

Review of existing international research evidence

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Principle Papers

- TCDC trade chapter (2000)
- 1996 Frank Chaloupka study
- Teh Wei Hu/Hsieh Taiwan study (1999)

The Impact of Trade Liberalization on Tobacco Consumption

Allyn Taylor, Frank Chaloupka,
Emmanuel Guidon, Michaelyn
Corbett

- Chapter 13 in *Tobacco Control in Less Developed Countries* (TCDC) published by Oxford Press in 2000

- This chapter and other chapters in TCDC can be found at:
<http://www1.worldbank.org/tobacco/tcdc.asp>

Some general trends:

- The percentage of tobacco grown that is exported has tripled between 1975 and 1995
- There has been a significant increase in global tobacco trade since 1975.
- Tobacco consumption is on the rise globally.

When tobacco trade is liberalized (lower non-tariff and tariff barriers), there are several effects:

- Increased competition in domestic markets
- Reduction in the prices of tobacco products
- Increase Advertising and Promotion Expenditures
 - International Companies to gain a foothold
 - Domestic Producers to protect their market shares

The impact of these changes:

- Lower prices lead to more consumption
- Higher advertising expenditures lead to more consumption
- Some substitution away from domestic cigarettes and to imported cigarettes

Long-Run impact

- **More smokers**
- **More smoking related illness and death**
- **Losses in productivity and welfare**
- **Greater health care expenditures**

Why not prevent trade liberalization to control tobacco consumption?

Potential Problems:

- Restrictive trade policies usually motivated by a desire to protect domestic producers – not to protect public health.
- Tobacco control efforts are weaker when there are significant trade barriers
- Trade facilitates economic growth and increases in income are linked to improved health outcomes – longer life expectancy, lower infant mortality and reduced morbidity.

World Trade Organization and GATT

- Rigorous tobacco control, uniformly applied to Domestic and International producers, is consistent with GATT
- BUT: Domestic and International products must be treated in the same manner

Regression Model in Taylor et al.

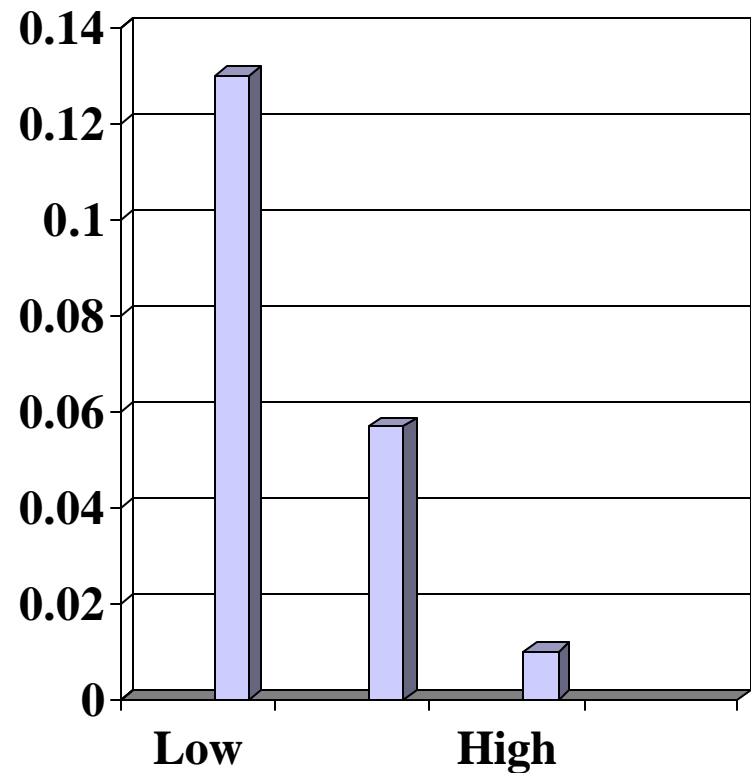
- Dependent Variable: Per Capita Cigarette Consumption for 42 countries, 1970 to 1995
- Explanatory Variables
 - Trade Openness (T)
 - Per Capita GNP (Y)
 - Lag Cigarette Consumption (C_{-1})
 - Year and Country fixed effects

Regression Results

- Sample partitioned into 3 groups
 - High Income (Per Capita GNP $>$ US \$ 3000)
 - Middle Income (Per Capita GNP between US \$1000 and US \$3000)
 - Low Income (Per capita GNP $<$ US \$1000)
- Equation estimated for each group separately

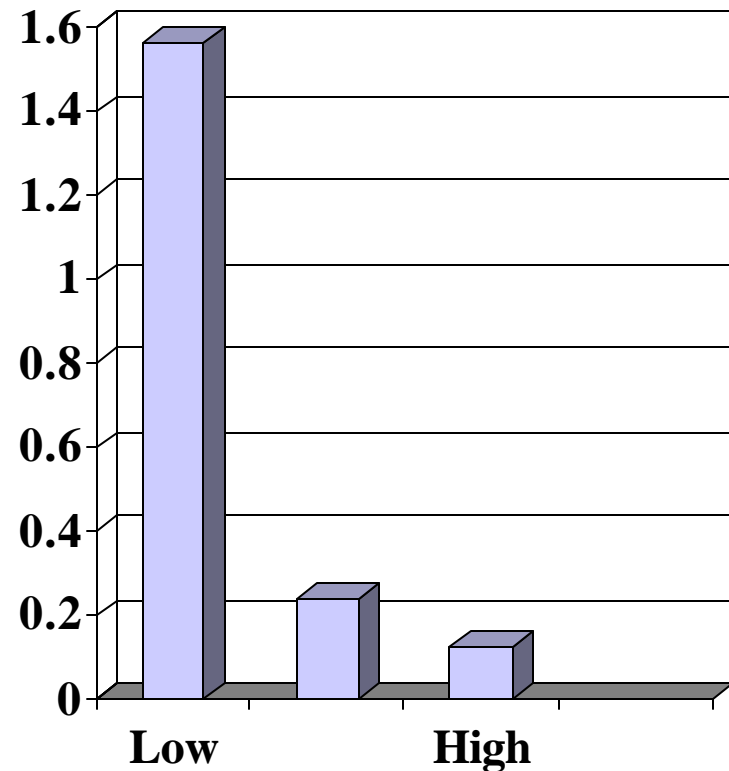
Regression Estimate for Openness (T)

- Trade liberalization has a much bigger impact on cigarette consumption in low income countries



Regression Estimate for Income

- Rising income has a much bigger effect on cigarette consumption in low income countries



Conclusion

- Growth and Globalization will without policy intervention (Tobacco Control) lead to more cigarette consumption in low income countries
- The impact will be greater in low income countries than either middle or high income countries

U.S. Trade Policy and Cigarette Smoking in Asia

Frank J. Chaloupka

Adit Laixuthai

- National Bureau of Economic Research
- Working paper 5543
- www.nber.org/
- Frank Chaloupka web site
- tigger.uic.edu/~fjc/

Paper examines the impact of trade liberalization on cigarette consumption.

- Annual Data from 10 Asian countries – 1970 to 1991 (observations = 220)
- Section 301 of the 1974 Trade Act and amendments used to persuade 4 Asian countries to open up markets to US cigarettes.
-

- Section 301 calls for the President of the US to investigate instances of trade practices by other countries that discriminated against U.S. firms
- Section 301 of the U.S. 1974 Trade Act called for negotiation to reduce or eliminate trade barriers and authorized the President to impose retaliatory sanctions if markets were not opened.
- Section 301 was used to open Japan, South Korea, Taiwan and Thailand to US cigarette makers.
- Generated a “natural experiment” – what is the impact on smoking

Countries in the Study

- List A – Tobacco Markets opened to US firms in 1980's
 - Japan
 - Taiwan
 - South Korea
 - Thailand
- List B – Tobacco Markets that remained relatively closed to US firms (to 1991)
 - **China**
 - **India**
 - **Indonesia**
 - **Malaysia**
 - **Pakistan**
 - **Philippines**

Research Design

- List B countries are used as controls for comparison with countries that open markets – that is, List A countries
- Dichotomous variable (Dummy Variable) is used to capture the impact of Section 301 agreements
- Per capita Gross National Product also included as an additional determinant of demand.
- Fixed effects are used to for country and time specific attributes

Dependent Variables

- Per Capita Annual Cigarette Consumption (sticks)
- Market Share of U.S. Tobacco firms

RESULTS

- 301 Agreements had a significant effect on cigarette consumption – countries that opened to U.S. manufactures experienced:
 - A 600 percent increase in U.S. manufactures' market share – compared to what would have been the case without trade liberalization
 - Average cigarette consumption was, on average, 10 percent higher as a result of liberalization.
 - U.S. companies significantly increased advertising and promotion – some evidence that women and the young were particularly targeted.

Conclusion

- If additional tobacco control measures are not implemented, trade liberalization will result in an increase in morbidity and mortality associated with cigarette smoking.

The Demand for Cigarettes in Taiwan: Domestic versus Imported Cigarettes

- Chee-Ruey Hsieh, Teh-Wei Hu and Chien-Fu Jeff Lin
- Contemporary Economic Policy, Vol 17,
No. 2, April 1999, 223-234

Data

- Annual data from Taiwan
- 30 Observations
- Tariff and Non-Tariff barriers change significantly over the time period (1966 to 1995)
- Examine demand for imported cigarettes and domestic cigarettes

Basic Model

- Demand Equation for overall market

$$- C_t = a_0 + a_1 P_t + a_2 Y_t + a_3 H_t + a_4 X_t + e_t$$

Demand depends on:

P – Price

Y – income

H – smoking related health information

X – vector of other determinants

e – error term

Estimated Model

- Two Equations – Imported and Domestic Brand consumption

- Demand for Domestic Brands

$$- C_{dt} = b_0 + b_1 P_{dt} + b_2 P_{it} + b_3 Y_t + b_4 H_t + b_5 X_t + e_{1t}$$

- Demand for Imported Brands

$$- C_{it} = c_0 + c_1 P_{dt} + c_2 P_{it} + c_3 Y_t + c_4 H_t + c_5 X_t + e_{2t}$$

Estimation Issues

- Three exogenous variables: H, Y and X.
- Endogenous explanatory variables: P_d , P_i
- 2-SLS is the estimation procedure
- Corrected for Auto Correlation
- SURS Estimation for Brand equations
- Some problems with statistical significance
 - because of small sample ($N = 30$)

Statistical Significance

- Own Price – significant (b_1 and c_2) and negative
- Income – Significant – positive but much higher for imports ($0 < b_3 < c_3$)
- Cross Price – not significant – but positive (b_2 and c_1)
- Warning Label – not significant - but negative (b_4 and c_4)
- Import Share – Significant - negative

Elasticities

- Domestic price elasticity is -0.6
- Imported price elasticity is -1.1
- Income Elasticities: 0.14 to 0.22
 - Imported cigarettes have a higher income elasticity than domestic cigarettes. Imported cigarettes may be viewed as higher quality by consumers.

Elasticities, Continued

- Elasticity of total cigarette demand with respect to imported market share: +0.025
- Market share increased from 1.94 to 17.68 – which is a 811 percent increase
- $(0.025) \text{ times } (811) = 20.3$ percent increase in demand
- Imports increase total per capita cigarette consumption

Elasticities, continued

- Cross Price elasticities: Domestic and Imported cigarettes are substitutes.

- As a result of lower tariffs:
 -
 - Imported cigarette consumption increased.
 -
 - Demand for domestic cigarettes fell.
 -
 - Overall Cigarette consumption increased.

Conclusions

- Per capita consumption in 1995 about what it was in 1987 prior to opening the market.
- This is probably due to tobacco control measures and increased consumer knowledge of health consequence of smoking
- Some evidence that consumers view imported cigarettes as “safer” than domestic cigarettes.