

GEORGIA STATE UNIVERSITY
ANDREW YOUNG SCHOOL OF POLICY STUDIES
FISCAL RESEARCH CENTER
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SUBJECT: Potential Sales Tax Loss From Exempting Natural Gas, Electricity and Capital Used in Manufacturing From the State Sales Tax

Analysis Prepared by William J. Smith

The task is to estimate the potential sales tax revenue loss to the state from exempting from the state sales tax the purchase of capital, natural gas and electricity used in manufacturing. The data used to produce the following estimates are obtained from the Energy Information Administration, the Georgia Department of Labor and the 1997 Economic Census Geographic Series (Georgia Manufacturing).

Natural Gas Used in Manufacturing

Annual data were obtained from the Energy Information Administration detailing the 5-year trend (1998 to 2002) in Georgia's industrial¹ prices and industrial consumption of natural gas. The method of Ordinary Least Squares (OLS) is used to produce a straight-line estimate of prices and quantities of natural gas used by the industrial sector. Prices and quantities are used to estimate the value of the total sales of natural gas to the manufacturing sector for 2003 through 2005. These estimates are provided in Table 1. Sales tax losses are calculated as 4 percent of the sales.

TABLE 1. GEORGIA'S ESTIMATED SALES AND SALES TAX LOSS FROM EXEMPTING NATURAL GAS USED IN MANUFACTURING FROM THE SALES TAX

Year	Value of Total Sales (est.)	Sales Tax Loss (est.)
2003	\$ 863,883,904	\$ 34,555,356
2004	\$ 915,594,730	\$ 36,623,789
2005	\$ 967,305,556	\$ 38,692,222

Electricity Used in Manufacturing

The Energy Information Administration reports industrial sales price and industrial kilowatt hours used at 5-year intervals for all states. The value of the sales of electricity and the resulting state sales tax loss for 2003 through 2005 are projected using OLS. The estimates are presented in Table 2.

TABLE 2. GEORGIA'S ESTIMATED SALES AND SALES TAX LOSS FROM EXEMPTING ELECTRICITY USED IN MANUFACTURING FROM THE SALES TAX

Year	Value of the Total Sales (est.)	Sales Tax Loss (est.)
2003	\$ 1,382,673,170.73	\$ 55,306,926.83
2004	\$ 1,395,614,634.15	\$ 55,824,585.37
2005	\$ 1,408,556,097.56	\$ 56,342,243.90

Capital Used in Manufacturing

To estimate the potential sales tax loss from exempting the purchase of capital used in manufacturing,² we used the 1997 Economic Census to obtain the value of 1997 purchases of capital used in manufacturing.³ We adjusted this value to account for both inflation and the changes in the size of the industry between 1997 and 2003. The estimate of the size of the industry is based on the employment growth in the manufacturing industry over the period 1990 to 1999 as reported by the Georgia Department of Labor. The average growth rate over the 9-year period was less than 1 percent per year (0.67 percent per year). We assume a fixed capital-to-labor ratio to estimate the growth in capital purchases for 2003 through 2005. We also inflate the cost of the additional purchases to reflect inflation. Table 3 provides the estimates of the state sales tax loss for 2003 through 2005.

TABLE 3: GEORGIA'S ESTIMATED SALES AND SALES TAX LOSS FROM EXEMPTING THE PURCHASE OF CAPITAL USED IN MANUFACTURING FROM THE SALES TAX

Year	Capital Expenditures on Machinery and Equipment New and Used (est.)	Sales Tax Loss (est. gross)
2003	\$ 3,632,125,694	\$ 145,285,028
2004	\$ 3,730,579,143	\$ 149,223,166
2005	\$ 3,829,032,592	\$ 153,161,304

Parts Purchased for Use in Manufacturing

We estimated that the current exemption for parts, which only applies to parts purchases up to \$150,000 by manufacturing firms, would result in a loss of \$20 million. This estimate is based upon the assumption that all firms with 20 or more employees (3,301 in Georgia) are eligible for the full exemption. The proposed exemption would exempt the purchase of all parts purchased for use in manufacturing. Since no data are available that separate out parts purchases from materials purchases, we assume that 5 percent of total materials costs are for parts.⁴ Table 4 provides estimates and projections for both the parts purchases by manufacturers and the sales tax loss from the exemption these purchases. These estimates of parts purchases and the resulting sales tax loss should be regarded as very approximate.

TABLE 4: GEORGIA'S ESTIMATED SALES AND SALES TAX LOSS FROM EXEMPTING THE PURCHASE OF PARTS IN MANUFACTURING FROM THE SALES TAX

Year	Parts Purchases (billions)	Sales Tax Loss
2003	\$ 3.98	\$ 159,200,000
2004	\$ 4.06	\$ 162,200,000
2005	\$ 4.12	\$ 164,800,000

Conclusion

A sales tax exemption for the purchase of natural gas used in manufacturing is estimated to reduce state sales tax revenues by \$38.7 million in 2005. A similar exemption for electricity and capital purchases would reduce revenues by an additional \$56.3 million and \$153 million, respectively. The total exemption of parts is estimated to reduce revenues by \$164 million in total; however, taken together with the current limited exemption for parts, the net effect is expected to be a \$144 million reduction in sales tax revenues. Together, these four exemptions would reduce revenues by \$393 million dollars in 2005. The industrial usage of both natural gas and electricity in Georgia has increased over the past five years along with the average prices associated with these energy sources. However, the growth in manufacturing employment has been almost flat for the past decade and negative more recently. Given these potentially opposite effects, it is difficult to predict whether this projected tax loss will increase or decrease past 2005.

Notes

1. The industrial sector as defined by the Energy Information Administration includes construction, but the expected effect of its inclusion on the accuracy of the estimated sales tax loss is likely to be relatively small in Georgia.
2. Capital Expenditures include the permanent additions and major alterations to manufacturing establishments and machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.
3. This represents capital expenditures for machinery and equipment both new and used.
4. Cost of Materials include costs of parts, components, and containers. This includes all raw materials, semi-finished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.