

**Cracking the Tax Codes:  
How State Tax Laws Influence the  
Number of Manufacturing Jobs within  
Their Borders**

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Political Science Senior Thesis  
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# Where to Locate a Business?

- Factors
  - Taxes
  - Geography
  - Levels of Education
  - Unionization
  - Workforce
  - Infrastructure
  - Economic Climate

# Importance to Me

- Manufacturing Facilities in My Home Region
  - Digikey, Polaris, Arctic Cat, Marvin Windows, Mattracks, Central Boiler
    - Jobs
    - Local Economy
    - Schools

How to Grow and Bring in More Factories?

# Literature Review

- Blair, John P. & Premus, Robert
  - *Major factors in industrial location: a review (Economic Development Quarterly)*
    - 1987 Journal Article contrasting studies concerning where businesses locate between 1960s & 1980s
    - Traditional Location Factors
      - Access to markets, labor, transportation, and raw materials
    - Emerging Location Factors
      - State and local taxes, education, business climate, labor skills, state and local infrastructure

# Literature Review

- Chirinko, Robert S. & Wilson, Daniel J.
  - *State business taxes and investment: state-by-state simulations (Economic Review)*
    - Equipment and Research Tax Credit
    - Research and Development Tax Credit
    - Corporate Income Tax
      - Investment and output

# Literature Review

- Cornia, Gary, Edmister Kelly D., Sjoquist, David L., and Wallace, Sally
  - *The disappearing state corporate income tax (National Tax Journal)*
    - Why has the percentage of state revenue from corporate income taxes decreased?
      - Tax planning
      - Tax Credits
      - Definitions
      - Overall economy

# Literature Review

- Bartik, Timothy J.
  - *Business Location Decisions in the United States: Estimates of the Effects of Unionization, Taxes, and Other Characteristics of States* (*Journal of Business & Economic Statistics*)
  - Unionization
  - Tax rates/incentives
  - Public Spending

# Literature Review

- Harden, William J., and Hoyt, William H.
  - *Do States Choose Their Mix of Taxes to Minimize Employment Losses? (National Tax Journal)*
    - Mixture of taxes
    - Level of employment
    - Effect of neighboring states tax rates
    - Sales, individual income and corporate income
      - Corporate income found to be significant



# Digital Age

- Have Factors Changed in Importance?
  - Access to Markets
  - Increased Mobility

# Hypotheses

In a comparison of the fifty US states, those with lower ***individual income taxes*** draw in more new manufacturing jobs than those with higher individual income taxes.

In a comparison of the fifty US states, those with lower ***corporate income taxes*** draw in more new manufacturing jobs than those with higher corporate income taxes.

# Hypotheses

In a comparison of the fifty US states, those with lower ***sales taxes*** draw in more new manufacturing jobs than those with higher sales taxes.

# Database

- Census Bureau
  - Total State Taxes 2001-2011
  - Sales Tax
  - Individual Income Tax
  - Corporate Tax
  - Population

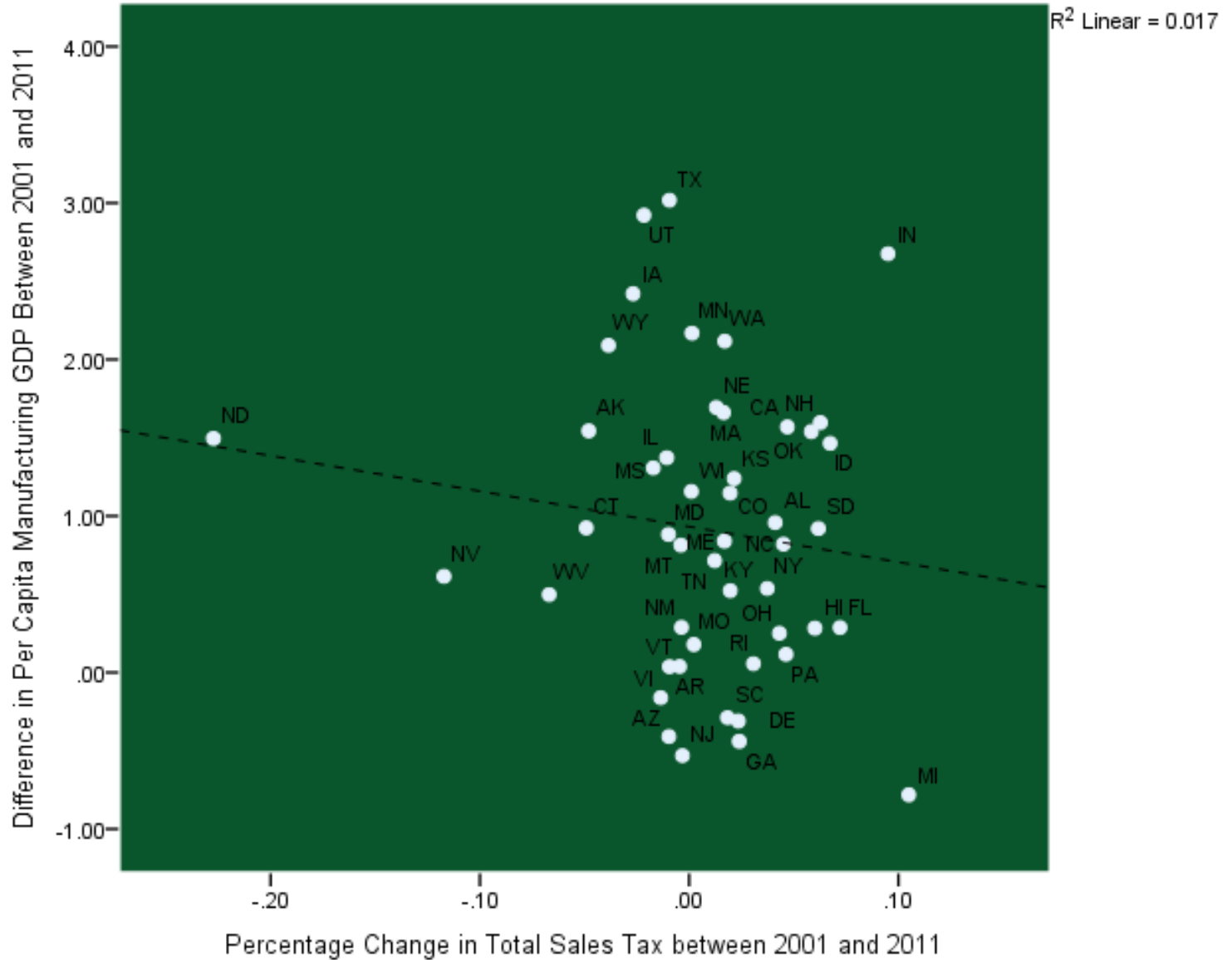
# Database

- Bureau of Economic Analysis
  - Total GDP 2001-2011
  - Manufacturing GDP 2001-2011
  - Manufacturing GDP by Subset 2001-2011

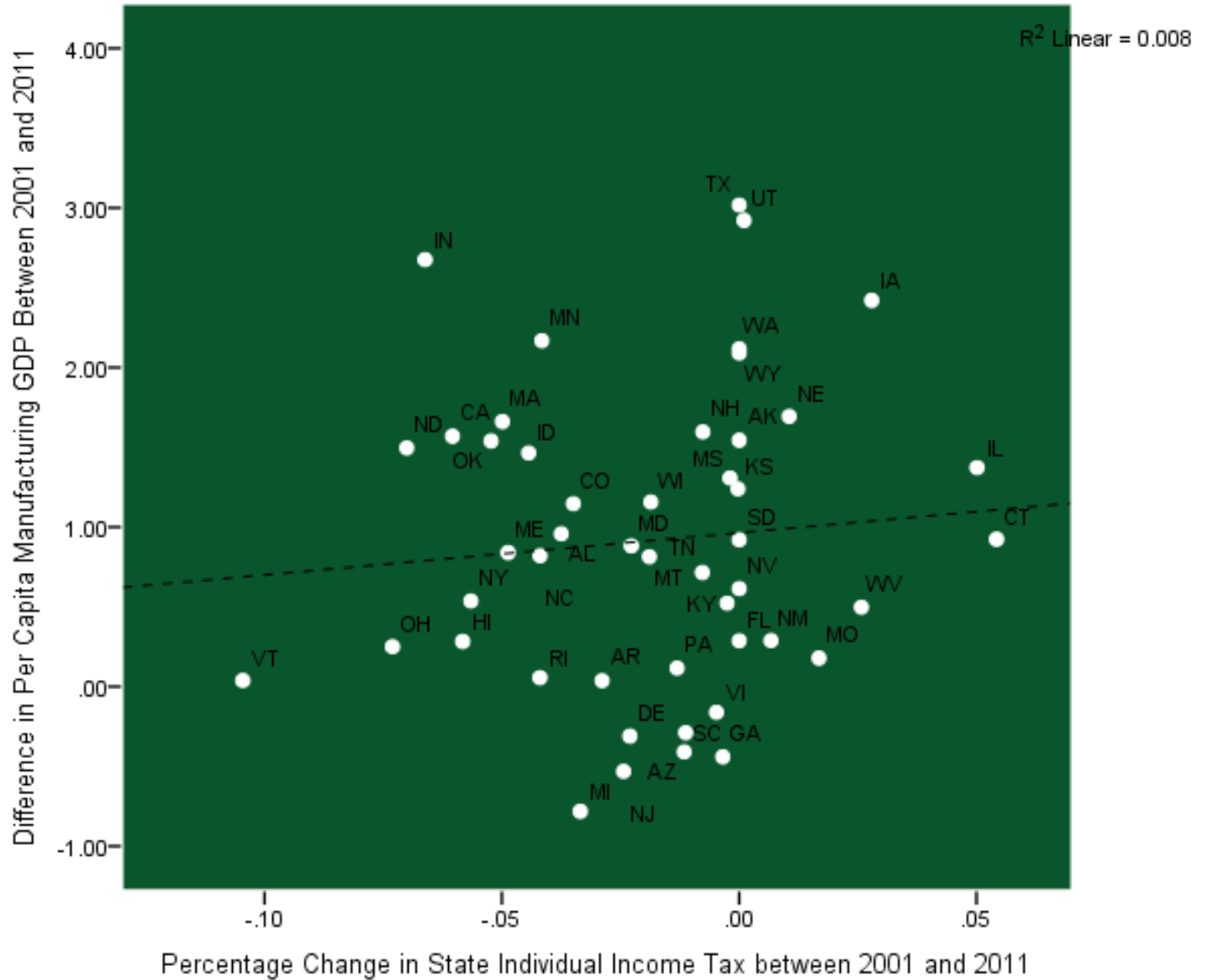
# Types of Analysis

- Scatterplots
  - Overall Visual Demonstration
- Correlations
  - Statistical Significance
- Regressions
  - Measure of Cause and Effect

# Scatterplot

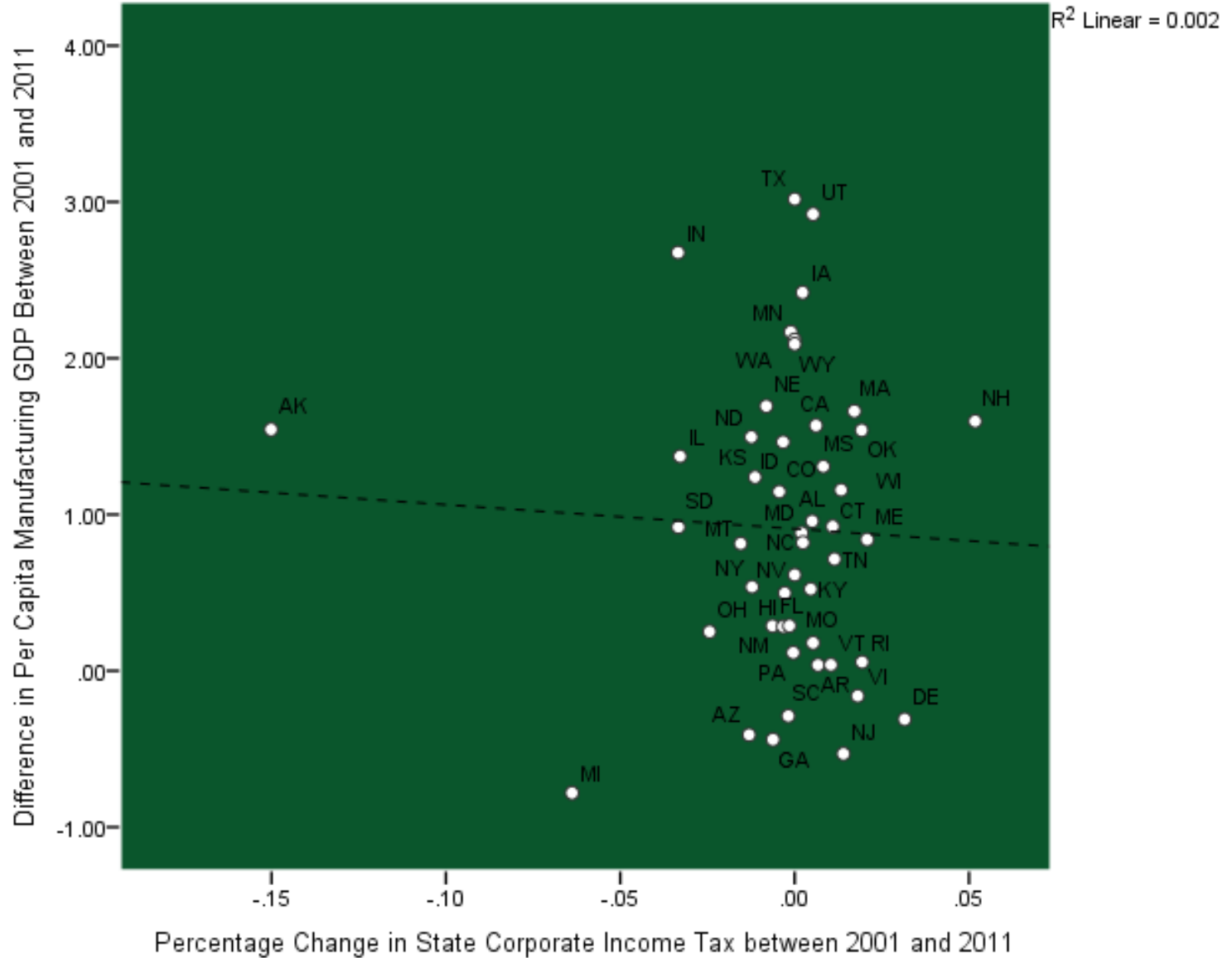


# Scatterplot





# Scatterplot



# Correlations

- Sales Tax
  - Statistically insignificant
    - Pearson's Coefficient  $-.036$
    - P value  $.806$

# Correlations

- Individual Income Tax
  - Statistically Insignificant
    - Pearson's Coefficient .039
    - P Value .787

# Correlations

- Corporate Income Tax
  - Statistically Insignificant
    - Pearson's Coefficient  $-.050$
    - P Value  $.730$

## Table 1

Correlation Coefficients with Change in Manufacturing GDP Per Capita as Dependent Variable

| Economic Variables  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2011       | -.036       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2011 | .039        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2011  | -.050       |
| Unemployment rate within state  | .289*       |
| Federal defense expenditures per capita within state                          | -.156       |
| Demographic Variables   | Coefficient |
| Percent of state population 18-24 years old                                   | .272*       |
| Percent of state population age 65 and older                                  | -.162       |
| Percent of the state's mass public identifying as conservative                | .167        |
| Percent of state population with high school degree or higher                 | -.232       |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

# Regressions

- Sales Tax
  - Statistically Insignificant
    - Regression Coefficient -2.250
    - Beta Coefficient -.059

# Regressions

- Individual Income Tax
  - Statistically Insignificant
    - Regression Coefficient 1.279
    - Beta Coefficient .021

# Regressions

- Corporate Income Tax
  - Statistically Insignificant
    - Regression Coefficient 13.046
    - Beta Coefficient .181

Most Influential Tax



**Table 2**

Regression Results with Change in Manufacturing GDP Per Capita as Dependent Variable

| Economic Variables  | Regression Coefficient | Beta Coefficient |
|---|------------------------|------------------|
| Percentage change in <i>total sales tax</i> 2001 and 2011       | -2.250                 | -.059            |
| Percentage change in <i>individual income tax</i> 2001 and 2011 | 1.279                  | .021             |
| Percentage change in <i>corporate income tax</i> 2001 and 2011  | 13.046                 | .181             |
| Unemployment rate within state                                  | .670*                  | .337*            |
| Federal defense expenditures per capita within state            | .000                   | -.123            |
| Demographic Variables   | Regression Coefficient | Beta Coefficient |
| Percent of state population 18-24 years old                     | .698                   | .284             |
| Percent of state population age 65 and older                    | -.092                  | -.080            |
| Percent of the mass public conservative                         | -.007                  | -.019            |
| Percent of population with high school degree or higher         | -.006                  | -.011            |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

Constant -7.140

# Manufacturing Subsets

- Apparel, Leather and Applied Products
- Chemical
- Computer and Electronic Products
- Electronic Equipment, Appliances, and Components
- Furniture and Related Products
- Machinery

# Manufacturing Subsets

- Motor Vehicle Body, Trailer and Parts
- Miscellaneous Manufacturing
- Other Transportation Equipment
- Paper
- Plastics and Rubber
- Printing and Related Support
- Textile

# Results

- Correlations

- Total Sales Tax not significant
- Corporate Income Tax significant for Paper and Apparel, Leather and Applied Products
- Individual Income Tax significant for Computers and Electronic Products
- Unemployment Rate significant for Computers and Electronic Products, Plastics and Rubber, Machinery, and Textile
- Percent of population 18-24 significant for Machinery, Furniture, Apparel, Leather and Applied Products, & Printing

# Results

- Regressions
  - Total Sales Tax not significant
  - Individual Income Tax significant for Furniture
  - Corporate Income Tax significant for Apparel, Leather and Applied Products & Paper
  - Unemployment significant for Computer and Electronic Products, Machinery, Miscellaneous Manufacturing, and Textile Manufacturing
  - Percentage of Population 18-24 significant for Furniture, Miscellaneous Manufacturing, Apparel, Leather, and Applied Products & Printing and Related Support

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# Questions

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**Table 3**

Correlation Coefficients with Change in Manufacturing GDP Per Capita as Dependent Variable  
by Manufacturing Subset

| <b>Computer and Electronic Product</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | .111        |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | -.278*      |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | .144        |
| Unemployment rate within state  | .306**      |
| Percent of state population 18-24 years old                                   | -.123       |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Plastics and Rubber</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.159       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .052        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | .010        |
| Unemployment rate within state  | -.284**     |
| Percent of state population 18-24 years old                                   | .211        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Machinery</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.179       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .191        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.026       |
| Unemployment rate within state  | -.257*      |
| Percent of state population 18-24 years old                                   | .376***     |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Electronic Equipment, Appliances and Components</b>                        | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.103       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | -.057       |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.204       |
| Unemployment rate within state  | .088        |
| Percent of state population 18-24 years old                                   | .017        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Motor Vehicle Body, Trailer and Parts</b>                                  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.224       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .142        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | .168        |
| Unemployment rate within state  | -.141       |
| Percent of state population 18-24 years old                                   | .074        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Other Transportation Equipment</b>   | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.021       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .040        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | .011        |
| Unemployment rate within state  | .001        |
| Percent of state population 18-24 years old                                   | -.018       |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Furniture and Related Products</b>   | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.120       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .217        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.087       |
| Unemployment rate within state  | -.089       |
| Percent of state population 18-24 years old                                   | .007***     |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Miscellaneous Manufacturing</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.128       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | -.019       |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.033       |
| Unemployment rate within state  | -.206       |
| Percent of state population 18-24 years old                                   | -.158       |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Textile</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.133       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .070        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.109       |
| Unemployment rate within state  | -.240*      |
| Percent of state population 18-24 years old                                   | .132        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Apparel, Leather and Applied Products</b>                                  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.125       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | -.097       |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.302       |
| Unemployment rate within state  | .038        |
| Percent of state population 18-24 years old                                   | .262        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Paper</b>  | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.039       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .026        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.039*      |
| Unemployment rate within state  | .138        |
| Percent of state population 18-24 years old                                   | .192        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Printing and Related Support</b>   | Coefficient |
|---|-------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | -.066       |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .195        |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.190       |
| Unemployment rate within state  | .013**      |
| Percent of state population 18-24 years old                                   | .319        |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

| <b>Chemical</b>   | <b>Coefficient</b> |
|---|--------------------|
| Percentage change in state <i>total sales tax</i> between 2001 and 2010       | .011               |
| Percentage change in state <i>individual income tax</i> between 2001 and 2010 | .066               |
| Percentage change in state <i>corporate income tax</i> between 2001 and 2010  | -.179              |
| Unemployment rate within state  | .172               |
| Percent of state population 18-24 years old                                   | .231               |

\*sig at .10, \*\* sig at .05, \*\*\* sig at .01

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | 3.468                       | 10.735     |                           | .323   | .749 |
| Percent workers who are union members (2007)                                 | -.033                       | .078       | -.085                     | -.421  | .676 |
| Percent of pop w/college or higher   | .148                        | .130       | .316                      | 1.144  | .260 |
| Percent of pop w/HS or higher  | -.138                       | .136       | -.253                     | -1.013 | .318 |
| Percent urban population   | -.020                       | .028       | -.139                     | -.708  | .483 |
| Unemployment rate  | 1.138                       | .398       | .540                      | 2.855  | .007 |
| Percent mass public Conservative   | -.155                       | .099       | -.389                     | -1.568 | .126 |
| Percent mass public Republican   | .091                        | .062       | .275                      | 1.456  | .154 |
| 1 Federal defense expenditures per capita                                    | .000                        | .000       | -.089                     | -.557  | .581 |
| Percent age 18-24 (2004)   | -.139                       | .444       | -.053                     | -.313  | .756 |
| Percent age 65 and older   | .103                        | .223       | .084                      | .462   | .647 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | 18.497                      | 14.682     | .242                      | 1.260  | .216 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | -15.302                     | 9.468      | -.235                     | -1.616 | .115 |
| The percentage change in state total sales taxes between 2001 and 2011       | -4.878                      | 5.898      | -.121                     | -.827  | .414 |

a. Dependent Variable: Difference between the per capita real GDP between 2001 and 2010 for Computer and Electronic Product



| Coefficients <sup>a</sup>  |                             |            |                           |        |      |
|--|-----------------------------|------------|---------------------------|--------|------|
| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.046                       | .289       |                           | -.160  | .873 |
| Percent workers who are union members (2007)                                 | .004                        | .002       | .431                      | 1.929  | .062 |
| Percent of pop w/college or higher   | .004                        | .003       | .369                      | 1.214  | .233 |
| Percent of pop w/HS or higher  | -.003                       | .004       | -.258                     | -.938  | .354 |
| Percent urban population   | -.001                       | .001       | -.265                     | -1.224 | .229 |
| Unemployment rate  | -.018                       | .011       | -.345                     | -1.652 | .107 |
| Percent mass public Conservative   | 8.681E-006                  | .003       | .001                      | .003   | .997 |
| Percent mass public Republican   | 5.912E-005                  | .002       | .007                      | .035   | .972 |
| 1 Federal defense expenditures per capita                                    | -5.968E-006                 | .000       | -.098                     | -.551  | .585 |
| Percent age 18-24 (2004)   | .019                        | .012       | .303                      | 1.611  | .116 |
| Percent age 65 and older   | .003                        | .006       | .100                      | .497   | .622 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | .034                        | .395       | .018                      | .087   | .931 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | .304                        | .255       | .191                      | 1.192  | .241 |
| The percentage change in state total sales taxes between 2001 and 2011       | .013                        | .159       | .013                      | .079   | .937 |

a. Dependent Variable: Difference Between the Per Capita Real GDP of the Plastics and Rubber Subset for 2001 and 2010

| Coefficients <sup>a</sup>  |                             |            |                           |        |      |
|--|-----------------------------|------------|---------------------------|--------|------|
| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.330                       | .918       |                           | -.360  | .721 |
| Percent workers who are union members (2007)                                 | .002                        | .007       | .052                      | .249   | .805 |
| Percent of pop w/college or higher   | .012                        | .011       | .301                      | 1.055  | .298 |
| Percent of pop w/HS or higher  | -.009                       | .012       | -.206                     | -.797  | .431 |
| Percent urban population   | 4.869E-005                  | .002       | .004                      | .020   | .984 |
| Unemployment rate  | -.076                       | .034       | -.440                     | -2.244 | .031 |
| Percent mass public Conservative   | .013                        | .008       | .403                      | 1.568  | .126 |
| Percent mass public Republican   | -.006                       | .005       | -.206                     | -1.051 | .300 |
| 1 Federal defense expenditures per capita                                    | -5.949E-005                 | .000       | -.288                     | -1.731 | .092 |
| Percent age 18-24 (2004)   | .059                        | .038       | .277                      | 1.569  | .125 |
| Percent age 65 and older   | .016                        | .019       | .158                      | .835   | .409 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -1.325                      | 1.255      | -.210                     | -1.056 | .298 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | 1.051                       | .809       | .196                      | 1.298  | .202 |
| The percentage change in state total sales taxes between 2001 and 2011       | .123                        | .504       | .037                      | .244   | .808 |

a. Dependent Variable: Difference between the machinery subset for 2001 and 2010

**Coefficients<sup>a</sup>**

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.037                       | .348       |                           | -1.107 | .915 |
| Percent workers who are union members (2007)                                 | .000                        | .003       | -.009                     | -.040  | .968 |
| Percent of pop w/college or higher   | .001                        | .004       | .094                      | .304   | .763 |
| Percent of pop w/HS or higher  | .000                        | .004       | .021                      | .076   | .940 |
| Percent urban population   | -.001                       | .001       | -.154                     | -.698  | .490 |
| Unemployment rate  | .014                        | .013       | .227                      | 1.068  | .293 |
| Percent mass public Conservative   | -.003                       | .003       | -.259                     | -.928  | .359 |
| Percent mass public Republican   | .005                        | .002       | .544                      | 2.562  | .015 |
| 1 Federal defense expenditures per capita                                    | 1.252E-005                  | .000       | .174                      | .962   | .343 |
| Percent age 18-24 (2004)   | -.012                       | .014       | -.163                     | -.852  | .400 |
| Percent age 65 and older   | -.001                       | .007       | -.041                     | -.198  | .844 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -.150                       | .476       | -.068                     | -.315  | .755 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | -.228                       | .307       | -.122                     | -.745  | .461 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.228                       | .191       | -.196                     | -1.193 | .241 |

a. Dependent Variable: Difference Between Electronic Equipment, Appliance and Component 2001 and 2010

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | .656                        | 1.144      |                           | .573   | .570 |
| Percent workers who are union members (2007)                                 | .005                        | .008       | .147                      | .652   | .519 |
| Percent of pop w/college or higher   | .021                        | .014       | .470                      | 1.524  | .136 |
| Percent of pop w/HS or higher  | -.024                       | .014       | -.459                     | -1.643 | .109 |
| Percent urban population   | -.005                       | .003       | -.352                     | -1.601 | .118 |
| Unemployment rate  | .006                        | .042       | .027                      | .130   | .897 |
| Percent mass public Conservative   | -.004                       | .011       | -.095                     | -.342  | .735 |
| Percent mass public Republican   | .007                        | .007       | .221                      | 1.045  | .303 |
| 1 Federal defense expenditures per capita                                    | 4.441E-005                  | .000       | .186                      | 1.036  | .307 |
| Percent age 18-24 (2004)   | -.002                       | .047       | -.009                     | -.049  | .961 |
| Percent age 65 and older   | .017                        | .024       | .149                      | .731   | .470 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | 1.756                       | 1.565      | .240                      | 1.122  | .269 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | 1.137                       | 1.009      | .183                      | 1.127  | .267 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.593                       | .629       | -.154                     | -.943  | .352 |

a. Dependent Variable: Difference Between Motor Vehicle Body, Trailer and Parts

| Coefficients <sup>a</sup> |  |             |                           |       |        |      |
|---------------------------|--|-------------|---------------------------|-------|--------|------|
| Model                     | Unstandardized Coefficients  |             | Standardized Coefficients | t     | Sig.   |      |
|                           | B  | Std. Error  | Beta                      |       |        |      |
| 1                         | (Constant)   | .833        | .983                      |       | .847   | .402 |
|                           | Percent workers who are union members (2007)                                 | .008        | .007                      | .277  | 1.157  | .255 |
|                           | Percent of pop w/college or higher   | -.005       | .012                      | -.133 | -.407  | .686 |
|                           | Percent of pop w/HS or higher  | -.002       | .012                      | -.043 | -.145  | .885 |
|                           | Percent urban population   | -.002       | .003                      | -.148 | -.635  | .529 |
|                           | Unemployment rate  | -.034       | .036                      | -.208 | -.927  | .360 |
|                           | Percent mass public Conservative   | .008        | .009                      | .256  | .872   | .389 |
|                           | Percent mass public Republican   | -.008       | .006                      | -.333 | -1.486 | .146 |
|                           | Federal defense expenditures per capita                                      | -1.930E-005 | .000                      | -.100 | -.524  | .603 |
|                           | Percent age 18-24 (2004)   | -.010       | .041                      | -.051 | -.251  | .803 |
|                           | Percent age 65 and older   | -.027       | .020                      | -.283 | -1.306 | .200 |
|                           | The percentage change in state Corporate Income taxes between 2001 and 2011  | .607        | 1.344                     | .103  | .452   | .654 |
|                           | The percentage change in state Individual Income taxes between 2001 and 2011 | .435        | .867                      | .086  | .502   | .619 |
|                           | The percentage change in state total sales taxes between 2001 and 2011       | .205        | .540                      | .066  | .379   | .707 |

a. Dependent Variable: Difference between other Transportation Equipment 2001 and 2010

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|--|-----------------------------|------------|---------------------------|-------|------|
|  | B                           | Std. Error | Beta                      |       |      |
|  | (Constant)                  | -.399      | .167                      |       |      |
| Percent workers who are union members (2007)                                 | .002                        | .001       | .295                      | 1.495 | .144 |
| Percent of pop w/college or higher   | .002                        | .002       | .224                      | .830  | .412 |
| Percent of pop w/HS or higher  | .000                        | .002       | -.026                     | -.106 | .916 |
| Percent urban population   | .000                        | .000       | .211                      | 1.101 | .278 |
| Unemployment rate  | -.003                       | .006       | -.097                     | -.526 | .602 |
| Percent mass public Conservative   | -5.176E-005                 | .002       | -.008                     | -.034 | .973 |
| Percent mass public Republican   | 5.173E-005                  | .001       | .010                      | .053  | .958 |
| Federal defense expenditures per capita                                      | -4.458E-006                 | .000       | -.112                     | -.713 | .480 |
| Percent age 18-24 (2004)   | .027                        | .007       | .643                      | 3.867 | .000 |
| Percent age 65 and older   | .004                        | .003       | .210                      | 1.176 | .248 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | .031                        | .228       | .025                      | .136  | .893 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | .304                        | .147       | .293                      | 2.064 | .046 |
| The percentage change in state total sales taxes between 2001 and 2011       | .022                        | .092       | .035                      | .244  | .808 |

a. Dependent Variable: Difference Between Furniture 2001 and 2010

| Coefficients <sup>a</sup>  |                             |            |                           |        |      |
|--|-----------------------------|------------|---------------------------|--------|------|
| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | 1.210                       | .571       |                           | 2.120  | .041 |
| Percent workers who are union members (2007)                                 | .004                        | .004       | .190                      | .975   | .336 |
| Percent of pop w/college or higher   | -.007                       | .007       | -.279                     | -1.050 | .301 |
| Percent of pop w/HS or higher  | .000                        | .007       | -.006                     | -.026  | .979 |
| Percent urban population   | .001                        | .001       | .140                      | .740   | .464 |
| Unemployment rate  | -.051                       | .021       | -.434                     | -2.387 | .022 |
| Percent mass public Conservative   | -.003                       | .005       | -.158                     | -.661  | .513 |
| Percent mass public Republican   | .006                        | .003       | .317                      | 1.741  | .090 |
| 1 Federal defense expenditures per capita                                    | -4.863E-005                 | .000       | -.351                     | -2.274 | .029 |
| Percent age 18-24 (2004)   | -.049                       | .024       | -.339                     | -2.068 | .046 |
| Percent age 65 and older   | -.026                       | .012       | -.382                     | -2.171 | .037 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -.422                       | .781       | -.100                     | -.540  | .592 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | -.290                       | .504       | -.080                     | -.575  | .569 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.387                       | .314       | -.173                     | -1.234 | .225 |

a. Dependent Variable: Difference Between Miscellaneous Manufacturing 2001 and 2010

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.175                       | .520       |                           | -.335  | .739 |
| Percent workers who are union members (2007)                                 | .006                        | .004       | .354                      | 1.610  | .116 |
| Percent of pop w/college or higher   | -.002                       | .006       | -.105                     | -.349  | .729 |
| Percent of pop w/HS or higher  | .000                        | .007       | .005                      | .018   | .986 |
| Percent urban population   | .001                        | .001       | .149                      | .699   | .489 |
| Unemployment rate  | -.037                       | .019       | -.396                     | -1.926 | .062 |
| Percent mass public Conservative   | -.002                       | .005       | -.121                     | -.449  | .656 |
| Percent mass public Republican   | .000                        | .003       | .017                      | .082   | .935 |
| 1 Federal defense expenditures per capita                                    | -1.230E-005                 | .000       | -.110                     | -.631  | .532 |
| Percent age 18-24 (2004)   | .033                        | .021       | .283                      | 1.530  | .135 |
| Percent age 65 and older   | .000                        | .011       | -.005                     | -.024  | .981 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -.371                       | .711       | -.109                     | -.521  | .605 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | .353                        | .459       | .122                      | .770   | .446 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.028                       | .286       | -.016                     | -.098  | .923 |

a. Dependent Variable: DifbtwTextile01and10



**Coefficients<sup>a</sup>**

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.183                       | .135       |                           | -1.359 | .183 |
| Percent workers who are union members (2007)                                 | .000                        | .001       | .039                      | .190   | .851 |
| Percent of pop w/college or higher   | .000                        | .002       | -.062                     | -.220  | .827 |
| Percent of pop w/HS or higher  | .000                        | .002       | -.026                     | -.103  | .918 |
| Percent urban population   | .000                        | .000       | .274                      | 1.374  | .178 |
| Unemployment rate  | .000                        | .005       | -.017                     | -.086  | .932 |
| Percent mass public Conservative   | -.002                       | .001       | -.348                     | -1.380 | .176 |
| Percent mass public Republican   | .000                        | .001       | .076                      | .396   | .694 |
| 1 Federal defense expenditures per capita                                    | -2.931E-006                 | .000       | -.095                     | -.582  | .564 |
| Percent age 18-24 (2004)   | .014                        | .006       | .435                      | 2.511  | .017 |
| Percent age 65 and older   | .004                        | .003       | .294                      | 1.582  | .122 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -.341                       | .184       | -.361                     | -1.851 | .072 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | -.093                       | .119       | -.116                     | -.786  | .437 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.069                       | .074       | -.138                     | -.927  | .360 |

a. Dependent Variable: DifbtwApparelLeatherandappliedproducts01and10

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | .026                        | .450       |                           | .058   | .954 |
| Percent workers who are union members (2007)                                 | -.003                       | .003       | -.222                     | -1.037 | .307 |
| Percent of pop w/college or higher   | .000                        | .005       | .022                      | .075   | .941 |
| Percent of pop w/HS or higher  | -.007                       | .006       | -.327                     | -1.243 | .222 |
| Percent urban population   | .002                        | .001       | .429                      | 2.069  | .046 |
| Unemployment rate  | -.011                       | .017       | -.127                     | -.636  | .529 |
| Percent mass public Conservative   | .000                        | .004       | .010                      | .037   | .971 |
| Percent mass public Republican   | -.003                       | .003       | -.202                     | -1.015 | .317 |
| 1 Federal defense expenditures per capita                                    | -1.208E-005                 | .000       | -.122                     | -.717  | .478 |
| Percent age 18-24 (2004)   | .016                        | .019       | .159                      | .886   | .382 |
| Percent age 65 and older   | .012                        | .009       | .254                      | 1.319  | .196 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -1.480                      | .615       | -.487                     | -2.406 | .021 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | -.206                       | .397       | -.080                     | -.519  | .607 |
| The percentage change in state total sales taxes between 2001 and 2011       | -.030                       | .247       | -.019                     | -.121  | .904 |

a. Dependent Variable: Difbtwpaper01and10

Coefficients<sup>a</sup>

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | -.290                       | .142       |                           | -2.045 | .048 |
| Percent workers who are union members (2007)                                 | .000                        | .001       | .029                      | .142   | .888 |
| Percent of pop w/college or higher   | -.001                       | .002       | -.161                     | -.576  | .568 |
| Percent of pop w/HS or higher  | .001                        | .002       | .117                      | .460   | .648 |
| Percent urban population   | .000                        | .000       | .080                      | .401   | .691 |
| Unemployment rate  | .001                        | .005       | .045                      | .236   | .814 |
| Percent mass public Conservative   | .001                        | .001       | .174                      | .691   | .494 |
| Percent mass public Republican   | .000                        | .001       | .104                      | .543   | .590 |
| 1 Federal defense expenditures per capita                                    | 1.919E-006                  | .000       | .059                      | .361   | .720 |
| Percent age 18-24 (2004)   | .010                        | .006       | .295                      | 1.707  | .096 |
| Percent age 65 and older   | .007                        | .003       | .428                      | 2.307  | .027 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -.169                       | .194       | -.169                     | -.868  | .391 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | .116                        | .125       | .137                      | .930   | .359 |
| The percentage change in state total sales taxes between 2001 and 2011       | .017                        | .078       | .033                      | .224   | .824 |

a. Dependent Variable: Difbtwprinting01and10

**Coefficients<sup>a</sup>**

| Model  | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
|  | B                           | Std. Error | Beta                      |        |      |
| (Constant)   | 1.276                       | 1.774      |                           | .719   | .477 |
| Percent workers who are union members (2007)                                 | -.011                       | .013       | -.186                     | -.824  | .415 |
| Percent of pop w/college or higher   | .020                        | .021       | .283                      | .920   | .364 |
| Percent of pop w/HS or higher  | -.033                       | .022       | -.404                     | -1.451 | .156 |
| Percent urban population   | .000                        | .005       | .010                      | .047   | .963 |
| Unemployment rate  | -.036                       | .066       | -.115                     | -.546  | .589 |
| Percent mass public Conservative   | .018                        | .016       | .311                      | 1.125  | .268 |
| Percent mass public Republican   | -.022                       | .010       | -.459                     | -2.179 | .036 |
| 1 Federal defense expenditures per capita                                    | -4.340E-005                 | .000       | -.117                     | -.653  | .518 |
| Percent age 18-24 (2004)   | .036                        | .073       | .092                      | .487   | .629 |
| Percent age 65 and older   | .007                        | .037       | .039                      | .191   | .849 |
| The percentage change in state Corporate Income taxes between 2001 and 2011  | -3.631                      | 2.427      | -.320                     | -1.496 | .143 |
| The percentage change in state Individual Income taxes between 2001 and 2011 | .377                        | 1.565      | .039                      | .241   | .811 |
| The percentage change in state total sales taxes between 2001 and 2011       | .703                        | .975       | .117                      | .721   | .476 |

a. Dependent Variable: Difbtwchemical01and10