Tobacco Taxes and Tobacco Use: Global Evidence

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IARC HANDBOOKS OF CANCER PREVENTION
Tobacco Control

Volume 14

Effectiveness of Tax and Price Policies for Tobacco Control

2011
Outline of Handbook volume 14

- Chapter 1: Introduction
- Chapter 2: Overview of Tobacco Taxation
- Chapter 3: Industry Pricing Strategies and Other Pricing Policies
- Chapter 4: Tax, Price and Aggregate Demand for Tobacco
- Chapter 5: Tax, Price and Adult Tobacco Use
- Chapter 6: Tax Price and Tobacco Use Among Young People
- Chapter 7: Tax, Price and Tobacco Use among the Poor
- Chapter 8: Tax Avoidance and Tax Evasion
- Chapter 9: Economic and Health Impact of Tobacco Taxation
- Chapter 10: Summary (Working Group of Experts)
- Chapter 11: Evaluation (Working Group of Experts)
- Chapter 12: Recommendations for Research (Working Group of Experts)
Handbook 14 Working Group

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Preparation

- Working Group Members search the scientific literature and prepare preliminary working drafts following the outline.
- Studies published (or accepted for publication) in the openly available scientific literature are the main source of evidence for the review and evaluation.
- Peer-reviewed government agency reports that are widely available can be considered.
- Unpublished reports that are in their final form and publicly available, can be exceptionally included if their inclusion is pertinent to making an evaluation.
- Volume 14 includes work published up to the week of the Handbook Meeting in May 2010 (May 17-22).
Evaluation Criteria

- **Sufficient evidence:** An association has been observed in studies in which chance, bias and confounding can be ruled out with reasonable confidence. The association is highly likely to be causal.

- **Strong evidence:** There is consistent evidence of an association but evidence of causality is limited by the fact that chance, bias or confounding have not been ruled out with reasonable confidence. However, explanations other than causality are unlikely.

- **Limited evidence:** There is some evidence of association between the intervention under consideration and a given effect, but alternative explanations are possible.
Evaluation Criteria

- **Inadequate/No Evidence**: There are no available methodologically sound studies showing an association; the available studies are of insufficient quality, consistency or statistical power to permit a conclusion regarding the presence or absence of a causal association between the intervention and a given effect. Alternatively, this category is used when no studies are available.

- **Evidence of No Effect**: Methodologically sound studies consistently demonstrate the lack of an association between the intervention under consideration and a given effect.
Evaluation Statements
Sufficient Evidence that:

Increases in tobacco excise taxes that increase prices result in a decline in overall tobacco use.
Taxes, Prices and Tobacco Use

Mexico

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

Source: Waters, et al., 2010
Taxes, Prices and Tobacco Use

Cigarette Prices and Cigarette Consumption, Guatemala, Inflation Adjusted, 2002-2010

Consumption (million sticks)

Price (inflation adjusted, 2010)

Consumption

Price

2002 2003 2004 2005 2006 2007 2008 2009 2010

2,950.0 3,150.0 3,350.0 3,550.0 3,750.0

11 13.3 13.8 14.3 14.8 15.3 15.8 16.3 16.8 17.3

Cigarette Prices and Cigarette Consumption, Guatemala, Inflation Adjusted, 2002-2010
Sufficient Evidence that:

Increases in tobacco excise taxes that increase prices reduce the prevalence of adult tobacco use.
Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2010

Source: Tax Burden on Tobacco, 2011, National Health Interview Survey, and author’s calculations
Increases in tobacco excise taxes that increase prices induce current tobacco users to quit.
Cigarette Prices and Cessation
US States & DC, 2009

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

\[ y = 0.0283x + 43.083 \]

\[ R^2 = 0.371 \]
Increases in tobacco excise taxes that increase prices lower the consumption of tobacco products among continuing users.

\[ y = 0.0219x + 16.737 \]

\[ R^2 = 0.2306 \]

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

Increases in tobacco excise taxes that increase prices reduce the initiation and uptake of tobacco use among young people, with a greater impact on the transition to regular use.
Tobacco use among young people responds more to changes in tobacco product taxes and prices than does tobacco use among adults.
Cigarette Price and Youth Smoking Prevalence, United States, 1991-2010

Source: MTF, *Tax Burden on Tobacco*, 2011, and author’s calculations
Limited Evidence that:

The demand for tobacco products in low-income countries is more responsive to price than is the demand for tobacco products in high-income countries.
Elasticity Estimates
Aggregate Demand Studies
High-Income, Non-US    Low/Middle-Income

Source: IARC Handbook 14, forthcoming
In high-income countries, tobacco use among lower-income populations is more responsive to tax and price increases than is tobacco use among higher-income populations.
Limited Evidence that:

In low- and middle-income countries, tobacco use among lower-income populations is more responsive to tax and price increases than is tobacco use among higher-income populations.
Strong Evidence that:

Changes in the relative prices of tobacco products lead to some substitution to the products for which the relative prices have fallen.
Tobacco industry price discounting strategies, price-reducing marketing activities, and lobbying efforts mitigate the impact of tobacco excise tax increases.
Price-Reducing Marketing:
Cigarette Company Marketing Expenditures, by Type, 1975-2008

Source: author’s calculations from data reported in FTC (2011)
Sufficient Evidence that:

Tobacco tax increases that increase prices improve population health

Source: Jha, 2009
Taxes, Prices and Health: US, 1980-2005

**Diagram:**
- **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
Sufficient Evidence that:

Higher and more uniform specific tobacco excise taxes result in higher tobacco product prices and increase the effectiveness of taxation policies in reducing tobacco use.
## Cigarette Taxation Globally

<table>
<thead>
<tr>
<th>Income Group</th>
<th>Excise System on Cigarettes</th>
<th>Total countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Only specific</td>
<td>Only ad valorem</td>
</tr>
<tr>
<td>High</td>
<td>11</td>
<td>2</td>
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<tr>
<td>Upper Middle</td>
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<td>11</td>
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<tr>
<td>Lower Middle</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Low</td>
<td>10</td>
<td>28</td>
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</table>

### By Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Excise System on Cigarettes</th>
<th>Total countries</th>
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</thead>
<tbody>
<tr>
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<td>Only ad valorem</td>
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<tr>
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<tr>
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<td>3</td>
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<tr>
<td>SEARO</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>WPRO</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>All Countries</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>

*Countries for which data are available

Source: *WHO calculations using WHO GTCR 2009 data*
Sufficient Evidence that:

Tobacco tax increases increase tobacco tax revenues.
Federal Cigarette Tax and Tax Revenues
Inflation Adjusted, 1955-2010

Year:

Tax Per Pack (Aug 2011 dollars):
$0.15 $0.25 $0.35 $0.45 $0.55 $0.65 $0.75 $0.85 $0.95 $1.05

Revenues (Million Aug 2011 dollars):
$6,000.00 $8,000.00 $10,000.00 $12,000.00 $14,000.00 $16,000.00

Source: Tax Burden on Tobacco, 2011, and author’s calculations
Tobacco Taxes and Revenues

Mexico

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

Source: Waters, et al., 2010
Sufficient Evidence that:

Tax avoidance and tax evasion reduce, but do not eliminate, the public health and revenue impact of tobacco tax increases.
Tax Avoidance & Evasion Do NOT Eliminate Health and Revenue Impact of Higher Taxes

Cigarette Prices and Adult Prevalence, New York, 1995-2007

Source: Tax Burden on Tobacco, 2008 and BRFSS
Tax Increases and Tax Avoidance

Cook County Cigarette Tax and Tax Revenues - FY01-FY06

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

Chicago smoking ban, 1/16/06
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.
Cigarette tax and illegal cigarette market, Spain 1991-2008

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

- Total tax incidence
- % of contraband

<table>
<thead>
<tr>
<th>Year</th>
<th>% of contraband</th>
<th>Total tax as % of Most Popular Brand Price</th>
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<tbody>
<tr>
<td>1991</td>
<td>59.0%</td>
<td></td>
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<tr>
<td>1992</td>
<td>17.7%</td>
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</tr>
<tr>
<td>1993</td>
<td>21.2%</td>
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<tr>
<td>1994</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>71.7%</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>71.2%</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>71.4%</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>1999</td>
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<td></td>
</tr>
<tr>
<td>2000</td>
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<td>2008</td>
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Strong Evidence that:

Tobacco tax increases do not increase unemployment.
Recommendations
In order to improve public health by reducing tobacco use, governments should adopt relatively simple tobacco excise tax structures that emphasize specific taxes and that include regular tax increases that outpace growth in general price levels and incomes.
Governments should use tobacco tax revenues to fund comprehensive tobacco control programs and other health promotion activities, given that such programs lead to further reductions in tobacco use and improvements in population health.
A multi-national surveillance and monitoring system should be implemented that regularly collects data on tobacco use among adults and young people, tobacco product taxes and prices, price-reducing marketing and lobbying efforts of tobacco companies, tax avoidance and evasion, and tax administration and enforcement activities.
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(available to order – pdf coming soon)
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