The Economics of Tobacco Taxation

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Overview

• History/description of cigarette and other tobacco taxes in the US and states
• Review of evidence on the impact of taxes on prices and tobacco use
  – Consumption
  – Prevalence
  – Cessation
  – Initiation
• Myths and Facts about the “economic costs” of tobacco taxation and tobacco control
• Brief review of evidence on the impact of earmarked tobacco taxes
Tobacco industry clearly understands the impact of tobacco taxation

"With regard to taxation, it is clear that in the US, and in most countries in which we operate, tax is becoming a major threat to our existence."

"Of all the concerns, there is one - taxation - that alarms us the most. While marketing restrictions and public and passive smoking (restrictions) do depress volume, in our experience taxation depresses it much more severely. Our concern for taxation is, therefore, central to our thinking...."

Philip Morris, “Smoking and Health Initiatives”, 1985
Tobacco Taxation in the U.S.

• Federal cigarette tax
  – Specific (per unit) excise tax
  – initially adopted in 1864
  – Raised during war time/lowered during peace time
  – Set at 8 cents per pack in 1951
  – Doubled to 16 cents per pack in 1983
  – Currently 39 cents per pack
    • About 60% of inflation adjusted value of 1951 tax

• Other federal tobacco taxes
  – Specific excise taxes on most products, including cigars, pipe tobacco, chewing tobacco, snuff, and roll-your-own tobacco (and separately on rolling papers)
    • Generally lower than cigarette tax
    • Similar infrequent increases in taxes
Tobacco Taxation in the U.S.

- State cigarette taxes
  - First adopted by IA in 1921; NC last to adopt in 1969
  - Specific excise tax in all states
  - Currently: 7.0 cents/pack (SC) to $2.57/pack (NJ)
    - Numerous state tax increases over past 5 years
  - Average 95.3 cents per pack (26.5 cents in tobacco growing states; 104.5 cents in other states)
  - Several proposing additional increases
    - CA: ballot initiative to increase by $2.60 per pack
  - Most states tax other tobacco products
    - Almost always an *ad valorem* tax (% of price)
  - Sales tax applied to tobacco products in most states

Local Taxes

- Many localities add additional tax
  - Typically a few cents/pack, with some exceptions:
    » $1.50 in New York City
    » $2.68 in Chicago/Cook county
State Cigarette Taxes and Prices,
November 1, 2005

Price (dollars per pack)

Tax (dollars per pack)

Source: Tax Burden on Tobacco, 2006, and author’s calculations
Inflation Adjusted Cigarette Prices, 1955-2006

Source: Tax Burden on Tobacco, 2006, and author’s calculations
Taxes as Percent of Cigarette Prices

Source: Tax Burden on Tobacco, 2006, and author’s calculations
Cigarette Company Marketing Expenditures, Inflation Adjusted, 1975-2003

Graph showing the trend of Cigarette Company Marketing Expenditures from 1975 to 2003, with categories for Price-Related, Other, and Image-Oriented expenditures.


Price-Related, Other, Image-Oriented expenditure levels are indicated on the vertical axis.
Tobacco Taxes and Tobacco Use

• Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.

• Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%:
  • price elasticity of demand: percentage reduction in consumption resulting from one percent increase in price
  • Most elasticity estimates in range from -0.25 to -0.5, clustered around -0.4
  • More recent elasticity estimates for tax paid sales significantly higher
    • Reflects increased tax avoidance/evasion not accounted for in studies

Source: Chaloupka et al., 2000
Total Cigarette Sales and Cigarette Prices, US, 1970-2005

Source: Tax Burden on Tobacco, 2006, and author’s calculations
Real price of cigarettes and annual per adult cigarette consumption in South Africa 1960-2002

Source: van Walbeek, 2003
Cigarette Prices and Sales
Colorado, 1970-2005

Sales (million packs)

Price (July 2006 dollars)

Fiscal Year


$1.25 $1.75 $2.25 $2.75 $3.25 $3.75

Sales

Price

impact TEEN

Sales

Price
Tobacco Taxes and Tobacco Use

• Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.

• Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%.

• About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers.

  • 10% rise in price reduces prevalence by about 2%

Source: Chaloupka et al., 2000
Adult Smoking Prevalence and Cigarette Price
United States, 1970-2005

Source: NHIS, Tax Burden on Tobacco, 2006, and author’s calculations
Cigarette Prices and Adult Smoking Prevalence

\[ y = -1.4715x + 26.939 \]

\[ R^2 = 0.1184 \]

Source: BRFSS, *Tax Burden on Tobacco*, 2006, and author’s calculations
Tobacco Taxes and Tobacco Use

• Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.

• Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%

• About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers

• Some evidence of substitution among tobacco products in response to relative price changes
Cigarette Prices and Smoking Cessation

- Growing evidence that higher cigarette prices induce smoking cessation
  - 10% price increase reduces duration of smoking by about 10%
  - 10% price increase raises probability of cessation attempt by 10-12%
  - 10% price increase raises probability of successful cessation by 1-2%
  - Higher cigarette taxes/prices increase demand for NRT and cessation services

Sources: Douglas, 1999; Tauras and Chaloupka, 2001; Tauras, 2001; Tauras and Chaloupka, 2003
Cigarette Price and Quitline Calls - Illinois, 2002-2003

![Graph showing the relationship between cigarette price and quitline calls. The x-axis represents the months from April to June, and the y-axis represents the number of calls to quitline and the price per pack. The graph indicates a sharp increase in quitline calls and a corresponding increase in price per pack in the month of June 2004. The data suggests that higher cigarette prices may encourage more people to seek help to quit smoking.]
Cigarette Prices and Percentage of Ever Smokers Who Have Quit Smoking

Source: BRFSS, *Tax Burden on Tobacco*, 2006, and author’s calculations

\[ y = 0.0167x + 0.2478 \]

\[ R^2 = 0.1276 \]
Lower SES populations are more price responsive

• Economic theory implies greater response to price by lower income persons

• Growing international evidence shows that smoking is most price responsive in lowest income countries

• Evidence from U.S. and U.K. shows that cigarette price increases have greatest impact on smoking among lowest income and least educated populations

• In U.S., for example, estimates indicate that smoking in households below median income level about four times more responsive to price than those above median income level

*Implies tax increases may be progressive*

Sources: Farrelly, et al., 2001; Chaloupka et al., 2000
Young People More Responsive to Price Increases

• Proportion of disposable income youth spends on cigarettes likely to exceed that for adults

• Peer influences much more important for young smokers than for adult smokers
  • recent estimates indicate about 1/3 of overall impact of price on youth accounted for by indirect impact through peers

• Young smokers less addicted than adult smokers

• Young people tend to discount the future more heavily than adults

• Other spillover effects
  • for example, through parental smoking

Source: Liang, et al., 2003; Chaloupka 2003
Cigarette Prices And Youth

• A 10% increase in price reduces smoking prevalence among youth by nearly 7%

• A 10% increase in price reduces average cigarette consumption among young smokers by over 6%

• Higher cigarette prices significantly reduce teens’ probability of becoming daily, addicted smokers; prevent moving to later stages of uptake.

  • 10% price increase reduces probability of any initiation by about 3%, but reduces probability of daily smoking by nearly 9% and reduces probability of heavy daily smoking by over 10%

Sources: Chaloupka and Grossman, 1996; Tauras, et al., 2001; Ross, et al., 2001
Cigarette Prices and Smoking Prevalence
12-17 Year Olds, 2003-04

\[ y = -1.3859x + 18.182 \]

\[ R^2 = 0.1272 \]

Source: NSDUH, *Tax Burden on Tobacco*, 2006, and author’s calculations
8th, 10th, and 12th Grade Smoking Prevalence and Cigarette Price

Source: MTF, Tax Burden on Tobacco, 2006, and author’s calculations
Cigarette Prices and Smoking Prevalence
18-25 Year Olds, 2003-04

\[ y = -1.6939x + 47.802 \]
\[ R^2 = 0.0484 \]

Source: NSDUH, *Tax Burden on Tobacco*, 2006, and author’s calculations
Support for Tobacco Tax Increases

Generally consistent support among voters for tobacco tax increases

• Greater support when revenues dedicated to tobacco control efforts or other health-related activities

• Often supported by large share of smokers, particularly when tied to efforts to prevent youth smoking initiation

• Support tends to be bipartisan

• Greater support for tobacco tax increases than for other revenue generating measures

• Support tends to be consistent across demographic and socioeconomic groups
Respondents’ support for an increase in Missouri’s cigarette excise tax

Source: SLU Center for Tobacco Policy Research, 2006
## Reasons for supporting a cigarette tax increase

<table>
<thead>
<tr>
<th>Reason</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To discourage smoking initiation and increase cessation</td>
<td>257</td>
<td>45.1</td>
</tr>
<tr>
<td>Smoking is not healthy</td>
<td>113</td>
<td>19.8</td>
</tr>
<tr>
<td>They are against smoking and tobacco use</td>
<td>77</td>
<td>13.5</td>
</tr>
<tr>
<td>Personal experiences with tobacco use</td>
<td>66</td>
<td>11.6</td>
</tr>
<tr>
<td>Feels those who smoke should be taxed; It is a luxury</td>
<td>47</td>
<td>8.2</td>
</tr>
<tr>
<td>To recover the medical expenses associated with tobacco-related health problems</td>
<td>41</td>
<td>7.2</td>
</tr>
<tr>
<td>To raise revenue for the state</td>
<td>35</td>
<td>6.1</td>
</tr>
<tr>
<td>To pay for educational programs and campaigns to raise awareness</td>
<td>23</td>
<td>4.0</td>
</tr>
<tr>
<td>They do not smoke and the tax does not affect them</td>
<td>21</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*Respondents could mention more than one reason.*

Source: SLU Center for Tobacco Policy Research, 2006
Impact of a Federal Cigarette Tax Increase

Based on these estimates, a $0.61 per pack increase in the Federal cigarette tax (to $1.00 per pack) would:

- Reduce cigarette sales by over 1.1 billion packs
- Generate over $10 billion in new revenues
- Lead over 1.4 million current smokers to quit
- Prevent almost 1.9 million youth from taking up smoking
- Prevent over 900,000 premature deaths caused by smoking
- Generate significant reductions in spending on health care to treat diseases caused by smoking
- Reduce most state tobacco-related revenues
Tax Increases and Indiana

Based on these estimate, a $0.50 per pack Increase (to $1.055) in the Indiana state cigarette tax would:

- Reduce cigarette sales by about 32 million packs
- Generate over $280 million in new revenues
- Lead almost 34,000 adult smokers to quit
- Prevent almost 48,000 youth from taking up smoking
- Prevent nearly 23,000 premature deaths caused by smoking
- Generate significant reductions in spending on health care to treat smoking attributable diseases
Earmarked Tobacco Taxes

• Many states earmark tobacco tax revenues for comprehensive tobacco control programs
  • CA – 1989 and 1999 ballot initiatives
  • MA – 1993 ballot initiative
  • Several others since

• Others devote portion of MSA or other settlement revenues to comprehensive programs

• Comprehensive programs support a variety of activities:
  • Anti-smoking advertising
  • Quitlines and other cessation support
  • School based prevention programs
  • Community-based cessation and prevention efforts
  • Much more

• These activities can add to the impact of tax increases in promoting cessation and preventing initiation
Per Capita Funding for State Tobacco Control Programs

Year

Dollars per capita (May 2006 dollar)

State Tobacco Control Funding as Percentage of CDC Recommended Minimum, FY00-FY06
State Tobacco Control Program Funding as Percentage of CDC Minimum Recommended Level, FY00-FY05, Northeast Region
State Tobacco Control Program Funding as a Percentage of CDC Minimum Recommended Level
FY00-FY05, Western Region
State Tobacco Control Program Funding as a Percentage of CDC Minimum Recommended Level
FY00-FY05, Midwest Region
Research Findings – Comprehensive Programs and State Cigarette Sales

• Higher spending on tobacco control efforts significantly reduces cigarette consumption

• Marginal impact of tobacco control spending greater in states with higher levels of cigarette sales per capita; average impact significantly higher in states with larger programs

• Disaggregated program spending suggests that impact of programs focusing on policy change is greater than spending on other programs

Sources: Farrelly, Pechacek and Chaloupka. 2001; Liang et. al 2001
Research Findings – Comprehensive Programs and Youth Smoking

- Higher spending on tobacco control efforts significantly reduces youth smoking prevalence and cigarette consumption among young smokers
  - estimated effects about 3 times those for adults

- Estimated impact of spending at CDC recommended levels: minimum: 8-9% reduction in youth smoking prevalence; maximum: over 20% reduction

- Estimates suggest that greatest impact is on earlier stages of youth smoking uptake

Sources: Farrelly, et al. 2001; Chaloupka et. al 2001
Anti-Smoking Advertising and Youth Smoking

Average Monthly Exposure to Tobacco Related Advertising

Source: Nielsen Media Research; Top 74 Media Markets

- American Legacy
- State
- Pharmaceutical
- Tobacco Prevention
- Tobacco PR

Mean
Anti-Smoking Advertising and Youth Smoking: Research Findings

• Increased exposure to state-sponsored anti-smoking ads associated with increased recall, stronger anti-smoking attitudes, greater perceptions of risk from tobacco use, and reductions in youth smoking prevalence and cigarette consumption
  - some evidence of a “threshold” effect

• Industry sponsored anti-smoking advertising directed at youth have little or no impact on youth tobacco use and related outcomes
  - ads targeting parents associated with lower perceived harm of smoking, stronger approval, stronger intentions to smoke in future, and higher youth smoking prevalence

Sources: Emery, et al., 2005; Wakefield et al., 2006
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Impact on Revenues?

• Impact on Jobs?

• Impact on Tax Evasion/Avoidance?

• Impact on the poor?

*Reality is that tobacco control is one of the “best buys” among health and public health interventions*
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Impact on Revenues?

Myth: Government revenues will fall as cigarette taxes rise, since people buy fewer cigarettes

Truth: Cigarette tax revenues rise with cigarette tax rates, even as consumption declines

• Every significant increase in federal and state cigarette taxes has resulted in a significant increase in cigarette tax revenues

Sources: Sunley, et al., 2000; World Bank, 1999; Farrelly et al., 2003
Federal Cigarette Tax and Tax Revenues, Inflation Adjusted, 1955-2005
Real cigarette tax rate and real cigarette tax revenue in South Africa 1960-2002

Source: van Walbeek, 2003
Missouri Cigarette Tax and Tax Revenues, Inflation Adjusted, 1970-2005
Positive Effect of Tax Increases on Revenues Results from:

Low share of tax in price:
- state taxes account for less than 20% of price
- total taxes account for just over 25% of price
- *Implies large tax increase has much smaller impact on price*

Less than proportionate decline in consumption:
- 10% price increase reduces consumption by 4%

*Example:*
- Price $4.00, State tax $1.00
- Doubling of tax raises price to $5.00 – 25% increase
- 25% price increase reduces sales by 10%
  - *90% of original sales at higher tax increases revenues by 80%*
Sustainability of Cigarette Tax Revenues

Some suggest increases in revenues won’t be sustained over time as consumption declines, tax evasion increases

- Looked at significant state tax increases over past 15 years where increase was maintained for at least 5 years
  - Separately for states with major tobacco control programs

**Conclusions:**
- All significant state tax increases resulted in significant increases in state tax revenues
  - Nominal increases in revenues sustained over time in states without tobacco control programs
  - Nominal revenues decline over time in states with tobacco control programs, but are significantly higher many years later than prior to tax increase
Cigarette Excise Tax Revenues, Alaska
29 cents to $1.00, 10/1/97

Revenues, 10/96-
9/97

Revenues, 10/97-
9/98

Revenues, 10/01-
9/02

Average
Revenues

$15.20

$35.60

$41.40

$40.70

$0

$5

$10

$15

$20

$25

$30

$35

$40

$45
Cigarette Excise Tax Revenues, Michigan
25 cents to 75 cents, 5/1/94

Revenues, 5/93-4/94
$268.80

Revenues, 5/94-4/95
$587.20

Revenues, 5/01/4/02
$552.00

Average Revenues
$574.20
Cigarette Excise Tax Revenues, California
37 cents to 87 cents, 1/1/99

Revenues, 1/98-12/98: $646.60
Revenues, 1/99-12/99: $1,115.70
Revenues, 1/02-12/02: $1,103.90
Average Revenues: $1,068.90

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Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Impact on Jobs?

**Myth:** Higher tobacco taxes and tobacco control generally will result in substantial job losses

**Truth:** Money not spent on tobacco will be spent on other goods and services, creating alternative employment

  • Presence does not imply dependence
  • Many countries/states will see net gains in employment as tobacco consumption falls

Source: Jacobs, et al., 2000; Chaloupka et al., in press; Warner et al., 1994, 1996
Tobacco Farming and Manufacturing as Share of Gross Domestic Product, United States

Source: Chaloupka et al., in press
Tobacco Farming and Manufacturing as Share of Gross State Product, 2000
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Impact on Jobs?

• For Michigan (1994 study), overall employment rises as tobacco consumption falls
• For US (1996 study):
  • 8 non-tobacco regions: employment rises as tobacco consumption falls
  • “Tiny” decline in employment in tobacco region as tobacco consumption falls nationally

• Several state specific studies (including NH, VA, MD) find no negative impact on employment from tobacco tax increases or other tobacco control efforts
  • Similar evidence from several other countries
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Impact on Tax Evasion?

Myth: Tax evasion negates the effects of increases in tobacco taxes

Truth: Even in the presence of tax evasion, tax increases reduce consumption and raise revenues

• Extent of tax evasion often overstated
• Other factors important in explaining level of tax evasion
• Effective policies exist to deter tax evasion

Sources: Joossens, et al., 2000; Merriman, et al., 2000
Canada Sharply Reduced Taxes in 1993

Tax reduced in an attempt to counter smuggling

Sweden Reduced Cigarette Taxes by 17% in 1998


Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Extent of Tax Evasion?

International Tobacco Control Policy Evaluation Study
• Longitudinal cohort study of smokers in many countries
  • Original 4-country study focused on US, UK, Canada and Australia
  • Added Ireland, Malaysia, Thailand, China, Korea; others in preparation/planning

• Approximately 2,000 smokers surveyed in each country in each wave

  • Detailed information collected on smoking behavior and variety of related issues
  • Cigarette purchase patterns/sources
Extent of Tax Evasion?
Last Purchase:

<table>
<thead>
<tr>
<th>Source</th>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservation</td>
<td>3.0%</td>
<td>3.4%</td>
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<tr>
<td>Duty Free</td>
<td>0.5%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Other State</td>
<td>0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Military Base</td>
<td>0.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Toll-Free</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Internet</td>
<td>0.6%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Independent</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Any</td>
<td>5.3%</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

Source: Hyland et al., 2006
### Extent of Tax Evasion?

Any Purchase in past 6 months:

<table>
<thead>
<tr>
<th>Source</th>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservation</td>
<td>2.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Duty Free</td>
<td>0.7%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Other State</td>
<td>0.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Military Base</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Toll-Free</td>
<td>1.2%</td>
<td>1.8%</td>
</tr>
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<td>Mail</td>
<td>1.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Internet</td>
<td>1.4%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Independent</td>
<td>2.1%</td>
<td>2.3%</td>
</tr>
<tr>
<td><strong>Any</strong></td>
<td><strong>8.4%</strong></td>
<td><strong>10.5%</strong></td>
</tr>
</tbody>
</table>

Source: Hyland et al., 2006
Efforts to Curb Tax Evasion

- Many focused on Internet, phone and mail order sales:
  - Outright ban on direct sales (e.g. New York state policy)
  - Major shipping companies (e.g. UPS, Federal Express) agree not to ship cigarettes to consumers
    - USPS hasn’t established similar policy
  - Major credit card companies agree to ban use of credit cards for direct cigarette purchases
  - States apply Jenkins Act to identify direct purchasers and to collect taxes due
    - Promising approach based on early data from several states
Efforts to Curb Tax Evasion

• Reservation sales similar focus in some states
  • Some states (e.g. MN) impose tax on reservation sales with refund to reservation residents
  • Other states (e.g. WA) enter into “compacts” with tribes that result in comparable taxes imposed on reservation sales with most/all of revenues kept by tribe
  • Others apply different tax stamps for cigarettes sold to residents and non-residents of reservations
    • Quota for expected resident consumption
Efforts to Curb Tax Evasion

- High-Tech Efforts
  - Adoption of sophisticated tax stamps
    - Harder to counterfeit
    - Contain information allowing better tracking of cigarettes through distribution channels
    - Easier to implement enforcement actions
- California:
  - Adopted 2002; fully implemented 2005
  - Coupled with better licensing standards
  - Can be examined with hand-held scanners
  - Thousands of compliance checks, hundreds of citations
  - Generated over $124 million in revenues during 20 month period (mid-2004 through late 2005)
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

• Regressivity?

Myth: Cigarette tax increases will negatively impact on the lowest income populations

Truth: Poor smokers bear disproportionate share of health consequences from smoking and are more responsive to price increases
  • Should consider progressivity or regressivity of overall fiscal system
  • Negative impact can be offset by use of new revenues to support programs targeting population or protect funding for current programs
Conclusions

Substantial increases in tobacco excise taxes lead to large reductions in tobacco use and, in the long run, reduce the public health toll caused by tobacco use.

Additional reductions in overall smoking and in the prevalence of youth smoking result when tax increases are coupled with comprehensive tobacco control efforts.

Arguments about economic consequences of tobacco control and tax increases misleading, overstated, or false

http://www.impacteen.org
http://www.tobaccoevidence.net
http://www.uic.edu/~fjc
fjc@uic.edu
Exercise

Estimate the impact of a tax increase on:

- Sales
  - Find percentage increase in price
  - Estimate percentage decline in sales to get new sales
- Tax revenues
  - Compute original tax revenues and new revenues to estimate increase in revenues from tax increase
- Number of adult smokers
  - Estimate percentage decline in adult smoking
- Number of future smokers among current youth
  - Estimate percentage decline in youth smoking
- Deaths caused by smoking
  - Estimated for youth and adults separately and added together for total impact
Exercise

Step 1: Calculate the percentage increase in price from a given tax increase:

• Illinois:

  • Average price per pack: $4.74
  • Source: *Tax Burden on Tobacco* updated for inflation in cigarette prices
  • Current tax per pack: $0.98
  • Increase tax to $1.50 per pack
    • $0.52 increase in tax (53.1% increase)

• Percentage increase in price:

  $0.52/$4.74 = 11.0%
Exercise

Step 2: Calculate the percentage reduction in sales and new sales level that results from the tax and price increase

• Illinois:

  • Cigarette sales, FY2006: 655.9 million packs
    • Source: state department of revenue or Tax Burden on Tobacco (some lag)
  
  • Price elasticity of demand: -0.4
    • from economic studies discussed earlier

  • 11.0% price rise reduces sales by 4.4%
    • Sales fall by 28.9 million packs
    • New sales of 627.0 million packs
    • Could allow for additional drop in sales in response to other factors or long run trend
Exercise

Step 3: Calculate increase in cigarette excise tax revenues resulting from tax increase

• Illinois:

  • Original tax revenues:
    • 655.9 million packs at $0.98 per pack:
      $642.8 million

  • New tax revenues:
    • 627.0 million packs at $1.50 per pack:
      $940.5 million

  • Increase in revenues:
    • $940.5 million – $642.8 million = $297.7 million

  • Could compute impact on sales tax revenues as well
Exercise

Step 4: Calculate impact of tax/price increase on future smoking among current youth and expected premature deaths from smoking

- Future prevalence: 23.7%
  - estimated based on young adult rates in BRFSS
- 0-17 population: 2,362,722
  - Source: US Census Bureau estimates
    - Future Smokers: 449,101

- Youth prevalence elasticity: -0.65
  - 11.0% price rise reduces youth taking up smoking by 7.2%
    - Future Smokers deterred: 32,335

- Premature deaths averted among adult smokers:
  - Risk of premature death from smoking = 0.32
    - $0.32 \times 32,335 = 10,347$ premature deaths averted
Exercise

Step 5: Calculate impact of tax/price increase on adult smoking cessation and expected premature deaths among adult smokers

- Adult prevalence: 19.9%
  - Source: BRFSS
- Adult population: 9,522,332
  - Source: US Census Bureau estimates
- Adult Smokers: 1,894,942

Adult prevalence elasticity: -0.2
- 11.0% price rise reduces adult prevalence by 2.2%
  - Adult Smokers who quit: 41,689

Premature deaths averted among adult smokers:
- Risk of premature death from smoking = 0.32
  - \(0.32 \times 0.6875 \times 41,689\)
  - \(= 9,172\) premature deaths averted

Total deaths averted = 19,519