Taxation of Cigarettes in KY: Post-Hoc Analysis

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Governor’s Office for Policy Research
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Presentation to The Revenue Estimating Conference of FTA

Road Map

- Reminder of KY tax law change
- Estimating technique
- Estimating performance one year later
- Take-away messages
  - Analysis of Border Sales
  - Floor-stock taxes
  - Vendor Compensation
  - Interested parties (earmarked revenues)
Tax Modernization of 2005

- Impose a 27¢ surtax on each pack of cigarettes stamped in KY (in addition to the 3-cent excise tax)
- Impose a floor tax at the wholesale and retail level on the day before the tax increase to equalize inventories
- Impose OTP taxes
- 2006 update: rolling paper tax (25¢ per pack of 32 papers)

A Priori Game plan

- Segment total sales into Kentucky destination smokers versus non-resident smokers
- In-state smokers – SR elasticity of demand
- Out-of-state smokers – Population weighted price differentials
- Details, details, details
  - Vendor’s compensation
  - Earmarked revenues
  - Sales tax impacts (in-state, trunk-slammers, smugglers)
  - Necessitated estimating packs, not revenues
  - Tax Fraud and partial stampers
Comparison of Cigarette Excise Tax Rates
Updated September 14, 2006

States to the South:
- GA -- $0.37
- NC -- $0.35
- SC -- $0.07
- AL -- $0.425
- MS -- $0.18

Illinois 98 cents
Indiana 65.5 cents
Kentucky 30 cents
Tennessee 20 cents
North Carolina 35 cents
West Virginia 55 cents
Virginia 20 cents

Missouri 17 cents

Michigan -- $2.00

Surrounding States Average: $0.74

National Average -- $0.953 per pack

Post-Hoc Analysis

- KY Tax effective 6/1/2005
- Estimated FY06 pack sales of 573,650,000 during the legislative session
- Ohio’s cigarette excise tax increased from $0.55 to $1.25 days after our session, effective 7/1/06
- Immediately changed our estimate to 640,000,000 packs

National Average -- $0.953 per pack
How did we do?

How did we do it?

- Assess the total market supply and demand situation for cigarettes
  - What are the taxing conditions in neighboring states?
  - Does your state have an internet presence in the cigarette market?
  - Can you justify the current level of consumption in your state?
The Lay of the Land

Cigarette Packs Stamped in KY
State Demographics (FY 05)

<table>
<thead>
<tr>
<th>State</th>
<th>Adult Smokers</th>
<th>Pack Sales</th>
<th>State Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>2,930,900</td>
<td>624.4 m</td>
<td>$1.50</td>
</tr>
<tr>
<td>NJ</td>
<td>1,236,500</td>
<td>325.3 m</td>
<td>$2.58</td>
</tr>
<tr>
<td>WA</td>
<td>905,800</td>
<td>231.6 m</td>
<td>$2.025</td>
</tr>
<tr>
<td>KY</td>
<td>873,000</td>
<td>753.1 m</td>
<td>$0.30</td>
</tr>
<tr>
<td>SC</td>
<td>777,400</td>
<td>394.4 m</td>
<td>$0.07</td>
</tr>
</tbody>
</table>

Source: Campaign for Tobacco Free Kids

Segmentation of Demand

- **In-State (estimated using census data)**
  - Elasticity of demand
    - Short-run
    - Long-run
  - Data needed:
    - Weighted pack price
    - Tax increase as percentage of price
  - Simple Multiplication
    - Percentage change in price multiplied with elasticity of demand

- **Out-of-state**
  - Deemed to be total demand less in-state consumption
  - Estimated using the Fleenor (1998) approach
  - Border Populations
  - Border Taxes
  - Population weighted price differential model
  - Change in border sales
Fleenor Methodology

- Dependent Variable is Sales
- Independent Variables:
  - Income, price, cross border
  - Other state specific fixed effects:
    - Military Bases
    - Native American Reservations
    - Western States (larger counties)
    - Mormon States dummy variable
    - Canada, Mexico dummies

Border Populations

<table>
<thead>
<tr>
<th>Border between KY and ....</th>
<th>Kentucky Population</th>
<th>Other State Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana (55.5¢)</td>
<td>1,135,860</td>
<td>595,521</td>
</tr>
<tr>
<td>Ohio (125.0¢)</td>
<td>330,532</td>
<td>1,234,409</td>
</tr>
<tr>
<td>Illinois (98¢)</td>
<td>108,625</td>
<td>47,757</td>
</tr>
<tr>
<td>Missouri (55.5¢)</td>
<td>10,613</td>
<td>86,389</td>
</tr>
<tr>
<td>Tennessee (20¢)</td>
<td>368,033</td>
<td>561,416</td>
</tr>
<tr>
<td>West Virginia 55¢</td>
<td>127,215</td>
<td>98,485</td>
</tr>
<tr>
<td>Virginia (20¢)</td>
<td>107,085</td>
<td>77,889</td>
</tr>
</tbody>
</table>
Exported Cigarettes

- Indiana: 27%
- Ohio: 54%
- Illinois: 4%
- Missouri: 1%
- Tennessee: 9%
- West Virginia: 5%
- Missouri: 1%
- Illinois: 4%
- Tennessee: 9%
- West Virginia: 5%

Export Estimations

- Border population/KY Population
- Price Differentials
- Population-weighted price differential
- Regression Parameter from Fleenor
  - 1.84 estimated
  - 1.99 re-estimated
- Border loss = PWPD*regression parameter
Tax Equilibrium

Summary

- Cigarette exporting may constitute a significant portion of demand
- Population weighted price differentials are one way to proxy the loss of sales associated with a tax increase
- Elasticities of demand help for estimating home-state pack reductions, but further research is needed to nail down border effects
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PRESENTATION TO THE REVENUE
ESTIMATING CONFERENCE OF FTA