Taxation as Obesity Control Policy

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Overview

- Rationales for taxation
- Impact of taxes/prices on consumption and consequences
- Types/levels of taxes
- Counterarguments
- Highlight experiences with tobacco taxes and implications for obesity prevention
- Thanks to Lisa Powell, Jamie Chriqui and many other colleagues
Rationale for Taxation
"Sugar, rum, and tobacco, are commodities which are nowhere necessaries of life, which are become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation."

Why Tax?

- **Efficient revenue generation**
  - Primary motive historically and still true in many countries today
  - Very efficient sources 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”
  
  - “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 on tobacco tax
Tobacco Taxes and Revenues

Mexico

Graph 7.2: Tax revenue from the STPS and the STPS rate, 1981-2008

Source: Waters, et al., 2010
Why Tax?

- Promote public health
  - Increasingly important motive for higher tobacco taxes in many high 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

- “... We [] have a package of six policy measures, known as MPOWER, that can help countries implement the provisions in the Convention. All six measures have a proven ability to reduce tobacco use in any resource setting. But tobacco taxes are by far the most effective.” Director General Dr. Margaret Chan, WHO, 2008

Source: Jha, 2009
Why Tax?

- **Cover the external costs of tobacco use**
  - “Pigouvian” tax
  - Less frequently used motive
  - Account for costs resulting from tobacco use imposed on non-users
    - Increased health care costs, lost productivity caused by exposure to tobacco smoke among non-smokers; public financed health care to treat diseases caused by tobacco use
  - Can also include “internalities” that result from addiction, imperfect information, and time inconsistent preferences
Economic Costs & Tax Revenues

United States

- Economic Costs
- Publicly Financed Health Care Costs
- Tax Revenues

Sources: CDC/SAMMEC, CTFK, Tax Burden on Tobacco, and author’s calculations
Implications for Obesity Prevention

- **Efficient revenue generation**
  - Considerable revenue potential
  - US Estimates suggest that 1¢ per ounce tax on SSBs would generate nearly $15 billion nationally

- **Promote public health**
  - Growing evidence that raising price of unhealthy foods/beverages would reduce consumption, promote healthier eating, and improve weight outcomes

- **Cover the external costs of obesity**
  - In US, health care costs from treating obesity estimated at $147-210 billion, with about half covered by public insurance programs
Impact of Prices on Tobacco Use
Prices and Tobacco Use

- Increases in tobacco product 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
Prices and Tobacco Use

Mexico

Graph 2.1: Cigarette consumption and real price, 1981-2008

Source: Waters, et al., 2010
Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2008

Prevalence

Source: NHIS, *Tax Burden on Tobacco*, 2009, and author’s calculations

Note: green data points for prevalence are interpolated assuming linear trend
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

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

\[ y = 0.0283x + 43.083 \]

\[ R^2 = 0.371 \]
Cigarette Prices and Youth Smoking Prevalence US States & DC, 2009

Source: YRBS, *Tax Burden on Tobacco*, 2010, and author’s calculations
Taxes, Prices and Health
US, 1980-2005

- Cigarettes per adult per day
- Lung cancer death rates per 100,000 (divided by 4): men age 35–44
- Relative price

Source: Nat Rev Cancer © 2009 Nature Publishing Group
Impact of Prices on Diet and Weight
Selected Food Price & Adult Weight Trends
1961-2009, Inflation Adjusted

Selected Food Price & Youth Weight Trends
1971-2009, Inflation Adjusted

Food Prices and Consumption

Extensive economic research on the impact of food and beverage prices on consumption of various products; estimates suggest 10% own-price increase would reduce:

- Cereal consumption by 5.2%
- Fruit consumption by 7.0%
- Vegetable consumption by 5.9%
- Soft drink consumption by 7.8%
- Sweets consumption by 3.5%
- Food away from home consumption by 8.1%

Source: Andreyeva, et al., 2010
Estimates from more recent research suggest similar or even larger effects for 10% price increases:

- Sugar sweetened beverage consumption falls by 12.1%
- Fast food consumption falls by 5.2%
- Vegetable consumption falls by 4.8%
- Fruit consumption falls by 4.9%

Source: Powell, et al., forthcoming
Food Prices and Weight Outcomes

Relatively limited research with mixed findings to date on impact of food and beverage prices and weight outcomes:

- Higher sugary food prices reduce prevalence of overweight/obesity among adults (Miljkovic et al., 2008)

- 10% higher fast food prices would reduce prevalence of adolescent obesity by almost 6% (Powell, et al., 2007)

- Higher soda sales taxes associated with reduced weight gain, particularly for overweight kids (Sturm, et al., 2010)

  - Higher carbonated beverage prices significantly related to lower BMI in children (Wendt and Todd, 2011)

- Tax-induced reductions in calories from beverage intake offset by increased calories from other sources (Fletcher et al., 2010)

Source: Powell et al., forthcoming
While mixed, weight of the existing evidence suggests that changes in relative prices for healthier and less healthy foods may affect weight outcomes, with greater impact on:

• Lower income, less educated populations
• Younger populations
• Populations at greater risk for obesity

Source: Powell, et al., forthcoming
Implications for Obesity Prevention

Policy options for altering relative prices include policies that:

• Increase prices of less healthy options
  • taxes
  • elimination of corn subsidies
  • disallow purchases under food assistance programs

• Reduce prices of healthier options
  • subsidies
  • expanded or favored treatment under food assistance programs

Source: Powell et al., forthcoming
Why Sugar-Sweetened Beverage Taxes?

• **Link to obesity**
  • Several meta-analyses conclude that increased SSB consumption causes increased weight, obesity
  • Increased calories from SSBs not offset by reductions in calories from other sources
  • “Empty calories” that provide little or no nutritional benefits

• **Other health consequences**
  • type 2 diabetes, lower bone density, dental problems, headaches, gout, cardiovascular disease, anxiety and sleep disorders
U.S. SSB Consumption in Calories by Age, 2007-2008

Source: National Health and Nutrition Examination Survey (NHANES) 2007-2008, author’s own calculations
Soda Consumption and Obesity Prevalence
U.S., 1980-2008

Source: National Health and Nutrition Examination Survey (NHANES) 2007-2008, author’s own calculations
Soda Consumption & Obesity
California Counties, 2005

\[ y = 16.44 \ln(x) + 6.1142 \]

\[ R^2 = 0.6656 \]

Source: Babey, et al., 2009 and authors' calculations.
Soda Consumption & Obesity
Selected Countries

Source: Soda consumption from Euromonitor, 2011; Obesity prevalence from OECD Health Data, 2005
Carbonated Beverage Prices & Youth Obesity
1995-2009, InflationAdjusted

Source: BLS; YRBS
SSBs and Tobacco?

• Similarities:
  • Neither is a necessity
  • Both cause considerable health consequences among users, with consequences poorly understood by many
  • Financial externalities for both from use of publicly funded health care to treat these health consequences
  • Consumption of both begins at early ages when information problems are more pronounced
  • Clear evidence of addiction for tobacco and growing evidence of addictive potential for sugar
SSBs and Tobacco?

• **Similarities:**
  • Both marketed aggressively by large multinational companies
  • Tobacco and soda multinationals have considerable political influence
  • Both industries emphasize personal responsibility and misuse economic arguments in debate over control policies
  • Both industries engage in ‘self-regulation’
  • Both industries introduce ‘safer’ products

Source: Adapted from Brownell and Warner, 2009
Cigarette Company Marketing Expenditures, by Type, 1975-2008

Source: author’s calculations from data reported in FTC (2011)
Types/Levels of Taxes
Types of Tobacco Taxes

- **Variety of tobacco taxes**
  - Taxes on value of production
  - Customs duties on tobacco leaf, tobacco products, alcoholic beverage imports and/or exports
  - Sales taxes/Value added taxes
  - Implicit taxes when government monopolizes production and/or distribution
  - Excise taxes (or similar taxes)
  - Many of these are applied to variety of agricultural and/or consumer goods and services
  - Excise taxes are of most interest given specificity to tobacco products
Types of Tobacco Taxes

- **Excise Taxes**
  - Two types of excises
    - Specific Taxes: excises based on quantity or weight (e.g. tax per pack of 20 cigarettes, wine gallons)
    - *Ad Valorem* taxes: excises based on value of products (e.g. a specific percentage of manufacturer’s prices for tobacco products, alcoholic beverages)
  - Wide variety of tobacco excise taxes globally
    - Uniform specific or uniform *ad valorem*
    - Mixed specific and *ad valorem*
    - Tiered specific or *ad valorem*
    - Different rates based on product/production factors
## Cigarette Taxation Globally

<table>
<thead>
<tr>
<th>Income Group</th>
<th>Only specific</th>
<th>Only ad valorem</th>
<th>Both specific and ad valorem</th>
<th>No Excise</th>
<th>Total countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>11</td>
<td>2</td>
<td>25</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>Upper Middle</td>
<td>16</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>42</td>
</tr>
<tr>
<td>Lower Middle</td>
<td>18</td>
<td>19</td>
<td>12</td>
<td>3</td>
<td>52</td>
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<tr>
<td>Low</td>
<td>10</td>
<td>28</td>
<td>2</td>
<td>3</td>
<td>43</td>
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<tr>
<td>By Region</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>AFRO</td>
<td>14</td>
<td>29</td>
<td>1</td>
<td>2</td>
<td>46</td>
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<tr>
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<td>13</td>
<td>16</td>
<td>2</td>
<td>3</td>
<td>34</td>
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<tr>
<td>EMRO</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>20</td>
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<tr>
<td>EURO</td>
<td>10</td>
<td>3</td>
<td>36</td>
<td>0</td>
<td>49</td>
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<tr>
<td>SEARO</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>8</td>
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<tr>
<td>WPRO</td>
<td>14</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>25</td>
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<tr>
<td>All Countries</td>
<td>55</td>
<td>60</td>
<td>48</td>
<td>19</td>
<td>182</td>
</tr>
</tbody>
</table>

* Countries for which data are available

Source: *WHO calculations using WHO GTCR 2009 data*
# Cigarette Taxation Globally

<table>
<thead>
<tr>
<th>Differential /Tiered Excise taxes on cigarettes</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total covered</td>
<td>156</td>
</tr>
<tr>
<td>With tiers</td>
<td>32</td>
</tr>
<tr>
<td>Base of tiers</td>
<td></td>
</tr>
<tr>
<td>Retail price</td>
<td>11</td>
</tr>
<tr>
<td>Producer price</td>
<td>2</td>
</tr>
<tr>
<td>Sales volume</td>
<td>1</td>
</tr>
<tr>
<td>Production volume</td>
<td>1</td>
</tr>
<tr>
<td>Type - filter/non filter</td>
<td>12</td>
</tr>
<tr>
<td>Type - hand/machine made</td>
<td>2</td>
</tr>
<tr>
<td>Type - kretek/white cigarette</td>
<td>1</td>
</tr>
<tr>
<td>Packaging soft/hard</td>
<td>3</td>
</tr>
<tr>
<td>Cigarette length</td>
<td>4</td>
</tr>
<tr>
<td>Trade domestic/imported</td>
<td>1</td>
</tr>
<tr>
<td>Weight (tobacco content in cigarette)</td>
<td>1</td>
</tr>
<tr>
<td>Leaf content (domestic/imported)</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note: Of the 155 countries with available data in TMA, 10 countries have no excise. Some countries differentiate based on more than one criteria. 8 countries differentiate their excises based on more than 1 criteria.*

*Source: TMA 2009*
Best Practices in Tobacco Taxation

• Simpler is better
• Favor specific taxes over *ad valorem* taxes
• Adjust specific taxes to outpace inflation, income growth
• Excise taxes account for ≥ 70% of retail prices
• Much more……
THE AMERICAS: Share of total and excise taxes in the price of a pack of the most sold brand of cigarettes, 2010

% excise tax
% all other taxes

Data not reported/not available for: Cuba and Haiti.

Source: WHO, 2011
Implications for SSB Taxes

• From a public health perspective, specific excise tax preferable to sales tax or ad valorem excise tax for several reasons:
  • More apparent to consumer
  • Easier administratively
  • Reduces incentives for switching to cheaper brands, larger quantities
  • Revenues more stable, not subject to industry price manipulation
  • Greater impact on consumption; more likely impact on weight outcomes
  • Disadvantage: need to be adjusted for inflation

Source: Chriqui, et al., forthcoming
Sales Taxes on Carbonated Beverages
United States, July 1, 2012

Note: Does not include 3 states with mandatory, statewide local tax rate (CA-1%, UT-1.25%, VA-1%)

Data Source: Bridging the Gap Program, University of Illinois at Chicago, 2012
Sales Taxes on Selected Beverages, All U.S. States, July 1, 2012

Note: Three states also impose a mandatory statewide local tax that is not reflected in the above data: CA (1%), UT (1.25%), VA (1%).
Sales Taxes on Selected Beverages
Taxing States, July 1, 2012

Mean State Sales Tax (46 states with tax @ avg=5.56%)
Mean State Food Tax (14 states with tax @ avg=3.5%)

Note: Three states also impose a mandatory statewide local tax that is not reflected in the above data: CA (1%), UT (1.25%), VA (1%).
Global Beverage Taxes

- Several countries recently adopted SSB taxes as part of effort to curb obesity; a few examples:
  - Denmark: DKK 1.58/litre (US$0.28) for beverages with >0.5 grams of sugar/100 ml; DKK 0.57 (US$0.10) for <0.5 grams/ml
  - France €7.16/100 litres (US$9.39) on beverages with added sugars and artificially sweetened beverages
  - Hungary: 5 forints/litre ($0.024) on soft drinks; 250 forints ($1.18) on energy drinks; 100 forints on pre-packaged sugar-sweetened products (>25-40g added sugar per 100g; varies by product)
  - Nauru: 30% ad valorem tax on prices of imported carbonated soft drinks, cordials, flavoured milks, and drink mixes containing sugar

Source: Chriqui, et al., forthcoming
Earmarking Tax Revenues
Comprehensive Programs

- Impact of tobacco control program funding:
  - Increased funding associated with:
    - Reductions in overall cigarette sales
    - Lower youth smoking prevalence
    - Lower adult smoking prevalence
    - Increased interest in quitting, successful quitting
  - Much of impact results from large scale mass-media anti-smoking campaigns

Source: ImpacTeen Project, UIC; YRBS
SSB Taxation & Revenues

- Revenue generating potential of beverage tax is considerable
  - SSB Tax calculator at:
  - Tax of one cent per ounce could generate:
    - $14.9 billion nationally if on SSBs only
    - $24.0 billion if diet included
  - Tax of two cents per ounce:
    - $21.0 billion nationally, SSBs only
    - $39.0 billion if diet included
  - Earmarking tax revenues for obesity prevention efforts would add to impact of tax
Oppositional Arguments
-
Myths & Facts
Oppositional Arguments - Tobacco

- Massive job losses as tobacco use falls in response to higher taxes
- Poor adversely affected by higher tobacco taxes
- Revenues will fall as tobacco use falls
- Increased tax avoidance and tax evasion in response to higher taxes
Impact on 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 jobs in most states
## Impact of Sugar Sweetened Beverages Taxes on Jobs

<table>
<thead>
<tr>
<th></th>
<th>Industry + Income/Substitution + Government</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Explicit Sugar Sweetened Beverages Substitution</td>
</tr>
<tr>
<td><strong>Illinois</strong></td>
<td></td>
</tr>
<tr>
<td>Total Jobs</td>
<td>4,406</td>
</tr>
<tr>
<td>Private Non Farm</td>
<td>-910</td>
</tr>
<tr>
<td>Beverage Manufacturing</td>
<td>-1,357</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>-1,894</td>
</tr>
<tr>
<td>State and Local Government</td>
<td>5,316</td>
</tr>
<tr>
<td><strong>California</strong></td>
<td></td>
</tr>
<tr>
<td>Total Jobs</td>
<td>6,654</td>
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<tr>
<td>Private Non Farm</td>
<td>-248</td>
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<tr>
<td>Beverage Manufacturing</td>
<td>-2,294</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>-2,722</td>
</tr>
<tr>
<td>State and Local Government</td>
<td>6,902</td>
</tr>
</tbody>
</table>

Source: Powell, et al., in progress
Impact on the Poor

- Concerns about the regressivity of higher tobacco taxes
  - Greater price sensitivity of poor – relatively large reductions in tobacco use among lowest income populations, small reductions among higher income populations
  - Health benefits that result from tax increase are progressive
  - Use of tax revenues for tobacco control, health promotion, and/or other programs targeting the poor offsets financial impact
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
Implications for SSB Taxes

- New SSB taxes almost certainly regressive given current consumption patterns

- Progressive distribution of health benefits from tax given greater impact on lower-income populations

- Use of tax revenues for programs targeting the poor offsets financial impact of tax
Summary
Summary

- Tobacco tax increases have significantly reduced tobacco use and its consequences
  - Potential for using taxes to promote healthier eating and curb obesity
- Regularly increased, sizable specific excise taxes most effective
- Earmarking tax revenues for prevention & control programs adds to impact
- Economic counterarguments false or greatly overstated
For more information:

fjc@uic.edu

http://www.bridgingthegapresearch.org/