Tax Volatility and Progressivity

An Economist’s Approach
What is tax revenue volatility?

“The volatility of tax revenue refers to the relationship of state tax revenues to the state’s business cycle — that is, the cyclicality of revenues.”

- R. Alison Felix,
  Federal Reserve Bank of Kansas City (2008)
Tax Revenue Volatility: Concepts

- Volatility is usually measured in the short-term.
- It compares the change in the growth rate of revenue relative to the growth rate of the relevant tax base (or personal income).
- It’s a ratio. When the result is greater than 1, the tax revenue is said to be more “volatile” than the tax base. When the result is less than 1, the revenue is considered less volatile (i.e., more stable).
- Volatility is like golf: you want a low score.
## Ranking Taxes by Volatility

<table>
<thead>
<tr>
<th>Tax Type</th>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales tax</td>
<td>1.24</td>
</tr>
<tr>
<td>Personal income tax</td>
<td>2.58</td>
</tr>
<tr>
<td>Corporate income tax</td>
<td>2.61</td>
</tr>
</tbody>
</table>

**Timeframe: 1965-2007**  
**Source:** Federal Reserve Bank of Kansas City (2008)
## Ranking States by Income Tax Volatility

<table>
<thead>
<tr>
<th>State</th>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>1.17</td>
</tr>
<tr>
<td>Utah</td>
<td>1.41</td>
</tr>
<tr>
<td>Arizona</td>
<td>1.55</td>
</tr>
<tr>
<td>National average</td>
<td>1.76</td>
</tr>
<tr>
<td>California</td>
<td>1.82</td>
</tr>
<tr>
<td>New Mexico</td>
<td>3.11</td>
</tr>
</tbody>
</table>

Source: Berry, Fox, and Tuttle (2006)
What influences tax revenue volatility?

Traditionally, it is believed that structure and health of state economy – the industry mix and the performance of industries within a state – were a big factor.

However, Rutgers University study in 2011 concluded that when tax structure is taken into account, revenue volatility was more strongly associated with tax provisions (what is taxed, what is exempt, what are the rates, etc.)
Tax structure influences volatility

Federal Reserve Bank of Kansas City study in 2008 concluded:

“[T]ax bases exhibiting rapid growth were also often the most unstable.”

“[Tax] structures that are more progressive and not indexed for inflation will experience faster growth and more volatility in revenues.”
Flat tax systems may be less volatile

The same Federal Reserve Bank study analyzed Colorado (which has had a flat tax since 1987).

“The long-run and short-run elasticities for Colorado show that its personal income tax revenues have grown more slowly than in other states and are also less volatile.”
Progressivity

Two forms:

• Progressivity of collections/payments: Higher income levels pay larger percentage of the total revenue pie.

• Progressivity of rates: Higher income levels have a higher statutory tax rate.

Note: “Flat taxes” can be progressive when a “zero bracket” and exemptions are present.
Progressivity can inhibit economic growth

University of Colorado economics professor Barry Poulson concluded in a 2008 study:

“States with more regressive tax systems achieved higher rates of economic growth. States with more progressive tax systems — that generated greater growth rates in revenue than in income — were at a disadvantage in economic growth.”

Note: “Progressive” here means that income tax revenues grow faster than personal income.