in wealth for the

²⁷ Lox, W., & Luna, L. (2013, August 20). Tax Analysts -- How Broad Should State Sales Tax Bases Be? A Review of the Empirical Literature.

taxable year, would be the best measure of income. Such a measure, however, is difficult to approximate given the challenges associated with quantifying non-revenue forms of wealth, such as employer-based health insurance, the value of self-constructed assets, and unrealized capital gains and losses.

The perfect calculation would also require complete expenditure information for all North Carolinians. Moreover, since business transactions are subject to sales tax, the ideal calculation would also account for businesses shifting their sales tax burden onto consumers. Businesses' transfer of tax burden (cascading taxes) depends on the demand elasticity of outputs relative to the supply elasticities of various inputs. The ideal calculation would, therefore, calculate cascading rates based on each good and service's elasticities, and would then impute that rate into the final demand price of each good and service.

The empirical methods implemented in this report diverge from the theoretically correct approach previously described. These areas of divergence, and the possible biases they may cause, are outlined in Table I. The remainder of the Methods section describes the "actual" procedures and potential biases outlined below in more detail.

Table I

Ideal	Actual	Incidence Bias
Haig-Simon Income	Self-reported income (wages, subsidies, and received cash transfers), adjusted for understated income.	Downwardly bias for more affluent households because the share of income increases with wealth, e.g. unrealized capital gains.
Sample consisting of all North Carolina Households	Sample of 3365 household from the South and Midwest region, reweighted to represent North Carolina's demographics.	Introduces imprecision, but does not create bias.
Complete expenditure data	Self-reported expenditures recorded using quarterly interviews and two week diaries. Interview and diary expenditures were linked via statistical matching.	Introduces imprecision, but does not create bias.
Precise ad-valorem excise rate	Calculated ad-valorem excise rates using the BLS consumer price index for the South region.	Downwardly bias for low-income households and upwardly bias for more affluent households.
Complete information on the amount of taxes shifted forward from businesses to consumers (cascading taxes)	Calculated cascading tax rates using input/output tables on inter-industry transactions.	Introduces imprecision, but does not cause bias.

Consumer Expenditure Survey

Data limitations make tax incidence calculations less than ideal. And my primary data set, the Bureau of Labor Statistics' (BLS) Consumer Expenditure Survey (CEX), has several

limitations. The CEX reports purchases for over 7000 households across the United States each year. However, because the CEX did not survey North Carolina residents during the years of interest (2013-2015), my analysis relies on CEX data collected from other states in the South and Midwest. To make my sample more representative of North Carolina, I reweighted the CEX data using GregWeight – a SAS program that recalibrates data by minimizing the error between the data’s weights and user entered benchmarks.²⁸ In this case, the benchmarks come from the Census Bureau’s 2015 American Community Survey (ACS).

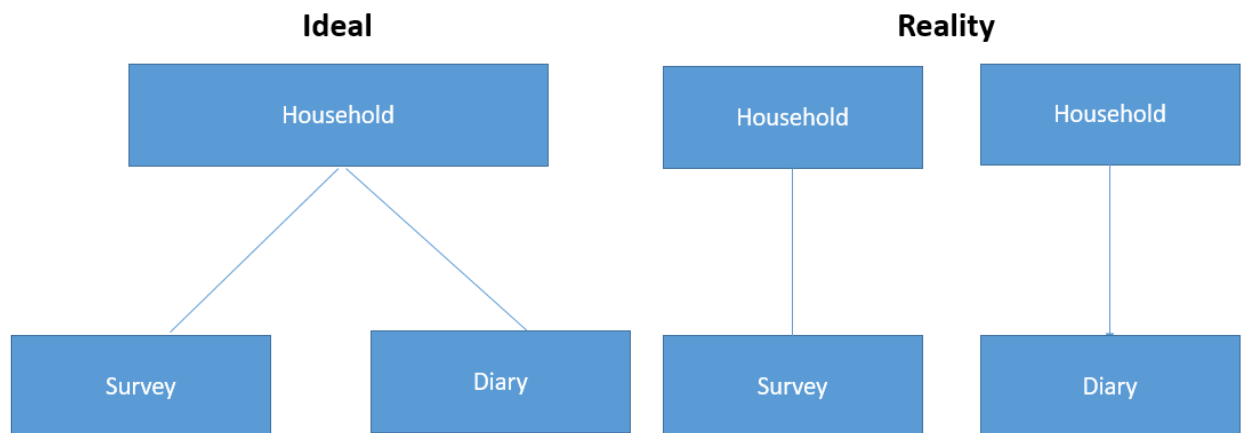
The number of married heads of households in North Carolina with a bachelor’s degree, for example, could serve as one benchmark. In this example, GregWeight would adjust the CEX so that it has the same number of married households with bachelor’s degrees as the ACS benchmark. After selecting several benchmarks, the reweighted CEX outputs should fall within 2 percent of North Carolina’s actual population for any demographic category – including categories not entered in GregWeight. The benchmarks omitted from GregWeight serve to verify that the reweighting process is converging to match North Carolina’s population. My sample converged on ten benchmarks entered into GregWeight, as well as two benchmarks not entered into GregWeight. Despite this convergence, my analysis is susceptible to bias if North Carolinians’ preferences fundamentally differ from the preferences of consumers in the Midwest and other Southern states.

The CEX’s structure is less than ideal. The CEX has two parts: quarterly surveys and weekly diaries. For the CEX survey, participants list “big-ticket” items such as household appliances and plane tickets purchased over four, three-month periods. In the CEX diary,

²⁸ Izrael, D., Hoaglin, D., & Battaglia, M. (n.d.). A SAS Macro for Balancing a Weighted Sample.

participants record all purchases made over two, one-week periods. The diary is intended to capture smaller expenditures like food and gasoline. Besides potential issues with self-reporting, the CEX has another fundamental limitation: Diary and interview survey data are not linked together. Figure I illustrates this problem.

Figure I



As depicted in Figure I, the expenditure data for any given household is incomplete: a household ID either links to interview data or diary data, never both. Consequently, the CEX does not provide total expenditures for any specific household [See Appendix I for a summary of the CEX methodology].

To capture total expenditures, households sharing similar characteristics from the diary and interview datasets must be matched. This match was done in the following steps: Households were first partitioned by family type and family size. The households were then sorted within their partitioned groups by income, survey weight percentile, and a random number. Households from the survey dataset were then assigned the average expenditures from the two nearest diary households. So, for instance, single female-led households with three children were grouped together. These households were then sorted by income, survey weight

percentile, and a random number. In the resulting matrix, each household from the survey dataset was between similar households from the diary dataset. The missing data points in the survey households (i.e. food and gasoline) were imputed by taking the average expenditure data of those diary households directly above and below them [See Appendix II for images of the matching process].

I assessed the matching process by comparing the fused dataset's average household expenditures across various consumption categories to the averages provided by BLS for the South region. Again, this analysis is susceptible to bias if North Carolinians' consumption systematically differs from the consumption of residents in other Southern states.

Direct Consumption Taxes

After matching interview households with diary expenditures, I calculated the amount spent on direct consumption taxes, which entails sales and excise taxes. The direct sales tax incidence was calculated in two steps. First, each household expenditure was multiplied by its corresponding tax rate. Second, the results were summed for each household and then divided by a household's income. Put simply: A family's direct tax burden is the amount they are estimated to explicitly pay in consumption taxes divided by their estimated household income. I define income to include wages, subsidies, and received cash transfers.

Because the CEX does not include county level consumption data, the sales tax incidence does not reflect specific county rates paid at the register [See Appendix III for County Rates]. As a proxy, I used North Carolina OSMB'S weighted state sales tax rate (6.93 percent), which was computed using county tax rates and sales tax revenue.²⁹

²⁹ State Sales and Use Tax Reports by Fiscal Year. (2017).

Unlike sales taxes, excise taxes are levied on quantities instead of prices. For instance, North Carolina levies an excise tax of 61.7 cents per gallon of beer. Converting excise taxes into an ad-valorem rates required three steps. First, I determined the average price for a single unit (i.e. a 16oz beer) using the BLS Southern Consumer Price Index for 2013-2015.³⁰ Second, I calculated the average price for the unit of quantity taxed (i.e. a gallon of beer) using the average price of a single unit. Third, I derived the ad-valorem rate by dividing the excise tax (i.e. 61.7 cents per gallon of beer) by the average price per gallon. In addition to being imprecise, the calculated excise rates are also bias. The computed excise rates do not account for the fact that a person who, for example, buys a gallon of Coors Light is taxed at a higher effective rate than someone who buys a gallon of an expensive craft beer. Although both will pay 61.7 cents, the proportion of the excise tax to total price is higher for the consumer of Coors Light. As a result, the tax incidence for low-income households will likely be downwardly bias, and vice-versa for more affluent households.

The measure of household income used in the incidence calculation is also imprecise. The CEX relies on self-reported income, which research suggests is prone to error. Studies indicate that errors are particularly pronounced among households reporting government subsidies.³¹ The CEX attempts to address underreporting by imputing income for individuals who receive government subsidies.

Second, the CEX omits or does not accurately capture non-wage forms of income, such as savings, assets, healthcare, and wealth transfers. The BLS acknowledges that flawed income data can result in many CEX households reporting expenditures that far exceed their income.

³⁰ CPI News Releases. (n.d.). Retrieved April 08, 2017.

³¹ Moore, J., Stinson, L., & Welniak, E. (n.d.). Income Measurement Error in Surveys: A Review.

This problem is disproportionately prevalent among young and old households because the CEX may not adequately capture wealth transfers or savings withdrawals. Thus, for the purposes of this paper, both withdrawals and cash transfers, once spent, are considered income. Accordingly, a household's income is the maximum of either its reported income or total expenditures.

Excluding non-wage forms of incomes, such as accrued capital gains, will result in upwardly bias incidence rates for more affluent households, particularly the most affluent households. Imputing income for households with expenditures that exceed their income may lead to downwardly bias incidence rates for lower deciles, as some households may truly assume large amounts of debt.

Cascading Sales Tax

The CEX, North Carolina Department of Revenue (NCDOR) sales tax data, and the Bureau of Economic Analysis' (BEA) input/output (I/O) table were used to compute cascading tax rates. Given the assumption that businesses pass their sales tax costs onto consumers, the total amount of cascading taxes is, at least theoretically, directly proportional to the sales tax revenue collected from businesses. The amount of cascading sales taxes was calculated in two steps. First, I calculated the amount of sales tax revenue collected from consumers by summing all CEX households' total sales tax expenditures. Second, the aggregate total sales tax expenditure for consumers was subtracted from NCDOR's total sales tax revenue, thus leaving the amount of sales tax revenue "paid" by businesses. Business sales tax expenditures, which will be used in later calculations, account for approximately 37 percent of North Carolina's sales tax revenue based on my analysis.

The BEA input/output table was used to determine cascading tax rates for each industry.³² The procedure used to calculate cascading taxes is outlined below [See Appendix IV for I/O tables].

1. I recalibrated the original I/O table to represent North Carolina's input/output production relationships. To do this, each industries' output was multiplied by the percent North Carolina contributes to US GDP for each industry. Importantly, dollar values in the table are tax inclusive and electricity and telecommunications are the only non-exempt business inputs in North Carolina.
2. I created a new table in which each cell from the Step 1 table was divided by the total output for the corresponding industry. The adjusted I/O table's entries represent the percentage of the dollar value of an industry's output that is used as an input in another industry, with the table's last column indicating the value of a commodity's final consumption. In other words, the sum of each commodity's value across all the columns (industries and final demand) equals one-hundred percent. For example, the steel used in automobiles represents the value of steel used in automobiles divided by the total value of the auto industry.
3. I created another tax table in which each cell represents the amount of sales tax paid on inter-industry transactions. To do this, I multiplied each cell in the Step 2 I/O table by its corresponding cell in the original Step 1 I/O table, and then again by .37, the proportion of NCDOR sales tax revenue collected from businesses.
4. The values in the original Step 1 I/O table minus the values in the Step 3 I/O tax table yield the tax exclusive value for each inter-industry transaction. Accordingly, the tax inclusive

³² Input/output tables show the amount (measured in dollars) of an industry's output that goes into the production of other goods and services as well as how much is purchased by consumers.

values divided by the tax exclusive values equal one plus the tax rate. Solving for the tax rate yields the cascading rate for each inter-industry transaction.

5. Of these inter-industry transactions, only a few are relevant to the cascading rates paid by consumers. North Carolina businesses' sales tax liability is limited to their consumption of electricity and telecommunication services. Moreover, of the 15 BEA industries, only seven (retail, transportation, information services, finance and rent, professional services, education and health, arts and entertainment) sell directly to consumers. The cascading rate consumers pay is, therefore, the sum of the utility and telecommunication rates that intersect with the corresponding industry.

Calculating Tax Incidence

Annual household tax incidence was calculated in three steps. First, household sales tax expenditures were calculated by multiplying every purchase by its corresponding consumption tax (sales and excise) and corresponding cascading rate. Second, these expenditures were summed for each household, thus yielding total household tax expenditures. Third, each household's total tax expenditure was divided by its annual household income, resulting in household sales tax incidence.

Determining the Appropriate Tax Rate

Determining the overall sales tax rate needed to maintain current revenues given a broader sales tax base required solving for "Rate" in Equation I. Importantly, all of the listed equations assume a demand elasticity of one for all goods and services, meaning that any percentage change in price will be exactly proportional to the percentage change in the sales tax.

Equation I

$$\text{Current Sales Tax Revenue} = \text{Rate} * \sum_{i=1}^n (\text{Services}_i + \text{Status Quo}_i + \text{Capped Goods}_i) + \sum_{i=1}^n \text{Utilities}_i$$

Households are identified by subscript i ; “Services” represents service expenditures not currently taxed; “Status Quo” signifies expenditures that are currently taxed; “Capped Goods” refers to removing the \$1500 sales tax cap on boat purchases and increasing the 3 percent rate on cars and boats to the standard rate; and “Utilities” denotes utility expenditures (i.e. electricity, phones, etc.). Health and education services remained exempt when calculating the new tax rate.

The hypothetical rate required to explicitly account for cascading taxes was determined by solving for “Rate” in the Equation II, where “Cascading” corresponds to the cascading taxes shifted to consumers:

Equation II

$$\text{Current Sales Tax Revenue} + \sum_{i=1}^n \text{Cascading}_i = \text{Rate} * \sum_{i=1}^n (\text{Services}_i + \text{Status Quo}_i + \text{Capped Goods}_i) + \sum_{i=1}^n \text{Utilities}_i$$

The equation below uses the hypothetical overall rate (“Rate”) from Equation I to determine the state sales tax rate needed to maintain current state tax revenues.

Equation III

$$\text{State Sales Tax Rate} = 4.75 - 4.75/6.93 * (6.93 - \text{Rate})$$

The average hypothetical county rate required to maintain local sales tax revenue was determined using the following equation, where “Rate” again refers to the overall hypothetical rate determined in Equation I.

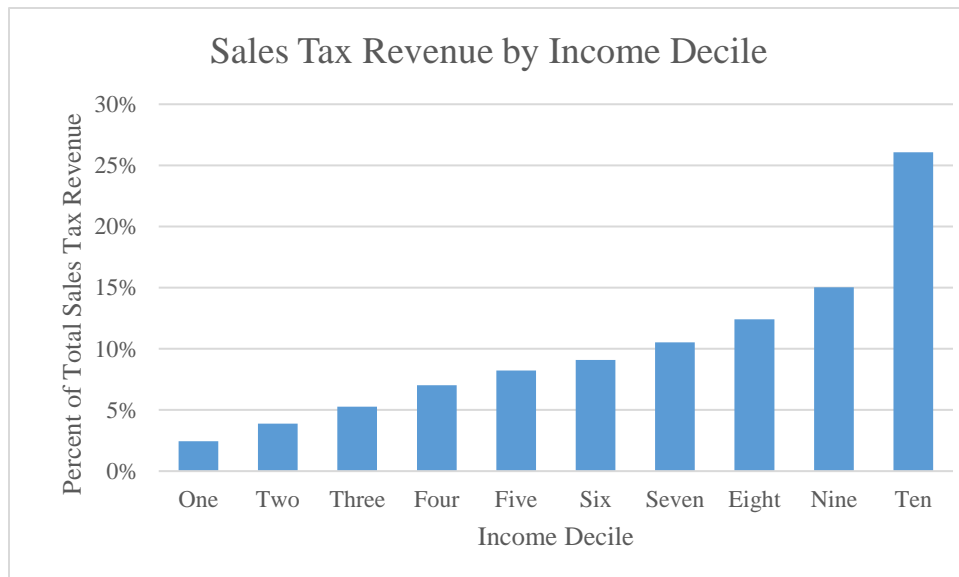
Equation IV

$$\text{Average Local Sales Tax Rate} = (6.93 - 4.75) - (1 - 4.75/6.93) * (6.93 - \text{Rate})$$

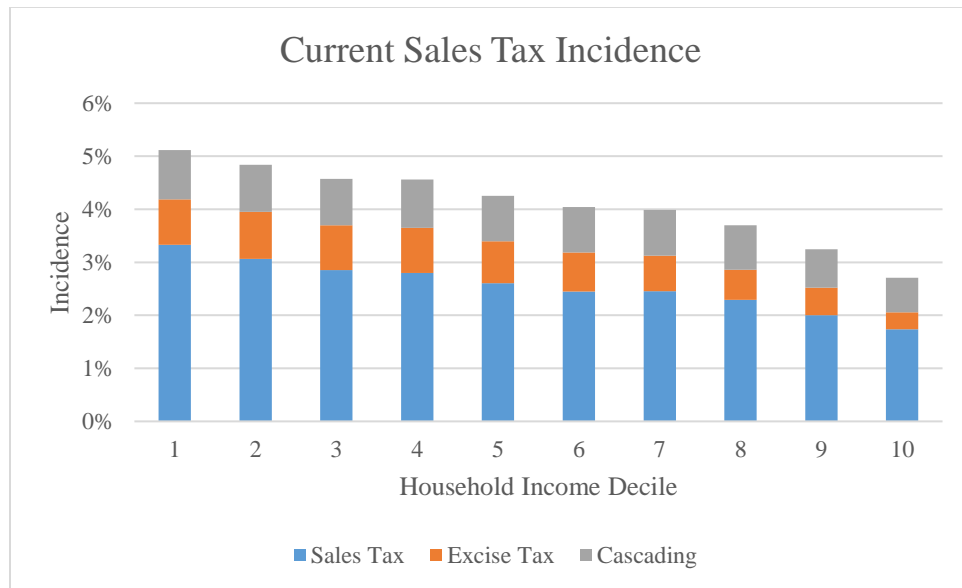
Results

Although affluent households contribute more to North Carolina's sales tax revenue (See Graph I), lower income households pay a greater share of their income in sales tax (See Graph II). If North Carolina expanded its sales tax base to include most services, it could reduce the state's sales tax from 4.75 to 3.71 percent while maintaining its current revenue. Broadening the sales tax base would allow local governments to reduce their municipal sales tax by an average of .48 percentage points and remain revenue neutral. Expanding the base and lowering the combined state and local tax rate to 5.42 percent would result in a more progressive sales tax system (See Graph III).

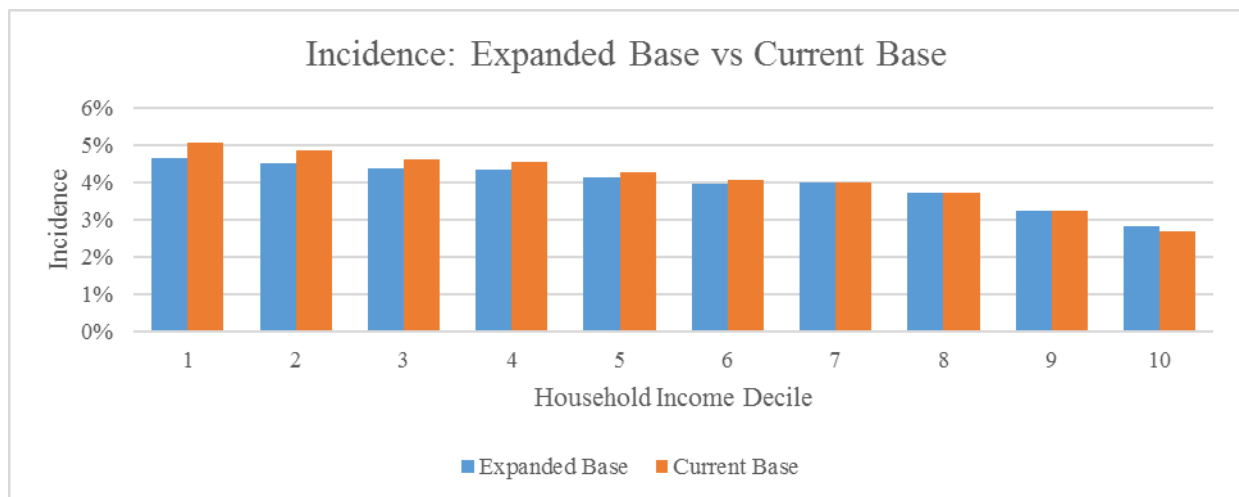
Graph I



Graph II



Graph III



When including cascading taxes, the effective average rate on retail goods, which incur relatively high cascading taxes, is 9.56 percent. Broadening the base and eliminating taxes on businesses would require a combined tax rate of 7.66 percent to maintain current total sales tax revenue [See Appendix V for industry specific cascading tax rates].

The state could reduce its rate from 4.75 to 4.1 percent by including services and maintaining the current three percent rate and cap for cars and boats, which some argue are susceptible to tax avoidance.³³ Counties could reduce their rate by, on average, .3 percentage points and remain revenue neutral if the state maintained sales tax caps and the three percent rate for cars and boats. Table I provides current and projected incidence rates by income decile if North Carolina expanded the sales tax base. The “Current Base” column refers to North Carolina adopting a broad tax base and levying the standard rate to cars and boats, and the “Current Base (with caps)” column refers to a broader tax code that maintained sales tax caps and a separate three percent rate for cars and boats.

Table I

Household Income		Total Incidence		
Decile	Average Income	Current Base	Expanded Base	Expanded Base (with caps)
1	\$14,942	5.06%	4.65%	4.83%
2	\$22,883	4.85%	4.53%	4.69%
3	\$30,721	4.62%	4.37%	4.49%
4	\$38,466	4.55%	4.32%	4.42%
5	\$47,478	4.27%	4.14%	4.20%
6	\$57,977	4.06%	3.96%	3.98%
7	\$71,053	4.00%	3.98%	3.94%
8	\$88,709	3.71%	3.73%	3.67%
9	\$116,300	3.22%	3.24%	3.23%
10	\$214,263	2.70%	2.83%	2.79%

As shown in Table I, expanding the base and lowering the rate would result in a more progressive sales tax, with households in the poorest decile decreasing their incidence from 5.06

³³ Goldin, J. (2012). Sales Tax Not Included: Designing Commodity Taxes for Inattentive Consumers. The Yale Law Journal.

to 4.65 percent and households in the most affluent decile increasing their incidence from 2.7 to 2.83 percent.

Table II shows that enacting a broad-based sales tax at a lower rate would, on average, save households in the fourth decile \$90 per year – the largest gains among all deciles. Households in the eighth decile and higher would lose money from expanding the sales tax base, with families in the tenth decile, on average, losing \$278 dollars per year.

Table II

Household Income		Annual Income Change	
Decile	Average Income	Expanded Base	Expanded Base (with caps)
1	\$14,942	\$62	\$35
2	\$22,883	\$75	\$37
3	\$30,721	\$76	\$38
4	\$38,466	\$90	\$53
5	\$47,478	\$60	\$30
6	\$57,977	\$63	\$51
7	\$71,053	\$12	\$42
8	\$88,709	-\$20	\$34
9	\$116,300	-\$15	-\$6
10	\$214,263	-\$278	-\$207

Recommendations

I recommend North Carolina expand its sales tax base to include services not related to health and education, tax cars and boats at the standard rate, remove caps, and decrease the state sales tax rate from 4.75 to 3.71 percent. A lower tax rate would promote greater tax equity and would eliminate the current tax code’s unjustified bias toward goods. The state, however, should not eliminate sales taxes on inter-industry transactions despite the burden they impose on businesses and consumers. Although consumers currently pay cascading sales taxes, it would be

politically infeasible to explicitly increase the sales tax rate in order to eliminate sales taxes on businesses.

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Appendix I

Brief description of the Consumer Expenditure Survey³⁴

The CEX survey, which is conducted by the U.S. Census Bureau for Bureau of Labor Statistics, consists of two components: A diary survey completed by participating consumer units' (CUs) for two consecutive 1-week periods and an interview survey by which expenditures of consumer units is obtained in four interviews conducted at 3-month intervals. Results in this report are based on integrated data from both surveys. Survey participants record dollar amounts for goods and services purchased during the reporting period, regardless of whether payment is made at the time of purchase. Expenditure amounts include all sales and excise taxes for items purchased by the consumer unit. All business-related expenditures are excluded from both surveys, as are expenditures for which the CU is reimbursed. Each component of the survey queries an independent sample of consumer units that are representative of the U.S. population. For the diary survey, about 7,000 consumer units are sampled each year. Each CU keeps a diary for two 1-week periods, yielding approximately 14,000 diaries a year. The interview survey, selected on a rotating panel basis, collects data about 7,000 CUs each quarter. With the rotating panel, some CUs drop out of the survey each quarter, while others come in. Each CU is interviewed once per quarter, for four consecutive quarters. Data are collected on an ongoing basis in 91 areas of the United States. The interview survey is designed to capture expenditure data that respondents can reasonably recall for a period of 3 months or longer. In general, these expenditures are relatively large, such as expenditures for real property, automobiles, and major appliances, or they occur on a regular basis, such as rent, utility payments, and insurance


³⁴ The following are excerpts taken from the technical notes section of the most recent CEX report.

premiums. The interview survey also collects data on expenditures incurred on leisure trips. Including global estimates of spending for food, it is estimated that about 95 percent of expenditures are covered in the interview survey. Nonprescription drugs, household supplies, and personal care items are excluded. The diary survey is designed to capture expenditures on small, frequently purchased items that are normally more difficult for respondents to recall buying over an extended period. Detailed entries of expenses are kept for food and beverages— consumed either at home or in eating places—and for tobacco, housekeeping supplies, nonprescription drugs, personal care products and services, and any other goods or services purchased within the period. Expenditures incurred by members of the CU while away from home overnight or longer are excluded from the diary survey.

Appendix II

After portioning households (column cuid) by family type and family size, the households were then sorted within their partitioned groups by income (column fincbtxm), survey weight, and a random number. Households from the survey dataset (where column diary equals zero) were then assigned the average expenditures from the two nearest diary households.


Diary Values



cuid	diary	grp	fincbtxm	housing_d	operations_d	food_d
328344	1	19	275811.2	0	0	4119.17896
296297	1	19	274950.0	0	0	4573.4909054
260451	0	19	228413.0	.	.	.
311436	1	19	218292.4	6024.2	0	25573.74924
326539	1	19	213000.0	0	0	4725.76

The imputed values correspond to columns “_Housing_”, “_Operation_”, and “_Food_”

Imputed Values



cuid	diary	grp	fincbtxm	housing_d	_Housing_	operations_d	_Operations_	food_d	_Food_
328344	1	19	275811.2	0	0	0	0	4119.17896	4119.17896
296297	1	19	274950.0	0	0	0	0	4573.4909054	4573.4909054
260451	0	19	228413.0	.	3012.1	.	0	.	15073.620073
311436	1	19	218292.4	6024.2	6024.2	0	0	25573.74924	25573.74924
326539	1	19	213000.0	0	0	0	0	4725.76	4725.76

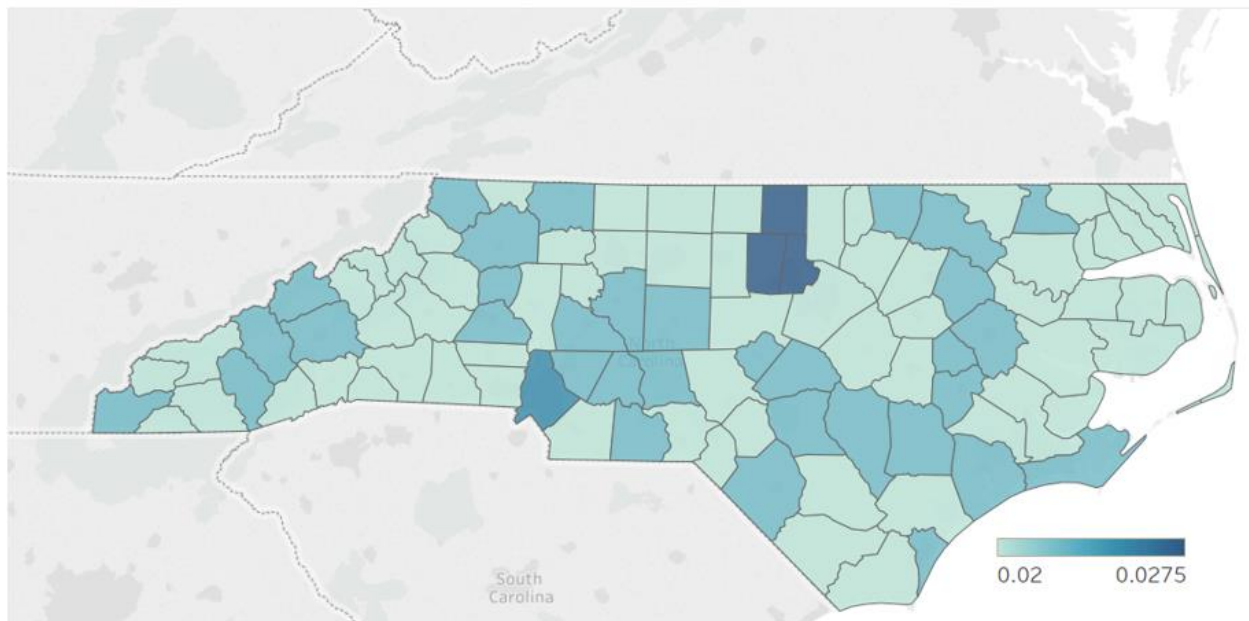
Appendix III

County Name	County Rate	Total Tax Rate
Alamance County	2.00%	6.75%
Alexander County	2.25%	7.00%
Alleghany County	2.00%	6.75%
Anson County	2.25%	7.00%
Ashe County	2.25%	7.00%
Avery County	2.00%	6.75%
Beaufort County	2.00%	6.75%
Bertie County	2.00%	6.75%
Bladen County	2.00%	6.75%
Brunswick County	2.00%	6.75%
Buncombe County	2.25%	7.00%
Burke County	2.00%	6.75%
Cabarrus County	2.25%	7.00%
Caldwell County	2.00%	6.75%
Camden County	2.00%	6.75%
Carteret County	2.25%	7.00%
Caswell County	2.00%	6.75%
Catawba County	2.25%	7.00%
Chatham County	2.00%	6.75%
Cherokee County	2.25%	7.00%
Chowan County	2.00%	6.75%
Clay County	2.00%	6.75%
Cleveland County	2.00%	6.75%
Columbus County	2.00%	6.75%
Craven County	2.00%	6.75%
Cumberland County	2.25%	7.00%
Currituck County	2.00%	6.75%
Dare County	2.00%	6.75%
Davidson County	2.25%	7.00%
Davie County	2.00%	6.75%
Duplin County	2.25%	7.00%
Durham County	2.75%	7.50%
Edgecombe County	2.25%	7.00%
Forsyth County	2.00%	6.75%
Franklin County	2.00%	6.75%
Gaston County	2.00%	6.75%
Gates County	2.00%	6.75%
Graham County	2.00%	6.75%
Granville County	2.00%	6.75%
Greene County	2.25%	7.00%
Guilford County	2.00%	6.75%

County Name	County Rate	Total Tax Rate
Harnett County	2.25%	7.00%
Haywood County	2.25%	7.00%
Henderson County	2.00%	6.75%
Hertford County	2.25%	7.00%
Hoke County	2.00%	6.75%
Hyde County	2.00%	6.75%
Iredell County	2.00%	6.75%
Jackson County	2.25%	7.00%
Johnston County	2.00%	6.75%
Jones County	2.00%	6.75%
Lee County	2.25%	7.00%
Lenoir County	2.25%	7.00%
Lincoln County	2.00%	6.75%
Macon County	2.00%	6.75%
Madison County	2.00%	6.75%
Martin County	2.25%	7.00%
Mcdowell County	2.00%	6.75%
Mecklenburg County	2.50%	7.25%
Mitchell County	2.00%	6.75%
Montgomery County	2.25%	7.00%
Moore County	2.00%	6.75%
Nash County	2.00%	6.75%
New Hanover County	2.25%	7.00%
Northampton County	2.00%	6.75%
Onslow County	2.25%	7.00%
Orange County	2.75%	7.50%
Pamlico County	2.00%	6.75%
Pasquotank County	2.00%	6.75%
Pender County	2.00%	6.75%
Perquimans County	2.00%	6.75%
Person County	2.75%	7.50%
Pitt County	2.25%	7.00%
Polk County	2.00%	6.75%
Randolph County	2.25%	7.00%
Richmond County	2.00%	6.75%
Robeson County	2.25%	7.00%
Rockingham County	2.00%	6.75%
Rowan County	2.25%	7.00%
Rutherford County	2.00%	6.75%

County Name	County Rate	Total Tax Rate
Scotland County	2.00%	6.75%
Stanly County	2.25%	7.00%
Stokes County	2.00%	6.75%
Surry County	2.25%	7.00%
Swain County	2.00%	6.75%
Transylvania County	2.00%	6.75%
Tyrrell County	2.00%	6.75%
Union County	2.00%	6.75%
Vance County	2.00%	6.75%
Wake County	2.00%	6.75%
Warren County	2.25%	7.00%
Washington County	2.00%	6.75%
Watauga County	2.00%	6.75%
Wayne County	2.00%	6.75%
Wilkes County	2.25%	7.00%
Wilson County	2.00%	6.75%
Yadkin County	2.00%	6.75%
Yancey County	2.00%	6.75%

County Sales Tax Rates



Appendix IV

All tables are truncated and all dollar amounts are in millions.

Original I/O table

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Total Final Uses (GDP)	Total Commodity Output
Agriculture, forestry, fishing, and hunting	\$103,929	\$97	\$0	\$1,667	\$252,993	\$73,454	\$449,670
Mining	\$2,629	\$31,854	\$37,088	\$12,533	\$314,942	-\$13,184	\$414,057
Utilities	\$4,910	\$2,483	\$2,755	\$2,912	\$51,399	\$264,489	\$515,226
Construction	\$2,899	\$4,686	\$4,681	\$175	\$12,340	\$1,187,490	\$1,445,967
Manufacturing	\$79,825	\$30,332	\$14,713	\$308,358	\$1,929,793	\$2,042,406	\$5,654,440
Wholesale trade	\$26,919	\$5,975	\$3,886	\$55,190	\$287,857	\$842,298	\$1,504,702
Retail trade	\$217	\$179	\$299	\$90,467	\$13,441	\$1,361,911	\$1,506,437
Transportation and warehousing	\$15,189	\$9,450	\$19,653	\$24,126	\$151,743	\$400,968	\$1,104,234
Information	\$621	\$561	\$1,230	\$6,182	\$24,943	\$703,148	\$1,298,348
Finance, insurance, real estate, rental, and leasing	\$24,192	\$11,980	\$9,746	\$41,398	\$90,931	\$3,208,192	\$5,668,020
Professional and business services	\$6,804	\$22,317	\$18,751	\$63,241	\$450,987	\$1,105,866	\$4,083,481
Educational services, health care, and social assistance	\$570	\$0	\$117	\$27	\$93	\$2,669,454	\$2,763,236
Arts, entertainment, recreation, accommodation, and food services	\$746	\$718	\$2,538	\$3,518	\$23,230	\$1,056,381	\$1,380,350
Other services, except government	\$1,301	\$438	\$600	\$6,776	\$17,322	\$592,200	\$824,192
Government	\$49	\$6	\$382	\$34	\$5,273	\$2,681,692	\$2,770,568
Scrap, used and secondhand goods	-\$43	-\$18	\$245	\$1,154	\$14,878	-\$24,233	\$10,754
Noncomparable imports and rest-of-the-world adjustment [1]	\$737	\$910	\$807	\$2,681	\$17,114	-\$115,882	\$3,340
Total Value Added	\$175,236	\$327,796	\$284,331	\$732,120	\$2,170,275	\$18,036,648	\$0
Total Industry Output	\$446,731	\$449,761	\$401,824	\$1,352,559	\$5,829,554	\$0	\$31,397,023

Step 1 – Recalibrated I/O table to represent North Carolina input/output relationships.

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Wholesale trade	Retail trade	Total Final Uses (GDP)	Total Commodity Output
Mining	\$239.34	\$0.00	\$0.00	\$0.06	\$1,418.27	\$0.04	\$0.11	\$119.56	\$13,040.43
Utilities	\$0.01	\$0.84	\$1.14	\$0.13	\$82.31	\$0.00	\$0.00	\$0.14	\$414.06
Construction	\$0.42	\$0.11	\$0.13	\$0.15	\$45.81	\$0.24	\$1.78	\$1,212.91	\$13,395.88
Manufacturing	\$0.05	\$0.13	\$0.13	\$0.00	\$0.90	\$0.01	\$0.04	\$8,376.82	\$36,149.13
Wholesale trade	\$17.42	\$2.52	\$0.59	\$260.00	\$10,183.16	\$3.40	\$8.11	\$11,406.31	\$254,449.76
Retail trade	\$4.30	\$0.21	\$0.09	\$18.08	\$491.94	\$7.65	\$4.36	\$4,212.04	\$39,122.28
Transportation and warehousing	\$0.00	\$0.00	\$0.00	\$46.67	\$1.03	\$0.00	\$0.34	\$10,576.08	\$37,660.93
Information	\$1.51	\$0.58	\$2.52	\$3.80	\$150.46	\$21.51	\$37.21	\$1,050.55	\$23,188.91
Finance, insurance, real estate, rental, and leasing	\$0.00	\$0.00	\$0.01	\$0.19	\$3.13	\$1.14	\$2.33	\$2,485.95	\$24,668.54
Professional and business services	\$0.92	\$0.23	\$0.15	\$2.70	\$13.03	\$13.65	\$43.68	\$16,221.87	\$147,368.49
Educational services, health care, and social assistance	\$0.10	\$1.09	\$0.77	\$8.75	\$444.95	\$71.38	\$68.43	\$2,675.38	\$106,170.56
Arts, entertainment, recreation, accommodation, and food services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.40	\$23,037.67	\$71,844.14
Other services, except government	\$0.00	\$0.00	\$0.04	\$0.08	\$3.36	\$0.40	\$0.28	\$6,944.33	\$34,508.75
Government	\$0.02	\$0.00	\$0.00	\$0.48	\$3.13	\$2.55	\$1.67	\$3,654.99	\$20,604.80

Step 2 – Entries represent the percentage of the dollar value of an industry’s output that is used as an input in another industry, with the table’s last column indicating the value of a commodity’s final consumption.

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Wholesale trade	Retail trade	Total Final Uses (GDP)	Total Commodity Output
Agriculture, forestry, fishing, and hunting	0.079	0.000	0.000	0.001	0.193	0.001	0.002	0.056	1.000
Mining	0.002	0.026	0.031	0.010	0.261	0.000	0.000	-0.011	1.000
Utilities	0.003	0.002	0.002	0.002	0.034	0.002	0.007	0.176	1.000
Construction	0.001	0.001	0.001	0.000	0.003	0.000	0.001	0.282	1.000
Manufacturing	0.005	0.002	0.001	0.019	0.117	0.002	0.003	0.124	1.000
Wholesale trade	0.006	0.001	0.001	0.013	0.066	0.008	0.006	0.192	1.000
Retail trade	0.000	0.000	0.000	0.021	0.003	0.000	0.002	0.311	1.000
Transportation and warehousing	0.005	0.003	0.006	0.008	0.047	0.018	0.023	0.125	1.000
Information	0.000	0.000	0.000	0.002	0.007	0.004	0.006	0.186	1.000
Finance, insurance, real estate, rental, and leasing	0.001	0.001	0.001	0.003	0.006	0.006	0.010	0.194	1.000
Professional and business services	0.001	0.002	0.002	0.005	0.038	0.015	0.015	0.093	1.000
Educational services, health care, and social assistance	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.332	1.000
Arts, entertainment, recreation, accommodation, and food services	0.000	0.000	0.001	0.001	0.006	0.002	0.002	0.263	1.000
Other services, except government	0.001	0.000	0.000	0.003	0.007	0.007	0.005	0.247	1.000
Government	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.333	1.000
Scrap, used and secondhand goods	-0.001	-0.001	0.008	0.037	0.475	0.000	0.001	-0.774	1.000
Noncomparable imports and rest-of-the-world adjustment [1]	0.076	0.094	0.083	0.276	1.761	0.379	0.217	-11.924	1.000

Step 3 – Each cell represents the amount of sales tax paid on inter-industry transactions.

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Wholesale trade	Retail trade	Total Final Uses (GDP)	Total Commodity Output
Mining		\$239.34	\$0.00	\$0.00	\$0.06	\$1,418.27	\$0.04	\$0.11	\$119.56
Utilities		\$0.01	\$0.84	\$1.14	\$0.13	\$82.31	\$0.00	\$0.00	\$0.14
Construction		\$0.42	\$0.11	\$0.13	\$0.15	\$45.81	\$0.24	\$1.78	\$1,212.91
Manufacturing		\$0.05	\$0.13	\$0.13	\$0.00	\$0.90	\$0.01	\$0.04	\$8,376.82
Wholesale trade		\$17.42	\$2.52	\$0.59	\$260.00	\$10,183.16	\$3.40	\$8.11	\$11,406.31
Retail trade		\$4.30	\$0.21	\$0.09	\$18.08	\$491.94	\$7.65	\$4.36	\$4,212.04
Transportation and warehousing		\$0.00	\$0.00	\$0.00	\$46.67	\$1.03	\$0.00	\$0.34	\$10,576.08
Information		\$1.51	\$0.58	\$2.52	\$3.80	\$150.46	\$21.51	\$37.21	\$1,050.55
Finance, insurance, real estate, rental, and leasing		\$0.00	\$0.00	\$0.01	\$0.19	\$3.13	\$1.14	\$2.33	\$2,485.95
Professional and business services		\$0.92	\$0.23	\$0.15	\$2.70	\$13.03	\$13.65	\$43.68	\$16,221.87
Educational services, health care, and social assistance		\$0.10	\$1.09	\$0.77	\$8.75	\$444.95	\$71.38	\$68.43	\$2,675.38
Arts, entertainment, recreation, accommodation, and food services		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.40	\$23,037.67
Other services, except government		\$0.00	\$0.00	\$0.04	\$0.08	\$3.36	\$0.40	\$0.28	\$6,944.33
Government		\$0.02	\$0.00	\$0.00	\$0.48	\$3.13	\$2.55	\$1.67	\$3,654.99

Step 4 – Each cell represents the tax exclusive value for each inter-industry transaction.

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Wholesale trade	Retail trade	Total Final Uses (GDP)
Mining		\$239.34	\$0.00	\$0.00	\$0.06	\$1,418.27	\$0.04	\$0.11
Utilities		\$0.01	\$0.84	\$1.14	\$0.13	\$82.31	\$0.00	\$0.00
Construction		\$0.42	\$0.11	\$0.13	\$0.15	\$45.81	\$0.24	\$1.78
Manufacturing		\$0.05	\$0.13	\$0.13	\$0.00	\$0.90	\$0.01	\$0.04
Wholesale trade		\$17.42	\$2.52	\$0.59	\$260.00	\$10,183.16	\$3.40	\$8.11
Retail trade		\$4.30	\$0.21	\$0.09	\$18.08	\$491.94	\$7.65	\$4.36
Transportation and warehousing		\$0.00	\$0.00	\$0.00	\$46.67	\$1.03	\$0.00	\$0.34
Information		\$1.51	\$0.58	\$2.52	\$3.80	\$150.46	\$21.51	\$37.21
Finance, insurance, real estate, rental, and leasing		\$0.00	\$0.00	\$0.01	\$0.19	\$3.13	\$1.14	\$2.33
Professional and business services		\$0.92	\$0.23	\$0.15	\$2.70	\$13.03	\$13.65	\$43.68
Educational services, health care, and social assistance		\$0.10	\$1.09	\$0.77	\$8.75	\$444.95	\$71.38	\$68.43
Arts, entertainment, recreation, accommodation, and food services		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.40
Other services, except government		\$0.00	\$0.00	\$0.04	\$0.08	\$3.36	\$0.40	\$0.28
Government		\$0.02	\$0.00	\$0.00	\$0.48	\$3.13	\$2.55	\$1.67

Step 5 – The cascading rate consumers pay is, therefore, the sum of the utility and telecommunication rates that intersect with the corresponding industry columns.

Name	Agriculture, forestry, fishing, and hunting	Mining	Utilities	Construction	Manufacturing	Wholesale trade	Retail trade
Mining		0.086261167	7.41222E-05	0	0.001275362	0.239632545	0.001052494
Utilities		0.002186337	0.027150393	0.0318	0.0105	0.3538	0.0000
Construction		0.003285083	0.001658582	0.0018	0.0019	0.0355	0.0025
Manufacturing		0.000689329	0.001114719	0.0011	0.0000	0.0029	0.0003
Wholesale trade		0.004874153	0.001846506	0.0009	0.0191	0.1328	0.0021
Retail trade		0.006184786	0.001366214	0.0009	0.0128	0.0704	0.0083
Transportation and warehousing		4.94958E-05	4.0828E-05	0.0001	0.0211	0.0031	0.0002
Information		0.004748579	0.002949089	0.0062	0.0076	0.0496	0.0182
Finance, insurance, real estate, rental, and leasing		0.000164365	0.000148482	0.000326	0.001638649	0.006644628	0.004004271
Professional and business services		0.001468642	0.00072674	0.000591	0.002515807	0.005542673	0.005673918
Educational services, health care, and social assistance		0.000572824	0.001881308	0.00158	0.00534963	0.039443253	0.015432954
Arts, entertainment, recreation, accommodation, and food services		7.08804E-05	0	1.45E-05	3.35726E-06	1.1564E-05	0.000142144
Other services, except government		0.000185724	0.000178752	0.000632	0.000876446	0.005815897	0.002009779
Government		0.000542654	0.000182626	0.00025	0.002832773	0.0072737	0.006561085

Appendix V

Industry ³⁵	Cascading Rate
Retail trade	2.63%
Transportation and warehousing	4.93%
Information	0.70%
Finance, insurance, real estate, rental, and leasing	1.46%
Professional and business services	1.95%
Educational services, health care, and social assistance	0.94%
Arts, entertainment, recreation, accommodation, and food services	0.71%

³⁵ Industries at a Glance: NAICS Code Index.