



Taxation of Cigarettes in KY: Post-Hoc Analysis

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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

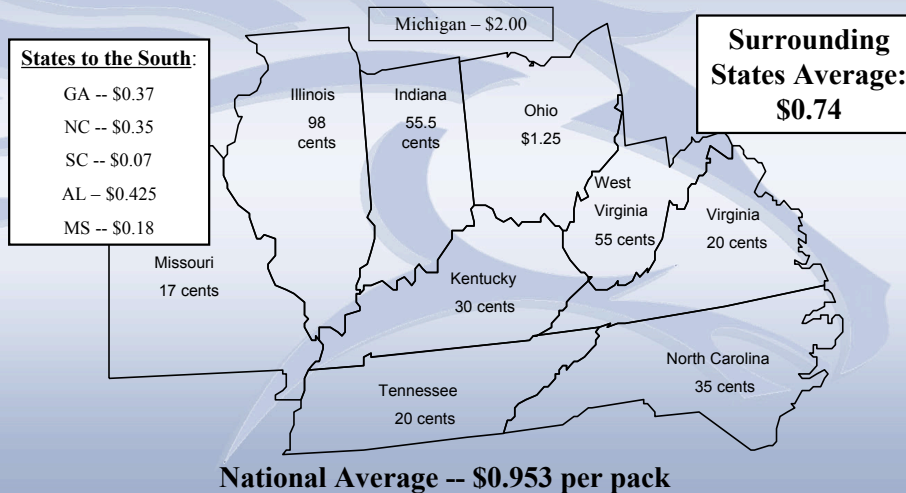
Jobs for
KY

- 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



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

How did we do?



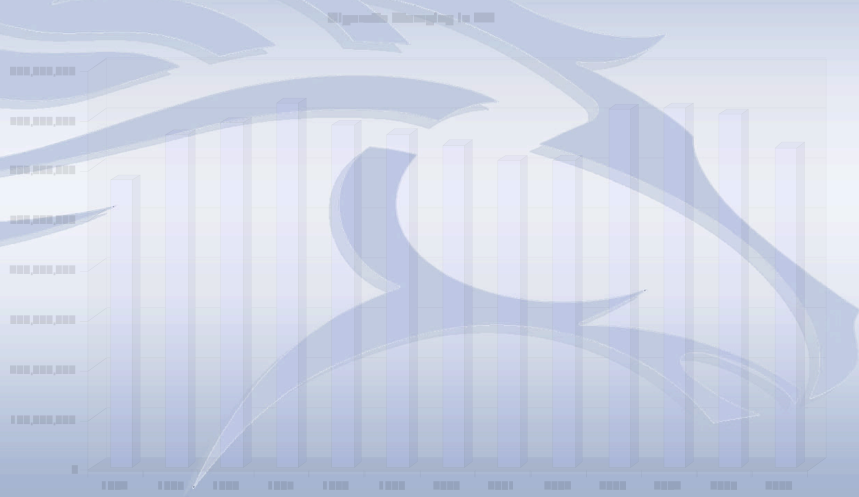
How did we do it?

- 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)

State	Adult Smokers	Pack Sales	State Tax
NY	2,930,900	624.4 m	\$1.50
NJ	1,236,500	325.3 m	\$2.58
WA	905,800	231.6 m	\$2.025
KY	873,000	753.1 m	\$0.30
SC	777,400	394.4 m	\$0.07

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

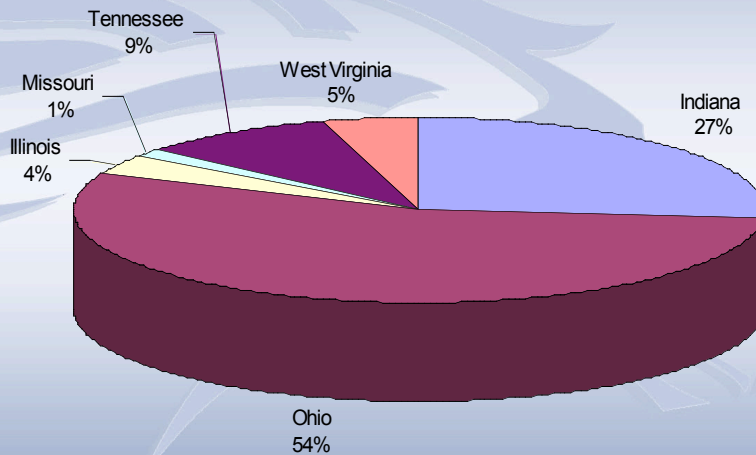
- Dependent Variable is Sales
- Independent Variables:
 - Income, price, cross border
 - Other state specific fixed effects:
 - Military Bases
 - Native American Reservations
 - Western States (larger counties)
 - Mormon States dummy variable
 - Canada, Mexico dummies
- Patrick Fleenor (1998). *How Excise Tax Differentials Affect Interstate Smuggling and Cross Border Sales if Cigarettes in the US*. Tax Foundation Background paper #26.

Border Populations

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

Exported Cigarettes

Jobs for
KY



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 = $PWPD * \text{regression parameter}$

Tax Equilibrium

	Current Percentage	New State Percentage	Weighted New State Percentage
Alabama	0.000	0.000	0.000
Arkansas	0.000	0.000	0.000
California	0.000	0.000	0.000
Colorado	0.000	0.000	0.000
Connecticut	0.000	0.000	0.000
Delaware	0.000	0.000	0.000
District of Columbia	0.000	0.000	0.000
Florida	0.000	0.000	0.000
Georgia	0.000	0.000	0.000
Idaho	0.000	0.000	0.000
Illinois	0.000	0.000	0.000
Indiana	0.000	0.000	0.000
Iowa	0.000	0.000	0.000
Kansas	0.000	0.000	0.000
Kentucky	0.000	0.000	0.000
Louisiana	0.000	0.000	0.000
Maine	0.000	0.000	0.000
Maryland	0.000	0.000	0.000
Massachusetts	0.000	0.000	0.000
Michigan	0.000	0.000	0.000
Minnesota	0.000	0.000	0.000
Mississippi	0.000	0.000	0.000
Missouri	0.000	0.000	0.000
Montana	0.000	0.000	0.000
Nebraska	0.000	0.000	0.000
Nevada	0.000	0.000	0.000
New Hampshire	0.000	0.000	0.000
New Jersey	0.000	0.000	0.000
New Mexico	0.000	0.000	0.000
New York	0.000	0.000	0.000
North Carolina	0.000	0.000	0.000
North Dakota	0.000	0.000	0.000
Ohio	0.000	0.000	0.000
Oklahoma	0.000	0.000	0.000
Oregon	0.000	0.000	0.000
Pennsylvania	0.000	0.000	0.000
Rhode Island	0.000	0.000	0.000
South Carolina	0.000	0.000	0.000
South Dakota	0.000	0.000	0.000
Tennessee	0.000	0.000	0.000
Texas	0.000	0.000	0.000
Utah	0.000	0.000	0.000
Vermont	0.000	0.000	0.000
Virginia	0.000	0.000	0.000
Washington	0.000	0.000	0.000
West Virginia	0.000	0.000	0.000
Wisconsin	0.000	0.000	0.000
Wyoming	0.000	0.000	0.000
Total	0.000	0.000	0.000

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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