Economics of Tobacco Taxation

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Overview-Part I

- Tobacco Taxation
  - Why tax tobacco products?
  - Types of tobacco taxes
  - Impact of taxes and prices on tobacco use
  - Economic impact of tobacco taxes
Overview-Part II

• Tobacco Taxation: Oppositional Arguments
  – Won’t generate additional revenues
  – Revenues won’t be sustained over time
  – Will harm the poor
  – Will adversely affect the economy
    (employment, small business, inflation)
  – Will cause extensive tax avoidance & evasion
Why Tax Tobacco Products?
Why Tax Tobacco?

"Sugar, rum, and tobacco, are commodities which are nowhere necessaries of life, which have become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation."

Adam Smith
An Inquiry into the Nature and Causes of The Wealth of Nations
Why Tax Tobacco?

• Efficient revenue generation
  – Primary motive historically and still true in many countries today
  – Very efficient source of revenue given:
    • Historically low share of tax in price in many countries
    • Relatively inelastic demand for tobacco products
    • Few producers and few close substitutes
    • One of many goods/services that satisfies the “Ramsey Rule”
Why Tax Tobacco?

“This vice brings in one hundred million francs in taxes every year. I will certainly forbid it at once – as soon as you can name a virtue that brings in as much revenue”

Napoleon III
Federal Cigarette Tax and Tax Revenues
Inflation Adjusted, 1955-2012

Source: Tax Burden on Tobacco, 2013, and author’s calculations
Why Tax Tobacco?

• To promote public health
  – Increasingly important motive for higher tobacco taxes in many high income countries
    • Emerging as important factor in some low and middle income countries
  – Based on substantial and growing evidence on the effects of tobacco taxes and prices on tobacco use
    • Particularly among young, less educated, and low income populations
**Surgeon General’s Report**

**Figure 1.1A  The health consequences causally linked to smoking**

<table>
<thead>
<tr>
<th>Cancers</th>
<th>Chronic Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oropharynx</td>
<td>Stroke</td>
</tr>
<tr>
<td>Larynx</td>
<td>Blindness, cataracts</td>
</tr>
<tr>
<td>Esophagus</td>
<td><strong>age-related macular degeneration</strong></td>
</tr>
<tr>
<td>Trachea, bronchus, and lung</td>
<td><strong>Congenital defects—maternal smoking: orofacial clefts</strong></td>
</tr>
<tr>
<td>Acute myeloid leukemia</td>
<td>Periodontitis</td>
</tr>
<tr>
<td>Stomach</td>
<td>Aortic aneurysm, early abdominal aortic atherosclerosis in young adults</td>
</tr>
<tr>
<td>Liver</td>
<td>Coronary heart disease</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Pneumonia</td>
</tr>
<tr>
<td>Kidney and ureter</td>
<td>Atherosclerotic peripheral vascular disease</td>
</tr>
<tr>
<td>Cervix</td>
<td>Chronic obstructive pulmonary disease, <strong>tuberculosis</strong>, asthma, and other respiratory effects</td>
</tr>
<tr>
<td>Bladder</td>
<td><strong>Diabetes</strong></td>
</tr>
<tr>
<td>Colorectal</td>
<td>Reproductive effects in women (including reduced fertility)</td>
</tr>
<tr>
<td></td>
<td>Hip fractures</td>
</tr>
<tr>
<td></td>
<td><strong>Ectopic pregnancy</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Male sexual function—erectile dysfunction</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Rheumatoid arthritis</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Immune function</strong></td>
</tr>
<tr>
<td></td>
<td>Overall diminished health</td>
</tr>
</tbody>
</table>


*Note: The condition in red is a new disease that has been causally linked to smoking in this report.*
Figure 1.1B  The health consequences causally linked to exposure to secondhand smoke

- **Children**
  - Middle ear disease
  - Respiratory symptoms, impaired lung function
  - Lower respiratory illness
  - Sudden infant death syndrome

- **Adults**
  - Stroke
  - Nasal irritation
  - Lung cancer
  - Coronary heart disease
  - Reproductive effects in women: low birth weight


*Note:* The condition in red is a new disease that has been causally linked to smoking in this report.
Taxes, Prices and Health: US, 1980-2005

Source: Nat Rev Cancer © 2009 Nature Publishing Group
Why Tax Tobacco?

• Cover the external costs of tobacco
  – “Pigouvian” tax
  – Less frequently used motive
  – Account for costs resulting from tobacco use imposed on non-users
    • Increased health care costs, lost productivity from diseases/death caused by exposure to tobacco smoke
    • Increased financial costs related to publicly financed health care used to treat diseases caused by tobacco use
  – Can also include “internalities” that result from addiction and time inconsistent preferences

- Lost Productivity: $150.8
- Health Care Costs: $170.6
- Publicly Paid Health Care Costs: $109.6
- Tax & MSA Revenues (2012): $38.7

Source: 2014 Surgeon General's Report and Tax Burden on Tobacco
Types of Tobacco Taxes
Types of Tobacco Taxes

• Variety of tobacco taxes
  – Taxes on value of tobacco crop
  – Customs duties on tobacco leaf imports and/or exports
  – Customs duties on tobacco product imports and/or exports
  – Sales taxes/Value added taxes
  – Implicit taxes when government monopolizes tobacco product production and/or distribution
  – Tobacco excise taxes (or similar taxes)
Types of Tobacco Taxes

• Tobacco Excise Taxes
  – Two types of excises
    • **Specific Taxes**: excises based on quantity or weight (e.g. tax per pack of 20 cigarettes)
    • **Ad Valorem taxes**: excises based on value of tobacco products (e.g. a specific percentage of manufacturer’s prices for tobacco products)
    • Some countries use a mix of specific and *ad valorem* tobacco excises, differential taxes for different products of given type, minimum taxes, etc.
    • Many countries apply different types of taxes and/or tax rates on different types of tobacco products (e.g. manufactured cigarettes vs. bidis)
# Excise systems for cigarettes

<table>
<thead>
<tr>
<th></th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total covered</td>
<td>186</td>
</tr>
<tr>
<td>Specific excise only</td>
<td>56</td>
</tr>
<tr>
<td>Ad valorem excise only</td>
<td>50</td>
</tr>
<tr>
<td>Mixture of both excises</td>
<td>60</td>
</tr>
<tr>
<td>No Excise</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: WHO GTCR IV
Tobacco Taxes, Prices & Tobacco Use
Taxes, Prices & Tobacco Use

• Increases in tobacco product taxes and prices:
  – Induce current users to try to quit
    • Many will be successful in long term
  – Keep former users from restarting
  – Prevent potential users from starting
    • Particularly effective in preventing transition from experimentation to regular use
  – Reduce consumption among those who continue to use
  – Lead to other changes in tobacco use behavior, including substitution to cheaper products or brands, changes in buying behavior, and compensation
Inflation adjusted cigarette prices and cigarette consumption, United Kingdom, 1971-1996

Source: Townsend 1998
Cigarette Prices and Cigarette Sales
Kansas, 1966-2013, Inflation Adjusted

Sources: Tax Burden on Tobacco, 2014; Bureau of Labor Statistics; and Authors' Calculations
Taxes, Prices & Tobacco Use

Inflation Adjusted Cigarette Prices and Cigarette Consumption, Morocco, 1965-2000

Source: Aloui, 2003
Cigarette Price & Consumption
Hungary, 1990-2011, Inflation Adjusted

Sources: EIU, ERC, and World Bank

www.tobacconomics.org
Cigarette and Adult Smoking Prevalence
US States & DC, 2009

Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author's calculations

\[ y = -0.013x + 25.51 \]

\[ R^2 = 0.172 \]
Adult Prevalence & Price, Brazil

Adult Smoking Prevalence and Cigarette Price
Brazil, Inflation Adjusted, 2006-2013

Sales, Million Sticks
Price per Pack, 2013 BRL

Sources: Ministry of Health, Brazil; EIU; World Bank
Monthly Quit Line Calls, United States
11/04-11/09

4/1/09 Federal Tax Increase

1/1/08 WI Tax Increase
Cigarette Prices and Cessation
US States & DC, 2009

\[ y = 0.028x + 43.08 \]
\[ R^2 = 0.371 \]

Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author’s calculations
Sources: Tax Burden on Tobacco, BLS, MTF, and author’s calculations
Economic Impact of Tobacco Taxes
Oppositional Arguments

- Won’t generate additional revenues
- Will harm the poor
- Will adversely affect the economy
- Will cause extensive tax avoidance & tax evasion
Tobacco Taxes - Oppositional Arguments: Revenue Impact
Taxes and Revenues

By J Scott Moody, 4/2/08, from an AP story:

AUGUSTA — “A coalition of health groups today urged lawmakers to increase the cigarette tax by a $1 per pack, saying the increase will encourage more people to quit smoking and generate more money for health programs.

Translation: Fewer people smoking equals more cigarette tax revenue? Someone needs a math lesson.”
Cigarette Tax and Tax Revenues
Georgia, 1965-2009

Tax per Pack

Tax Revenues (Millions)


$0.00 $0.05 $0.10 $0.15 $0.20 $0.25 $0.30 $0.35 $0.40

$0.0 $50.0 $100.0 $150.0 $200.0

Tax Revenues (Millions)  Tax per Pack
Cigarette Tax and Tax Revenues
Wisconsin, 1965-2014

Sources: Tax Burden on Tobacco, 2014, and Authors’ Calculations
Cigarette Tax and Tax Revenues
Arizona, 1965-2014

Sources: Tax Burden on Tobacco, 2013, and Authors’ Calculations
Federal Cigarette Tax and Tax Revenues Inflation Adjusted, 1955-2012

Source: Tax Burden on Tobacco, 2013, and author’s calculations
State Cigarette Taxes and Tax Revenues Inflation Adjusted, 1955-2012

Source: Tax Burden on Tobacco, 2013, and author’s calculations
Cigarette Tax and Tax Revenues Inflation Adjusted, Illinois, 1956-2013

Source: Tax Burden on Tobacco, 2013; IL Dept. of Revenue, and author’s calculations
Cigarette real price & real tax revenue – United Kingdom

<table>
<thead>
<tr>
<th>Year</th>
<th>Price (£) 1994 value</th>
<th>Tax revenue (£ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>£1.40</td>
<td>5500</td>
</tr>
<tr>
<td>1973</td>
<td>£1.90</td>
<td>6000</td>
</tr>
<tr>
<td>1975</td>
<td>£2.40</td>
<td>6500</td>
</tr>
<tr>
<td>1977</td>
<td>£2.90</td>
<td>7000</td>
</tr>
<tr>
<td>1979</td>
<td>£2.90</td>
<td>7500</td>
</tr>
<tr>
<td>1981</td>
<td>£2.90</td>
<td>8000</td>
</tr>
<tr>
<td>1983</td>
<td>£2.90</td>
<td>8500</td>
</tr>
<tr>
<td>1985</td>
<td>£2.90</td>
<td>9000</td>
</tr>
<tr>
<td>1987</td>
<td>£2.90</td>
<td>£2.40 (1994 value)</td>
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<tr>
<td>1989</td>
<td>£2.90</td>
<td>£2.40 (1994 value)</td>
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<tr>
<td>1991</td>
<td>£2.90</td>
<td>£2.40 (1994 value)</td>
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</tr>
<tr>
<td>1995</td>
<td>£2.90</td>
<td>£2.40 (1994 value)</td>
</tr>
</tbody>
</table>

Source: Townsend, 2010
South Africa - Taxes, Prices, and Tax Revenues, 1970-2012, Inflation Adjusted
Estimated Future Cigarette Tax Revenues
Kansas

Note: Data are for fiscal years ending June 30.

Sources: Tax Burden on Tobacco, 2013 and Authors’ Calculations
Sufficient Evidence that:

Tobacco tax increases increase tobacco tax revenues.
Sustainability of Cigarette Tax Revenues

Some suggest increases in revenues won’t be sustained over time

- Looked at significant state tax increases over past 20 years where increase was maintained for at least 5 years
- Separately for states with major tobacco control programs
Sustainability of Cigarette Tax Revenues

• **Conclusions:**
  - All significant state tax increases result in significant increases in state tax revenues
    - Nominal increases in revenues sustained over time in states without tobacco control programs
    - Nominal revenues decline in states with tobacco control programs, but are significantly higher than before tax increase
  - Tobacco tax revenues more predictable than other revenues
Cigarette Tax and Tax Revenues
Florida, 1965-2014

Sources: Tax Burden on Tobacco, 2013, and Authors’ Calculations
Cigarette Tax and Tax Revenues
Arizona, 1965-2014

Sources: Tax Burden on Tobacco, 2013, and Authors’ Calculations
Cigarette Tax and Tax Revenues
Ohio, 1965-2014

Sources: Tax Burden on Tobacco, 2013, and Authors’ Calculations
Cigarette Tax and Tax Revenues
Kansas, 1965-2014

Sources: Tax Burden on Tobacco, 2014, and Authors' Calculations

Sources: Tax Burden on Tobacco, 2014, and Authors' Calculations
Tobacco Taxes - Oppositional Arguments: Impact on the Poor
Impact on the Poor

July 23, 2010 – San Francisco Examiner

- “Democrats are relying more heavily in their midterm 2010 election message that Republicans care nothing about the poor. Conveniently absent from this analysis is Republican opposition to President Barack Obama’s cigarette tax increase…… While higher cigarette taxes do discourage smoking, they are highly regressive. Analyzing a slightly less severe proposal in 2007, the Tax Foundation noted that ‘no other tax hurts the poor more than the cigarette tax.’” Peyton R. Miller, special to the Examiner.
Tobacco Taxes & Equity

• Concerns about “fairness” of tobacco taxes

  • Horizontal equity: equals should be treated equally (e.g. those with the same incomes should pay the same tax)
  
  • Vertical equity: those with greater ability to pay should be taxed more heavily (e.g. those with higher incomes should pay greater share of income)
    – Equal disutility of tax when diminishing marginal utility of wealth
  
  • Benefit principle: those who get the greatest benefit from government activities should pay greater share of taxes
Tobacco Taxes & Equity

- Relates to tax incidence/distributional impact
  - Progressive taxes – tax rate rises as tax base increases
    - Burden of tax falls more heavily on higher income populations
  - Proportional taxes – tax rate fixed as tax base changes
    - Burden of tax shared equally by all populations
  - Regressive taxes – tax rate rises as tax base falls
    - Burden of tax greater on lower income populations
- Incidence depends on measures used
  - e.g. income vs. expenditures
Tobacco Taxes & Equity

• Distribution of health consequences from tobacco
  • Generally “regressive” with greater share of burden of tobacco caused disease falling on lower income populations
    – Greater use of tobacco among lower income populations in many countries
    – Less access to health care to treat diseases caused by tobacco use
  • Tobacco use accounts for much of the health gap between the rich and the poor
Social inequalities in male mortality in 1996 from smoking (shaded) and from any cause

% risk of dying at ages 35–69

England & Wales

Social Class

High III

21%

Mid III/IV

31%

Low V

43%

High >12yr

20%

Mid 12yr

14

Low <12yr

15

USA

Education

High 20%

20%

Mid 60%

25%

Low 20%

35%

Canada

Neighbourhood Income

High 20%

6

Mid 60%

8

Low 20%

15

Poland

Education

High >12yr

26%

Mid 12yr

10

Low <12yr

22

Source: Jha et al, 2006
Tobacco & Poverty

• Spending on tobacco crowds out other household spending
  • Growing body of evidence from LMICs; few studies for HICs
  • Spending on tobacco reduces household spending on food, housing, education, health care, clothing, and more
    – Greater impact on lower income households
    – Causes other health consequences for women, children
Tobacco & Poverty

Family falls into poverty

Foregone income 3: Breadwinner dies prematurely

Foregone income 2: Treatment cost & Lost working days & income

Foregone income 1: More money spent on tobacco: Less money spent on Education, nutrition etc. High opportunity cost

Breadwinner gets sick due to tobacco use

Poor men smoke

Source: Yurekli, 2007
Tobacco Taxes & Equity

• Tobacco tax increases
  • Can be “progressive” even in countries where tax is regressive
    – Based on greater reductions in tobacco use among the poor in response to higher taxes and prices
Who Pays & Who Benefits
Impact of Federal Tax Increase, U.S., 2009

Source: Chaloupka et al., in progress; assumes higher income smokers smoke more expensive brands
Who Pays & Who Benefits
Turkey - 25% Tax Increase

Source: Adapted from Önder & Yürekli, 2014
Tobacco Taxes & Equity

Need to consider fairness of overall fiscal system

- Key issue with tobacco taxes is what’s done with the revenues generated by the tax
- Greater public support for tobacco tax increases when revenues are used for tobacco control and/or other health programs
- Net financial impact on low income households can be positive when taxes are used to support programs targeting the poor
- Concerns about regressivity offset by use of revenues for programs directed to poor
WHO “Best Practices” for Tobacco Excise Taxes

• Do not view low taxes and prices for some tobacco products as a “pro-poor” policy
  – High tobacco taxes on all tobacco products will result in greater reductions in tobacco use among the poor
  – Results in a progressive distribution of the health and economic benefits that result – a truly “pro-poor” policy
WHO “Best Practices” for Tobacco Excise Taxes

• *Do not allow concerns about the regressivity of higher tobacco taxes to prevent tobacco tax increases*
  
  – Regressive impact often overstated
  – Concerns about impact on the poor can be offset by using new revenues to support efforts to help poor tobacco users quit, health promotion efforts targeting poor and/or other poverty alleviation programs
Tobacco Taxes - Oppositional Arguments: Impact on Economy
Impact on Employment

JULY, 14, 2010 – The Associated Press

• RICHMOND, Va. — The tobacco industry is running a full-court press ahead of a federal scientific panel's meeting to discuss how to regulate menthol cigarettes, a still-growing part of the shrinking cigarette market.

• The union representing nearly 4,000 tobacco workers sent a letter to the Food and Drug Administration committee examining the public health effects of the minty smokes, warning that a ban could lead to "severe jobs loss" and black market cigarettes.
Impact on Employment

Impact of tobacco use on jobs?

- tobacco industry argues that tobacco makes significant economic contribution
  - employment in farming, manufacturing, distribution, and related sectors
  - multiplier effects as income earned in tobacco-related jobs spent on other goods & services

Tobacco Taxes and Jobs

Warner et al. (1996); Warner and Fulton (1994) –

- used adapted version of REMI model to assess impact of declining tobacco use on employment
- 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
Tobacco Taxes and Jobs

- Tobacco excise tax will lead to decreased consumption of tobacco products
  - Small loss of jobs in tobacco sector
- Money not spent on tobacco products will be spent on other goods and services
  - Gains in jobs in other sectors
- Increase in tax revenues will be spent by government
  - Additional job gains in other sectors
- Net increase in most states, countries
Impact on Businesses

• More recent argument that higher taxes will harm convenience stores

• New analysis
  – Number of convenience stores (convenience only, gas stations, both), by state, 1997-2009
  – State cigarette tax rates and smoke-free air policies
  – Economic conditions (income, unemployment, gas prices)
  – Multivariate, fixed effects econometric models

Source: Huang & Chaloupka, 2013
Impact on Businesses

• Results:
  – Positive association between state cigarette tax and number of convenience stores
    • “overshifting” of cigarette tax in retail price
    • Substitution of spending on cigarettes to spending on other products
    • $1.00 tax increase associated with increase of 11 stores per million population
  – No impact of smoke-free policies
  – Robust to alternative specifications and empirical methods

Source: Huang & Chaloupka, 2013
Tobacco-Related Employment

- Very small share of employment dependent on tobacco growing and manufacturing in most countries
  - Economic presence does not imply economic dependence
  - Employment in tobacco manufacturing falling over time in response to tobacco industry shift to more capital intensive production technologies.
  - Can use revenues from tobacco taxes to help those in tobacco growing/manufacturing shift to other sustainable livelihoods

www.tobacconomics.org
WHO “Best Practices” for Tobacco Excise Taxes

• *Do not allow concerns about employment impact to prevent tobacco tax increases*
  
  – Tobacco employment often declining even where tobacco product consumption rising
  
  – Reductions in tobacco-dependent employment are offset by increases in other sectors
  
  – Where concerns are significant, use tax revenues to support transition from tobacco farming/manufacturing to other activities
Tobacco Taxes - Oppositional Arguments: Tax Avoidance & Evasion
Overview

– Definition of terms
– Measurement of tax avoidance and tax evasion
– Determinants of tax avoidance and tax evasion
– Impact of tax avoidance and evasion on tobacco use
– Policy responses
Defining Tax Avoidance and Tax Evasion
Tax Avoidance & Evasion

– Many terms used:
  • Illicit trade, contraband, smuggling, bootlegging, counterfeit, etc.

– Tax Avoidance
  • Legal methods for avoiding tobacco taxes

– Tax Evasion
  • Illegal methods for avoiding tobacco taxes
Tax Avoidance & Evasion

– Individual tax avoidance
  • Reservation, Internet and other direct, duty-free, and cross-border purchases
  • Brand/product switching, carton purchases, use of cheaper outlets
  • Mostly legal

– Bootlegging
  • Purchasing of cigarettes in low-tax/price jurisdictions for resale in high tax/price jurisdictions
Tax Avoidance & Evasion

– Organized smuggling
  • Illegal transportation, distribution and sale of large consignments of tobacco products
  • Generally avoids all taxes

– Counterfeit
  • products bearing a trademark without the approval of the trademark owner
  • Often involved in organized smuggling
Tax Avoidance & Evasion

– Illegal Manufacturing

• Unreported or under-reported manufacturing, distribution and sale of large consignments of tobacco products
• Generally avoids all taxes
• Often involved in organized smuggling

– Brand Repositioning

• Industry changes in pricing, packaging, product design, etc. that change tax rate applied to product
Measuring Tax Avoidance and Tax Evasion
Measuring Avoidance & Evasion

– Difficult to measure given illegality

– Variety of approaches used
  • Each captures different pieces
  • None fully captures all tax avoidance and evasion
  • Difficult to distinguish avoidance and evasion
Measuring Avoidance & Evasion

– Comparing recorded exports of tobacco products to recorded imports

• Difference reflects leakage into black markets

• In recent years, 10-25% of exports do not appear as imports

• 4-10 percent of global consumption

• Will be largely organized smuggling
Extent of Illicit Trade
Export-Import Gap, 1980-2010

Source: FAOSTAT
Measuring Avoidance & Evasion

– Comparing tax paid sales and self-reported consumption

  • Under-reporting of consumption in surveys
  • Better for assessing trends and relative size of problem than absolute size of problem
Measuring Avoidance & Evasion

- NRC/IOM estimates for 2010/11
  - TUS/CPS data
  - Difference between national tax paid sales and total self-reported consumption used to adjust for underreporting in all states
    - May be differences in extent of underreporting based on social norms about tobacco
  - Estimated 8.5% of total consumption avoided or evaded taxes
    - 1.24 billion packs; $2.95 billion in lost revenue
- Will underestimate cross-border sales for states with both positive and negative tax differentials with bordering states.
## Distribution of the U.S. Illicit Tobacco Market

<table>
<thead>
<tr>
<th>State</th>
<th>Self-Reported Consumption (millions of packs)</th>
<th>Tax-Paid Sales (millions of packs)</th>
<th>Adjusted SRC (millions of packs)</th>
<th>Adjusted SRC:TPS</th>
<th>Adjusted SRC–TPS (millions of packs)</th>
<th>2011 State Excise Tax per Pack</th>
<th>Estimated State Revenue Lost or Gained (millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Five Net Exporters (by revenue)</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>474.43</td>
<td>960.82</td>
<td>790.99</td>
<td>0.82</td>
<td>-169.82</td>
<td>$0.87</td>
<td>$147.75</td>
</tr>
<tr>
<td>South Carolina</td>
<td>159.27</td>
<td>458.87</td>
<td>265.55</td>
<td>0.58</td>
<td>-193.31</td>
<td>$0.57</td>
<td>$110.19</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>42.31</td>
<td>126.60</td>
<td>70.54</td>
<td>0.56</td>
<td>-56.05</td>
<td>$1.78</td>
<td>$99.77</td>
</tr>
<tr>
<td>Virginia</td>
<td>213.57</td>
<td>545.93</td>
<td>356.08</td>
<td>0.65</td>
<td>-189.85</td>
<td>$0.30</td>
<td>$56.96</td>
</tr>
<tr>
<td>Delaware</td>
<td>27.52</td>
<td>79.93</td>
<td>45.88</td>
<td>0.57</td>
<td>-34.05</td>
<td>$1.60</td>
<td>$54.48</td>
</tr>
<tr>
<td><strong>Top Five Net Importers (by revenue)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>424.47</td>
<td>389.45</td>
<td>707.70</td>
<td>1.82</td>
<td>318.25</td>
<td>$4.35</td>
<td>$(1,384.39)</td>
</tr>
<tr>
<td>Washington</td>
<td>162.10</td>
<td>147.43</td>
<td>270.27</td>
<td>1.83</td>
<td>122.84</td>
<td>$3.03</td>
<td>$(371.58)</td>
</tr>
<tr>
<td>Ohio</td>
<td>484.43</td>
<td>659.94</td>
<td>807.67</td>
<td>1.22</td>
<td>147.73</td>
<td>$1.25</td>
<td>$(184.67)</td>
</tr>
<tr>
<td>Michigan</td>
<td>317.40</td>
<td>463.99</td>
<td>529.20</td>
<td>1.14</td>
<td>65.21</td>
<td>$2.00</td>
<td>$(130.41)</td>
</tr>
<tr>
<td>Arizona</td>
<td>135.97</td>
<td>163.43</td>
<td>226.70</td>
<td>1.39</td>
<td>63.26</td>
<td>$2.00</td>
<td>$(126.53)</td>
</tr>
</tbody>
</table>

Sources: NRC/IOM 2015
Measuring Avoidance & Evasion

– “Expert Opinions”

• Customs officials, tobacco industry representatives, tax authorities, and others
  – Potential bias in some sources

• Widely varying estimates across countries

• Recent estimates 10-12%
  – 6-7% in US; rising over time

• Largely reflects organized smuggling
Measuring Avoidance & Evasion

– Econometric analyses of tax paid sales that account for various factors, including:
  • tax/price differences
  • population density
  • travel patterns and distance
– US estimates suggest up to 12.5% of total consumption in early 2000s
– Western European estimates about 3% of consumption in 1980s/1990s
Measuring Avoidance & Evasion

- Individual tax avoidance – self-reported data
  • Tobacco Use Supplement to the Current Population Survey
    - Periodic state representative, cross-sectional samples
    - Includes questions on price paid, whether or not purchased in own state, other state or through other channels (e.g. Internet or phone) – 2003 and 2006/07 surveys only
    - Did not ask about in-state tax avoidance (e.g. reservation purchases)
    - 2006/07: 5.2%
Tax Avoidance – United States

% Tax Avoiders, 2006/07

Source: Tax Burden on Tobacco, 2008 and TUS-CPS
Determinants of Tax Avoidance and Evasion
Determinants of Avoidance & Evasion

- Tax and price differentials
  - More important for individual tax avoidance and bootlegging
  - Key factor in U.S.
  - Larger scale efforts avoid all taxes
State Cigarette Excise Tax Rates

Average State Cigarette Tax: $1.54 per Pack
Average Cigarette Tax in Major Tobacco States: 48.5 cents per Pack
Average Cigarette Tax in Non-Tobacco States: $1.68 per Pack

Guam: $3.00
No. Marianas Islands: $1.75
Puerto Rico: $2.23
Cross-Border Shopping Among ITC EU Countries

ITC Europe Surveys: Cross-border purchasing in German states and French provinces

13–24% when bordering countries with lower prices

2–7% (in these states/provinces and in UK & Ireland) when NOT bordering countries with lower prices.
Illicit Cigarette Market Share & Cigarette Prices, 2012

Sources: Euromonitor, WHO
Determinants of Avoidance & Evasion

– Corruption

– Weak tax administration
  • Absence of tax stamps; weak or non-existent physical controls; unlicensed manufacturers, distributors, retailers;
  • weak customs authorities

– Presence of informal distribution channels
  • e.g. Street vendors, unlicensed distributors
Smuggling and Corruption, 2011

y = -0.013x + 0.202
R² = 0.081

Sources: Euromonitor, Transparency International
Determinants of Avoidance & Evasion

- Poor enforcement
  - Limited resources for border patrols, customs authorities, etc; low penalties

- Presence of criminal networks
  - e.g. Organized crime, terrorist organizations
Trends in Net Tax Avoidance and Evasion in the U.S.

Sources: NRC/IOM 2015
Trends in Illicit Tobacco Enforcement in the U.S.

Sources: NRC/IOM 2015
Impact of Tax Avoidance and Evasion
Tax Avoidance & Evasion
Do NOT Eliminate Health Impact of Higher Taxes

NYC Smoking Prevalence Declined as Price Increased

Source: Schroth, 2014
Tax Avoidance & Evasion
Do NOT Eliminate Revenue Impact of Higher Taxes

Cook County Cigarette Tax and Tax Revenues - FY01-FY06

- Chicago tax rises from 16 to 48 cents
- Chicago tax up to 68 cents, 1/1/06
- Chicago smoking ban, 1/16/06

Tax Avoidance & Evasion
Do NOT Eliminate Revenue Impact of Higher Taxes
Cigarette Tax and Tax Revenues
Kansas & Neighboring States, FY2002 & FY2004

Sources: Tax Burden on Tobacco, 2013

Net Cigarette Tax Revenues
(in millions)

FY 2002  FY 2004

Kansas  $50  +151%
Nebraska  $50  +56%
Iowa  $50  -1%
Missouri  $50  +8%
Oklahoma  $50  -1%
Colorado  $50  -5%

NE also Increased its tax during this period
Cigarette Tax and Tax Revenues
Missouri & Neighboring States, FY2002 & FY2004

Notes: Tax increases include: KS, 24 to 79 cents/pack; NE, 34 to 64 cents/pack; TN, 13 to 20 cents/pack; AR, 34 to 59 cents/pack; and IL 58 to 98 cents/pack. Source: Tax Burden on Tobacco, 2013
Impact of Avoidance & Evasion

• IARC Handbook 14:
  – Sufficient Evidence that tax avoidance and tax evasion reduce, but do not eliminate, the public health and revenue impact of tobacco tax increases
Policy Responses
Government Responses: Canada, 1990s

Tax reduced in an attempt to counter smuggling

Real price per pack (USD)

Annual cigarette consumption per capita (in packs)

Source: World Bank, 1999
Combating Illicit Trade

• Tax stamps

• Michigan and tax stamps
  – Raised tax from 25 to 75 cents per pack, May 1, 1994; no tax stamp at the time
  – Initial large increase in revenues
    • From just under $250 million last full fiscal year before increase to almost $600 million first full year after increase
  – Smuggled cigarettes gain significant market share
    • NC (5 cent tax) eliminated tax stamp soon after MI tax increase; SC (7 cents) followed in 1997
  – Michigan adopts tax stamp in 1998
    • 14% increase in revenues following stamp
    • NC sales fall about 9%; SC more than 13%
Michigan: Taxes & Tax Revenues

Source: Tax Burden on Tobacco and author’s calculations
Combating Illicit Trade

- Adopt high tech tax stamp and enforce
  - Reduces tax evasion
  - More than pays for itself with increases in revenues
Combating Illicit Trade

![Graph showing California Cigarette Taxable Distributions with annotations for AB 71 Implementation on January 1, 2004, and trend line. 2007/08 numbers are estimates.](image)
Combating Illicit Trade

• California’s high-tech tax stamp
  – 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)

• Slow uptake by other states (MA, MI, NJ)
Combating Illicit Trade

Many US efforts 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 last to do so under PACT Act
• 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 data from several states
  • MA collected over $4.6 million in FY07
Combating Illicit Trade

• 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
Combating Illicit Trade

• Spain
  – Reduced share of smuggled cigarettes from estimated 15% in 1995 to 5% in 1999
    • Focus on large scale, container smuggling
    • Strengthened tax administration with new technology and better enforcement
    • Collaboration with France, Andorra, Ireland, UK and the EU Anti-Fraud Office
    • Did NOT focus on individual tax avoidance, street sellers
Cigarette tax and illegal cigarette market, Spain 1991-2008

Spain: Size of contraband cigarette market & total tax level on cigarette price

% of contraband cigarettes in duty paid sales

Total tax as % of Most Popular Brand Price

-3.0% 1.0% 2.0% 3.0% 4.0% 5.0% 6.0% 7.0% 8.0%
59.0% 21.2% 17.7% 13.6% 71.2% 71.4% 77.6%
50% 60% 70% 80%
Combating Illicit Trade

- World Bank Policy Report:
  - Rather than forego tax increases, appropriate response is to crack down on illicit trade

- IARC Handbook 14:
  - Strong evidence that a coordinated set of interventions that includes international collaborations, strengthened tax administration, increased enforcement, and swift, severe penalties reduces illicit trade in tobacco products
WHO’s Best Practices in Tobacco Taxation

• Eliminate tax or duty free sales of tobacco products
  – As called for in Article 6 of FCTC
  – Reduces opportunities for individual tax avoidance
  – Maximizes public health and revenue impact of taxes/tax increases
WHO’s Best Practices in Tobacco Taxation

• Adopt new technologies to strengthen tobacco tax administration and minimize tax avoidance and evasion
  – Sophisticated tax stamps
  – Tracking and tracing technologies
  – Production monitoring technologies
WHO’s Best Practices in Tobacco Taxation

- Strengthen tobacco tax administrators’ capacity by licensing all involved in tobacco product manufacturing and distribution
  - Facilitates identification of those engaged in illegal trade
  - Enhances ability to penalize those engaged in illegal trade
    - License suspension, revocation
WHO’s Best Practices in Tobacco Taxation

- Ensure certain, swift and severe penalties for those caught engaging in illicit trade in tobacco products
  - Increased the expected costs of engaging in illicit trade
  - Administrative sanctions coupled with licensing
WHO’s Best Practices in Tobacco Taxation

• Strengthen tobacco tax administrators’ capacity to monitor tobacco product markets and evaluate the impact of tobacco tax increases
  – “Trust but verify”
  – Monitoring of tobacco production and distribution
  – Physical control over tobacco products
  – Periodic audits
  – Capacity to estimate impact of tax changes on consumption, revenues
  – Regional and international collaborations for monitoring, administration, enforcement
Combating Illicit Trade

- Illicit trade protocol to the WHO FCTC
  - Adopted November 2012; currently in process of being signed/ratified; provisions calling for:
  - Strong tax administration
    - Prominent, high-tech tax stamps and other pack markings
    - Licensing of manufacturers, exporters, distributors, retailers
    - Export bonds
    - Unique identification codes on packages
  - Better enforcement
    - Increased resources
    - Focus on large scale smuggling
  - Swift, severe penalties
  - Multilateral/intersectoral cooperation
Summary
Cost Effectiveness of Tobacco Taxes

Significant tobacco tax increases make good economic sense:

- Not just long-term public health, but near-term health and economic benefits
- Tobacco control will not harm economies
- Substantial impact in reducing health care costs, improving productivity, and fostering economic development.
For more information:

Tobacconomics

http://www.tobacconomics.org

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