Volatility of Major Washington State Taxes

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Introduction

• Objective
  – To present results of volatility measures of major tax bases of Washington State

• Stability of Tax System
  – estimated for the Washington Tax Structure Study (December, 2002).

• Measure of stability
Stability of Tax System

- A stable tax system provides sufficient revenues to meet state expenditure requirements notwithstanding fluctuations of the economy over the business cycle.

- Less sensitive to fluctuations of the economy over the business cycle.

Measure of Stability

- Short-run elasticity (SRE)
## Washington General Revenues, FY2000 (State and Local)

- **Taxes** 56.1%
- **Federal Grants** 17.4%
- **Charges for Services** 17.4%
- **Other** 5.3%
- **Interest** 3.8%
  - **Washington State and Local Taxes (56.1%)**
    - **General Sales Taxes** 47.6%
    - **Property Taxes** 29.3%
    - **Selective Sales Taxes** 13.7%
    - **Other** 9.4%

## Data

- **Constant base, constant rate**
  - Retail sales and use tax base
  - Business and Occupation base
  - Public utility base
  - Personal property tax base
- **Measure of the economy**
  - Washington State personal income
- **Data series 1970-2000**
- **Alternative tax system**
Data contd.

- Stationarity of data series
  - Tendency to return to mean value over time - or not
  - Trend stationary or difference stationary?

Non-stationary Data Series

Untransformed Data Series

- PersInc
- TB&O
- TPubUtil
- TSU
- Property
- AllTaxes
De-trended Data Series
Deviations from Regression Line

Year to Year Changes in Personal Income
Relative to Retail Sales and Use Tax Base
The Econometric Model

• Standard Model
  – \( \ln(B_t) = \_ + \ln(Y_t) + \_t \)
  – Where \( B_t \) = the level of the tax base in period \( t \)
  – \( Y_t \) = the level of personal income in period \( t \)
  – \( t = 1970…..2000 \)

• Model in change form or difference form:
  – \( \_\ln(B_t) = \_ + \_\ln(Y_t) + \_t \)

Results

• A tax system with normal stability has a SRE equal to one. It tracks the economy over the business cycle.

• A more stable tax system has a SRE that is less than one and is less susceptible to fiscal crises.

• A tax system with a SRE of greater than one has a volatile tax system, subject to fiscal crises. In periods of economic expansion tax revenues grow faster than the economy; in times of recession tax revenues shrink faster than the economy.
## Short-Run Elasticity Estimates

<table>
<thead>
<tr>
<th>Tax Base</th>
<th>Short-Run Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales and Use</td>
<td>1.4</td>
</tr>
<tr>
<td>B&amp;O</td>
<td>1.4</td>
</tr>
<tr>
<td>Property</td>
<td>0.2</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>-0.2</td>
</tr>
<tr>
<td>All Taxes</td>
<td>1.2</td>
</tr>
</tbody>
</table>


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<tr>
<th>Tax Base</th>
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<tbody>
<tr>
<td>-Flat personal income tax</td>
<td>2.0</td>
</tr>
<tr>
<td>-Combination 2.3% personal income tax and 3.5% retail sales with food in the base</td>
<td>1.2</td>
</tr>
<tr>
<td>-Combination 2.6% personal income tax and 3.5% retail sales tax with food exempted</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Conclusions

- Overall SRE for major tax bases is 1.2. The current mix of major taxes for Washington State are volatile. With both the sales and use and B&O tax bases being relatively elastic short-run elasticities.

- While personal property and public utilities have inelastic measures of 0.2 and -0.2 and are therefore stable – that’s not enough to offset volatile sales and use and B&O income elasticities.

- Alternative tax system does not mitigate the volatility problem.

Questions