Tobacco Taxation

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Johns Hopkins School of Public Health, International Tobacco Control Leadership Program, Baltimore MD, July 29, 2008

Overview

- Why tax tobacco
- Types of tobacco taxes
- Impact of tobacco taxes on tobacco product prices
- Effects of taxes and prices on cigarette smoking and other tobacco use
- Myths and Facts about economic impact of tobacco tax increases

Prabhat Jha
University of Toronto
and
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University of Illinois
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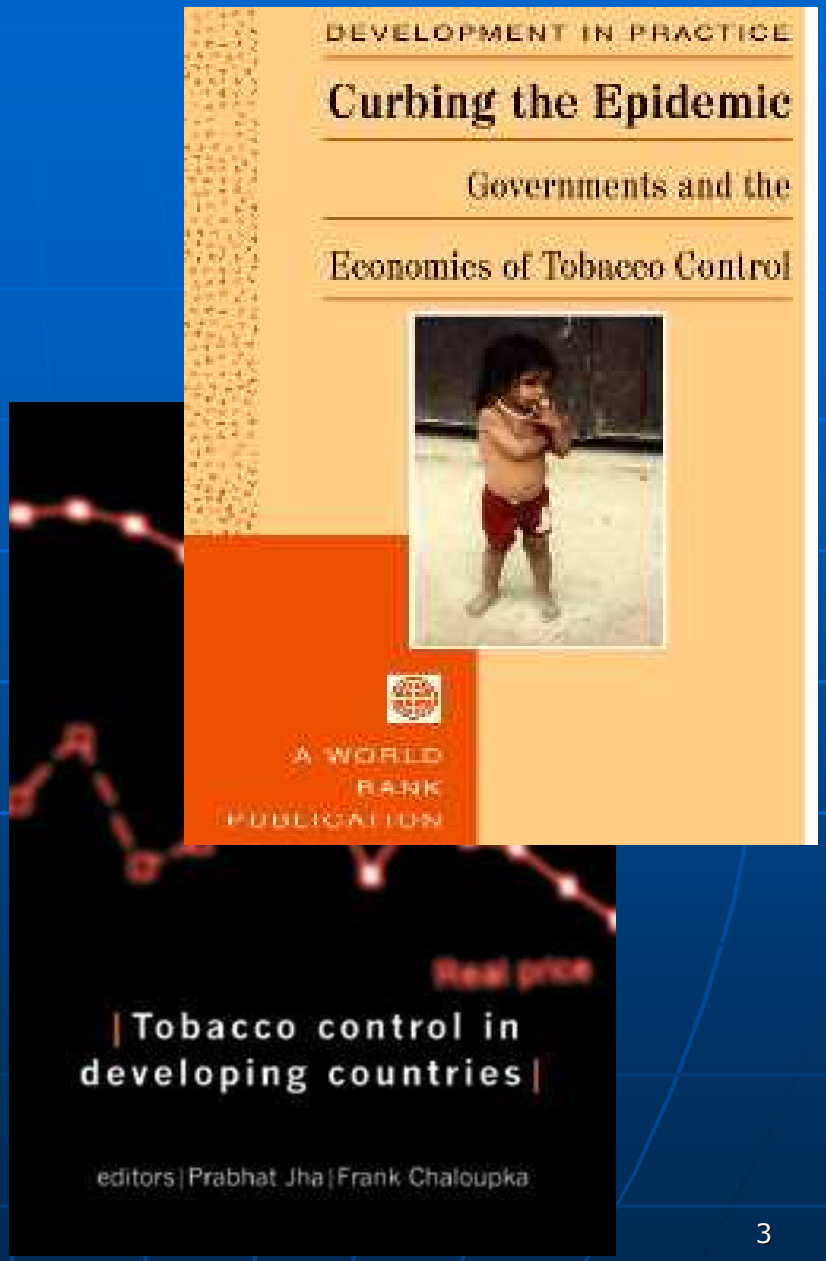
The World Bank

WHO



International Tobacco Evidence Network

- Chaloupka and Jha, Co-Directors;
  - Hana Ross Deputy Director
  - Numerous international collaborators
- Continues network developed for Curbing
- Technical assistance, dissemination, small grant support
  - Funded projects in South Africa, Poland, Mexico
  - Supported projects in Central/Eastern Europe and Southeast Asia
- Briefings for policy-makers
- www.tobaccoevidence.net

NCI & WHO Monograph 21

Frank J. Chaloupka
Geoffrey T. Fong
Ayda Yurekli

The Economics of Tobacco Control

National Cancer Institute
U.S. National Institutes of Health | www.cancer.gov

WHO

Why Tax Tobacco?

- **Efficient revenue generation**
  - Primary motive historically and still true in many countries today
  - Very efficient source of revenue given:
    - Low share of tax in price in most countries
    - Relatively inelastic demand for tobacco products
    - Few producers and few close substitutes
  - "Sugar, rum and tobacco are commodities which are no where necessaries of life, which are become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation" (Adam Smith, *Wealth of Nations,* 1776)

Why Tax Tobacco?

- **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
  - "The Parties recognize that price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons." (Framework Convention on Tobacco Control, Article 6)

Why Tax Tobacco?

- **Cover the external costs of tobacco**
  - 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

Why Tax Tobacco?

- **Industry understands importance of tobacco taxes**

"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

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
    - 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 (and a few others products – e.g. alcoholic beverages, motor vehicle fuel)

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)

Types of Tobacco Taxes

- **Choice of tobacco excises affects and/or depends upon:**
  - Relative prices of different brands within product category
    - e.g. filtered vs. unfiltered, longer vs. shorter, heavier vs. lighter, premium vs. discount, etc.
  - Stability, predictability of tax revenues
  - Inflation
  - Real value of revenues over time
  - Mix of products/brands available on the market
    - e.g. more expensive imports vs. low price domestic brands
  - Mix of products consumed
  - Potential for substitution in response to tax increase
  - Ease of administration
  - More……

Taxes and Tobacco Product Prices

Differences in brand-specific prices

- China
  - Specific tax (RMB 3/1000 – 0.06/pack)
  - Variable *ad valorem* taxes
    - 45% if CIF≥ RMB 50 per carton
    - Otherwise 30%
  - Import Duty of 25% of CIF
  - Prices (taxes), January 2007
    - Marlboro 14.00 (6.57)
    - Low price local brand 1.00 (0.41)

Source: Philip Morris International, 2007

Taxes and Tobacco Product Prices

Differences in brand-specific prices

- Russia
  - Variable specific taxes:
    - Filter 100 RUR/1000
    - Non-Filter 45 RUR/1000
  - *ad valorem* tax 5% of RSP
  - Minimum taxes:
    - Filter 115 RUR/1000
    - Non-Filter: 60 RUR/1000
  - Prices (taxes), January 2007
    - Marlboro 30.00 (8.08)
    - Low price non-filtered local brand 3.50 (1.73)

Source: Philip Morris International, 2007

Types of Tobacco Taxes

- **Specific vs. *ad valorem* tobacco excises**
  - Specific taxes:
    - Generally produce more stable stream of revenue
    - Real value falls with inflation
    - Promote higher "quality" products
    - Easier to administer
  - *Ad valorem* taxes:
    - More unstable revenues
    - Government subsidizes industry price cuts
      - but benefits from industry price increases
    - More likely to keep pace with inflation
    - Potential for abusive "transfer" pricing
    - Greater potential for "switching down" in response to tax increase
      - May require minimum price policies
    - May be protective for domestic industry (if imports tend to be higher quality/price)
      - Can achieve similar impact with specific tax if customs duty imposed on imported products

Types of Tobacco Taxes

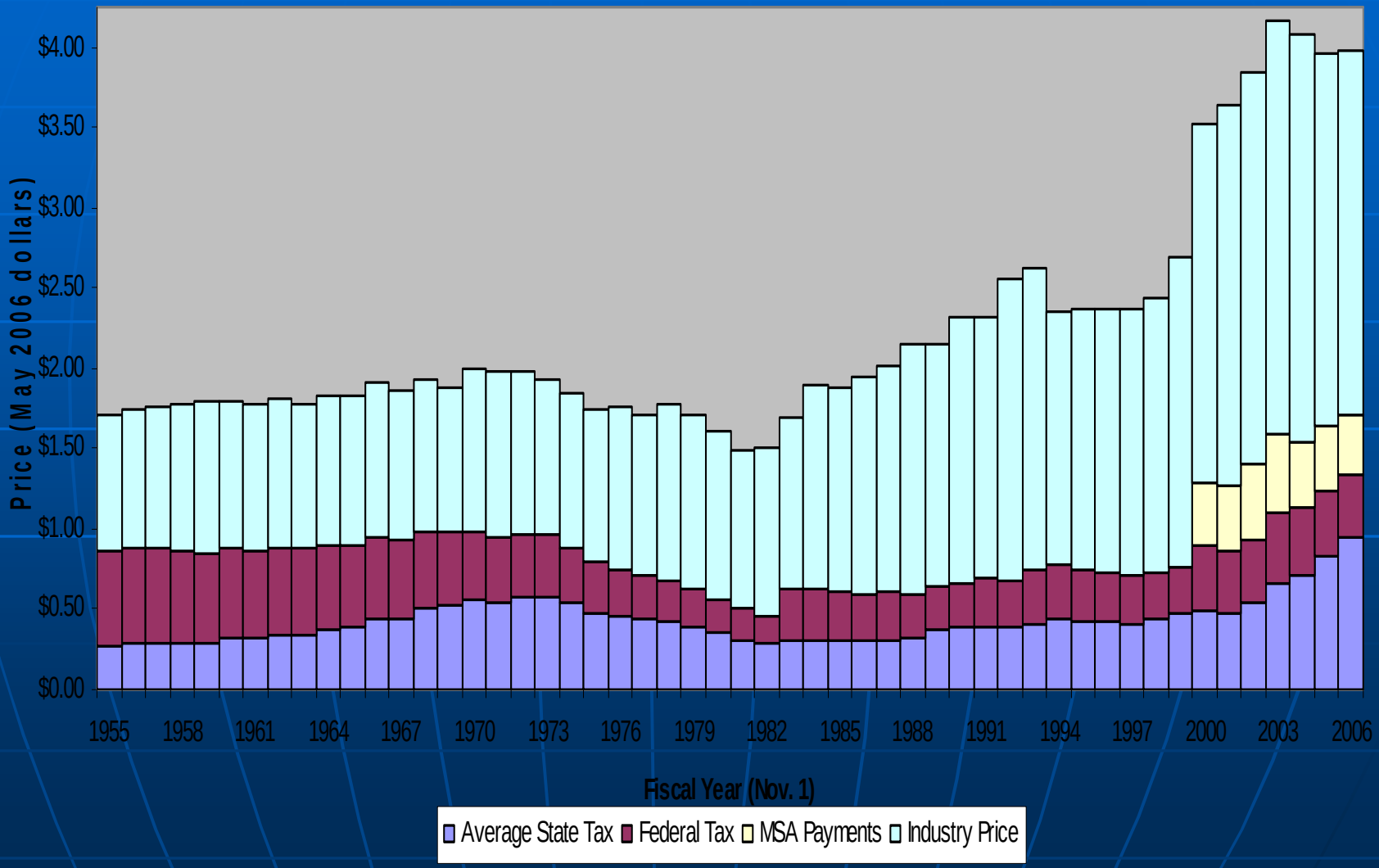
If reducing tobacco use is primary goal, specific tax is generally preferred

- Should be regularly adjusted for inflation
  - Generally not included in tobacco tax legislation or done in practice through regular increases
  - Regular increases above inflation if goal is to further reduce consumption
- Tax increases should be comparable across tobacco products
  - Reduce opportunities for substitution in response to changes in relative prices
- Can be somewhat offset by industry response
  - e.g. per stick taxes may result in greater availability of longer cigarettes

Taxes and Tobacco Product Prices

- **Impact of tobacco taxes on tobacco use, other outcomes depends on impact of tax on prices of tobacco products**
  - Impact on prices will vary based on several factors, including:
    - Structure of tobacco product market
    - Cost of tobacco product production
    - Industry price-related marketing efforts
    - Potential for individual tax avoidance and larger scale, more organized tobacco product smuggling
  - Most evidence (largely from the United States) indicates that tobacco tax increases result in comparable or larger tobacco product price increases
    - Little to no evidence for low/middle income countries

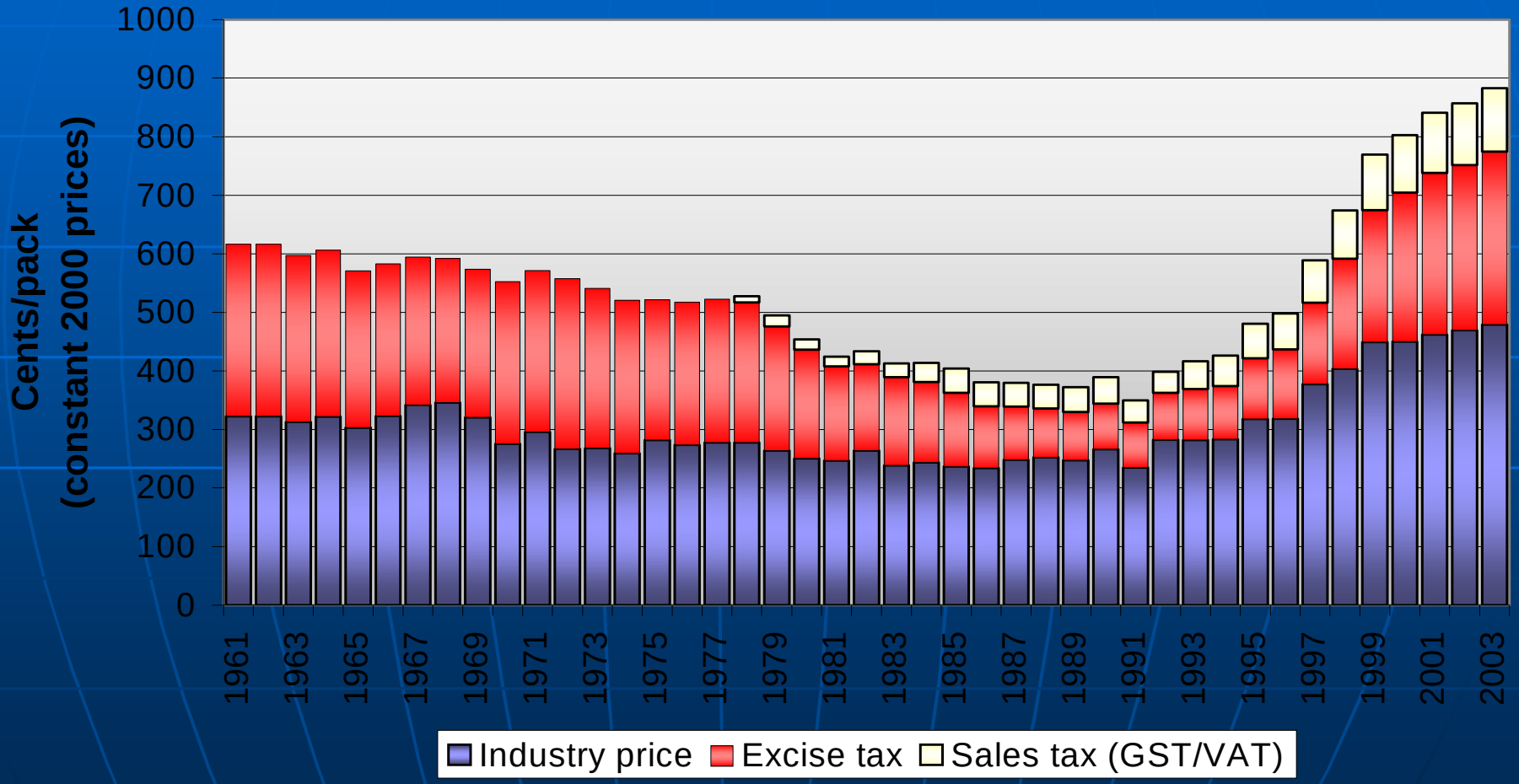
Taxes and Tobacco Product Prices



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

Taxes and Tobacco Product Prices

Inflation Adjusted Cigarette Taxes and Prices South Africa, 1961-2003

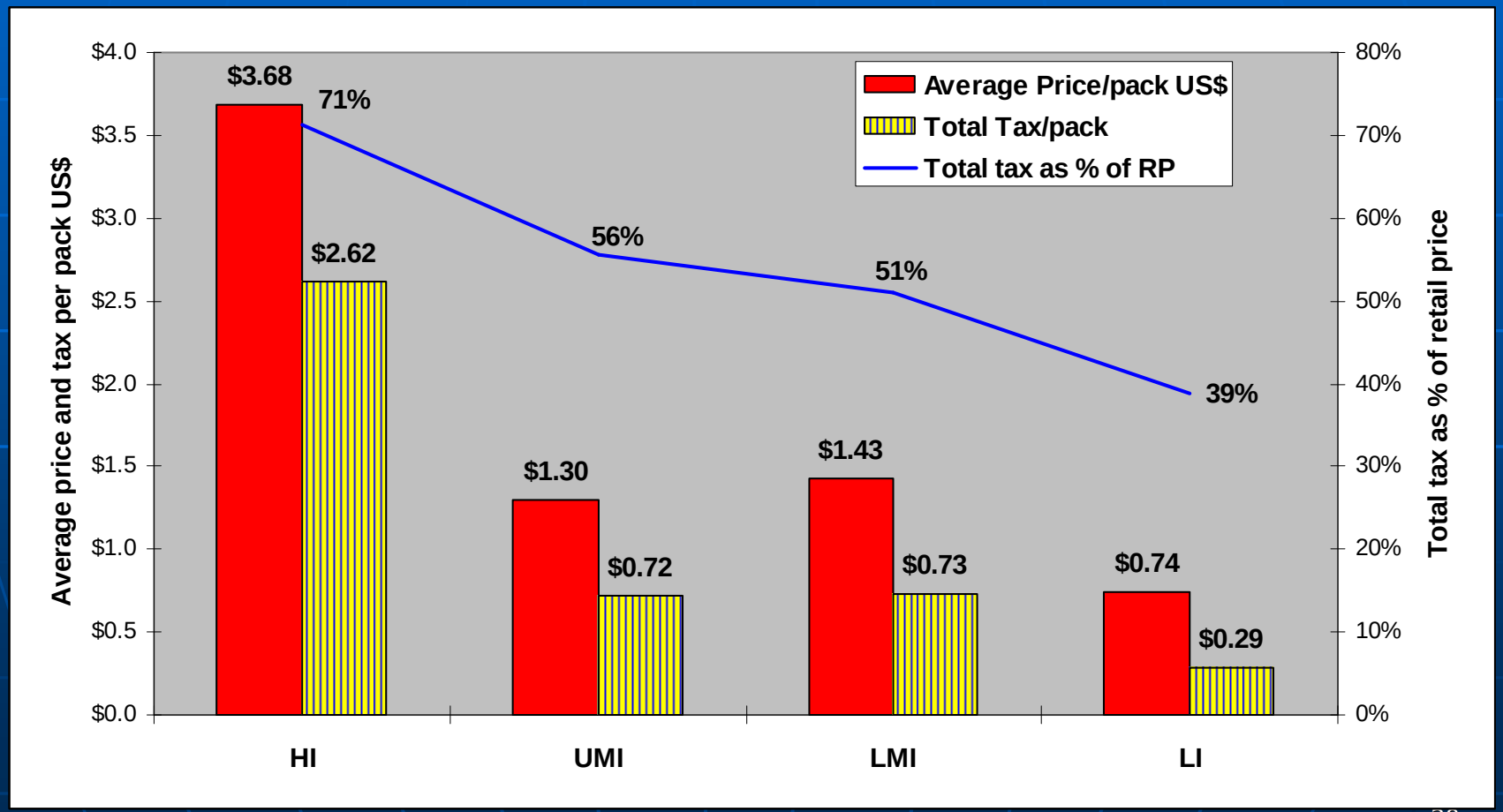


Source: Van Walbeek, 2003

Taxes and Tobacco Product Prices

- Tax levels and prices, vary widely across countries

Price and Tax by Income Level, 2004-05



Source: Yurekli and Onder, 2006

Taxes, Prices and Tobacco Use

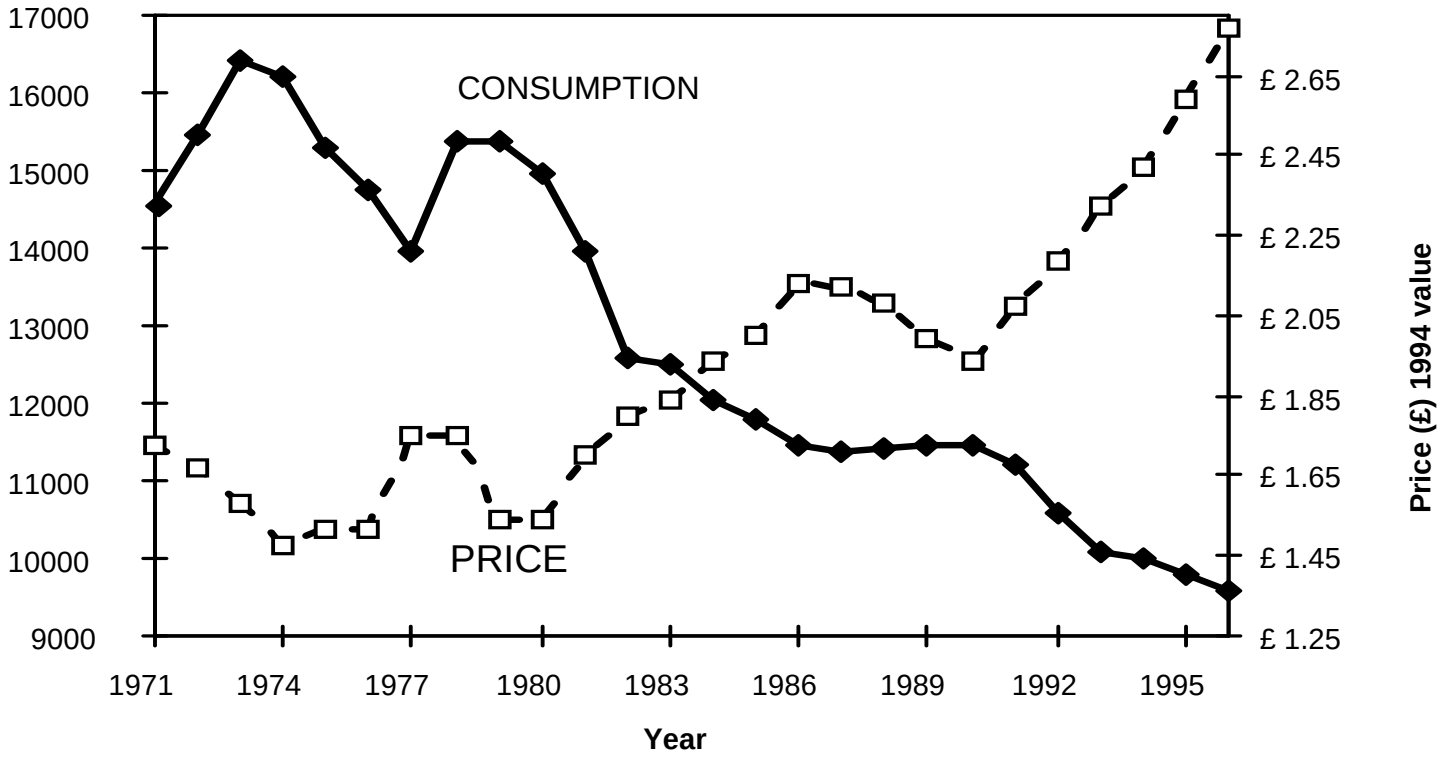
- **Increases in tobacco product taxes and prices:**
  - Induce current users to try to quit
    - Many will be successful in long term
  - Keep former users from restarting
  - Prevent potential users from starting
    - Particularly effective in preventing transition from experimentation to regular 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

Taxes, Prices and Tobacco Use

- **Price & Tobacco Use in High-Income Countries**
  - Well over 100 studies from high income countries consistently find that:
    - Ten percent increase in price reduces overall consumption by 2.5 to 5 percent
      - Consensus estimate is 10 percent price increase reduces consumption by 4 percent
      - Estimated impact on tax paid sales higher in presence of significant tax avoidance and smuggling
      - Long run impact about twice as large as addicted users respond over time to permanent increases in taxes and prices

Taxes, Prices and Tobacco Use

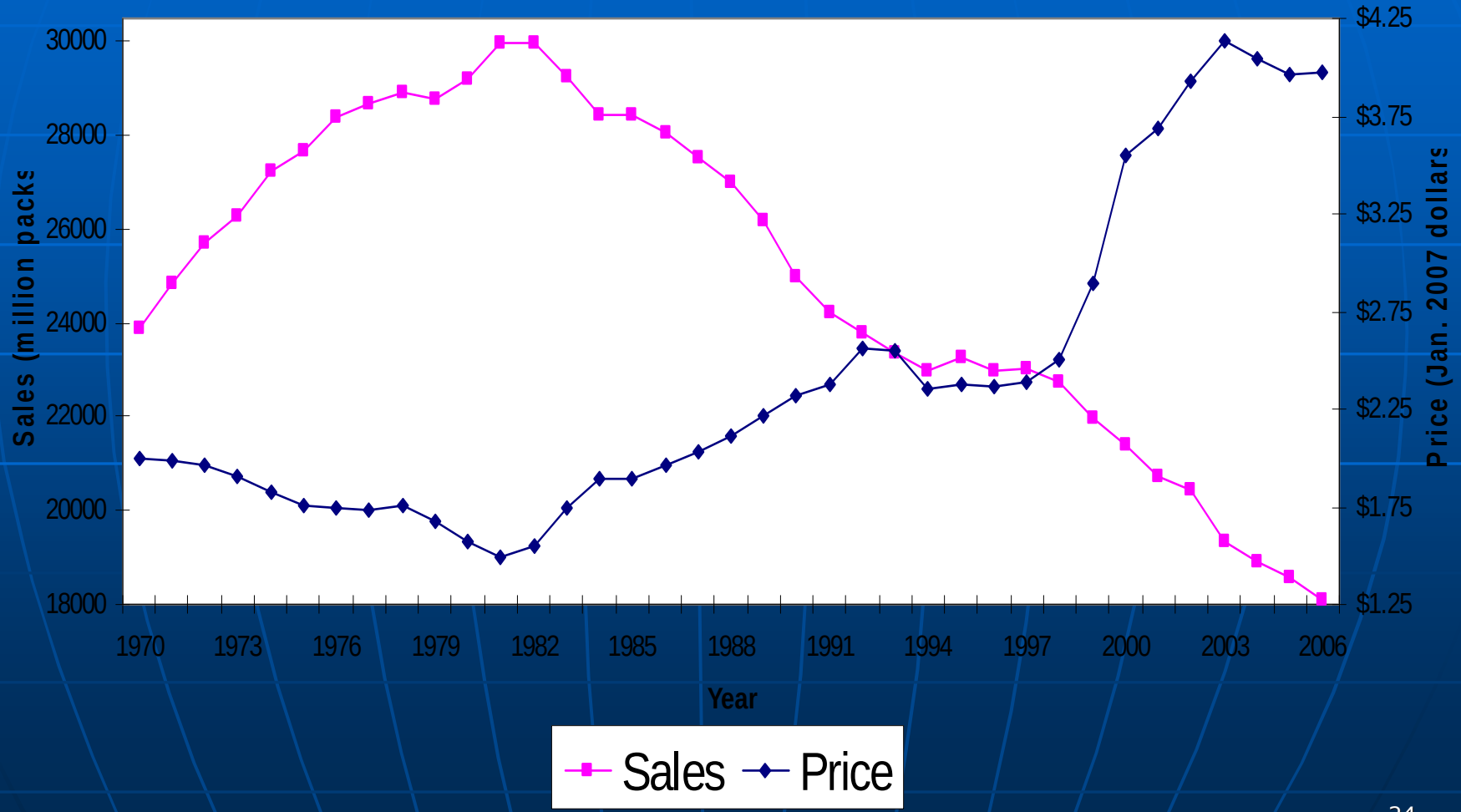
Inflation adjusted cigarette prices and cigarette consumption, United Kingdom, 1971-1996



Source: Townsend 1998

Taxes, Prices and Tobacco Use

Cigarette Prices and Cigarette Sales, United States, 1970-2006



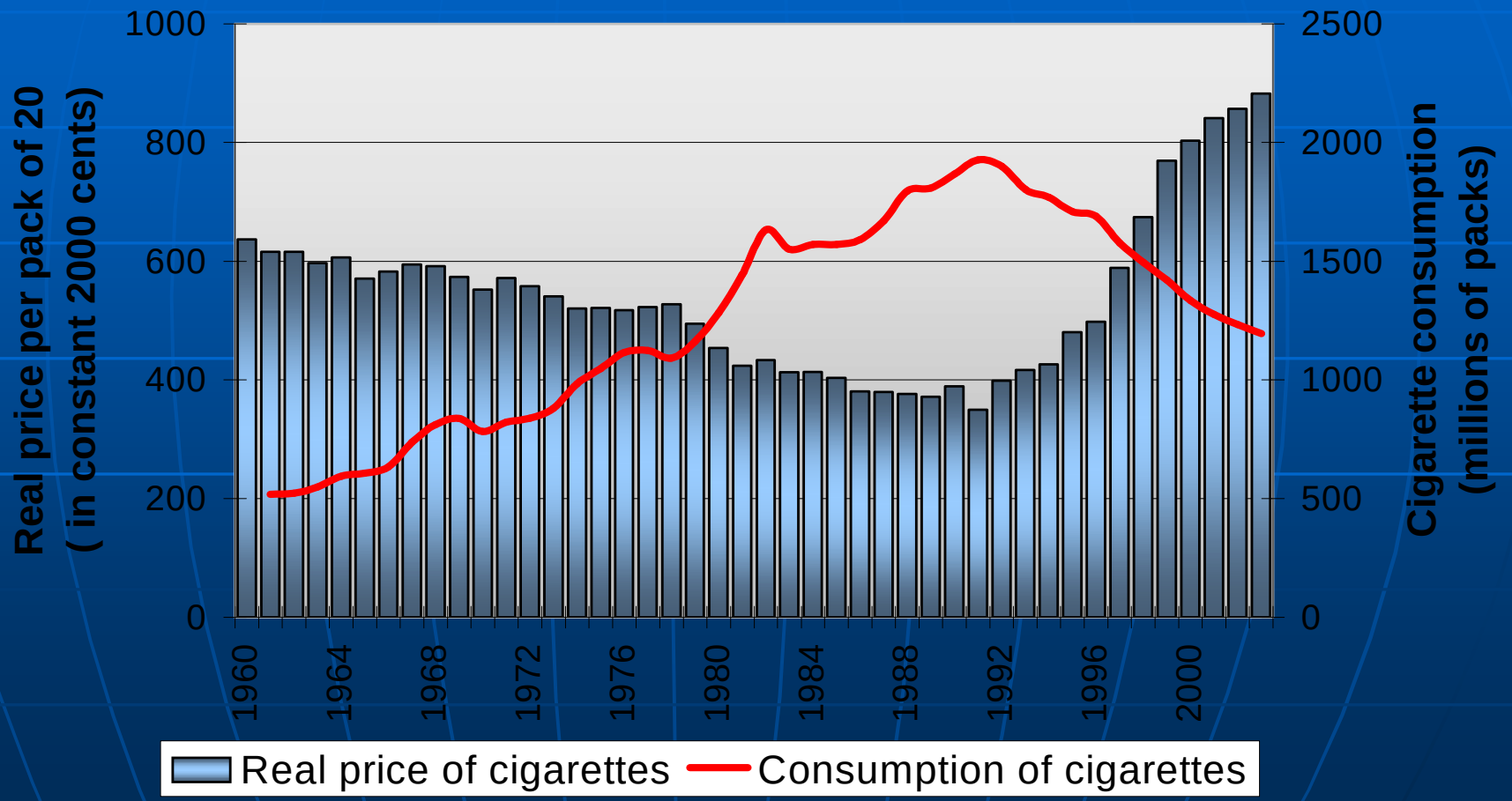
Source: *Tax Burden on Tobacco*, 2007, and author's calculations

Taxes, Prices and Tobacco Use

- **Price & Tobacco Use in Low/Middle-Income Countries**
  - Growing evidence from low and middle income countries suggests that impact of tax and price increases is up to twice as large as in high-income countries
    - Consistent with predictions from economic theory that price sensitivity greater among those on lower incomes
    - A few elasticity estimates:
      - SE Asia: -0.6 to -0.9
      - China: -0.65 to -1.3
      - South Africa: -0.6 to -0.7
      - Morocco: -0.5 to -1.5
      - Mexico: -0.5
      - India: Bidis: -0.95 to -1.0
        Cigarettes: -0.13 to -0.56

Taxes, Prices and Tobacco Use

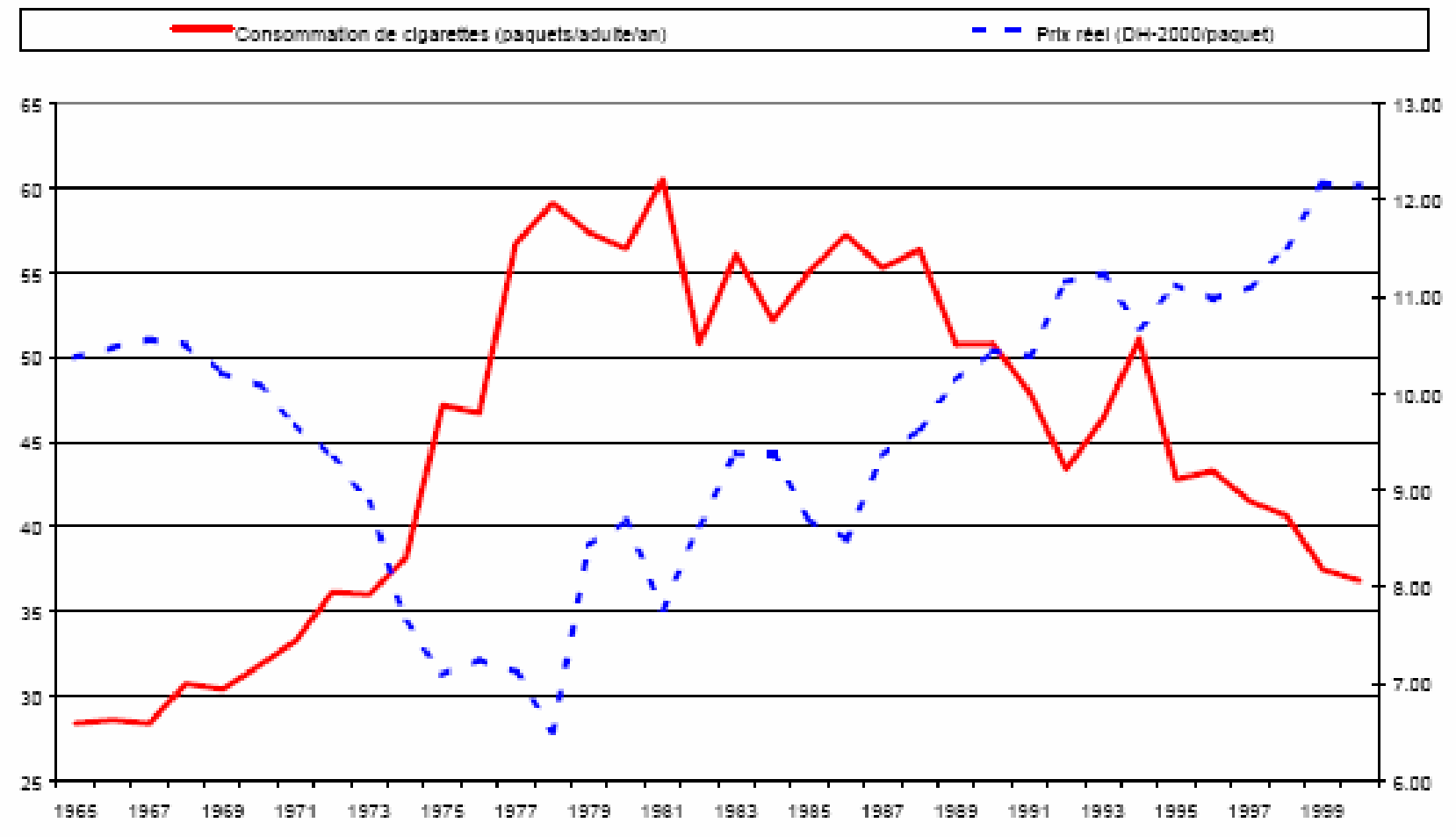
Inflation Adjusted Cigarette Prices and Cigarette Consumption, South Africa, 1960-2003



Source: Van Walbeek, 2003

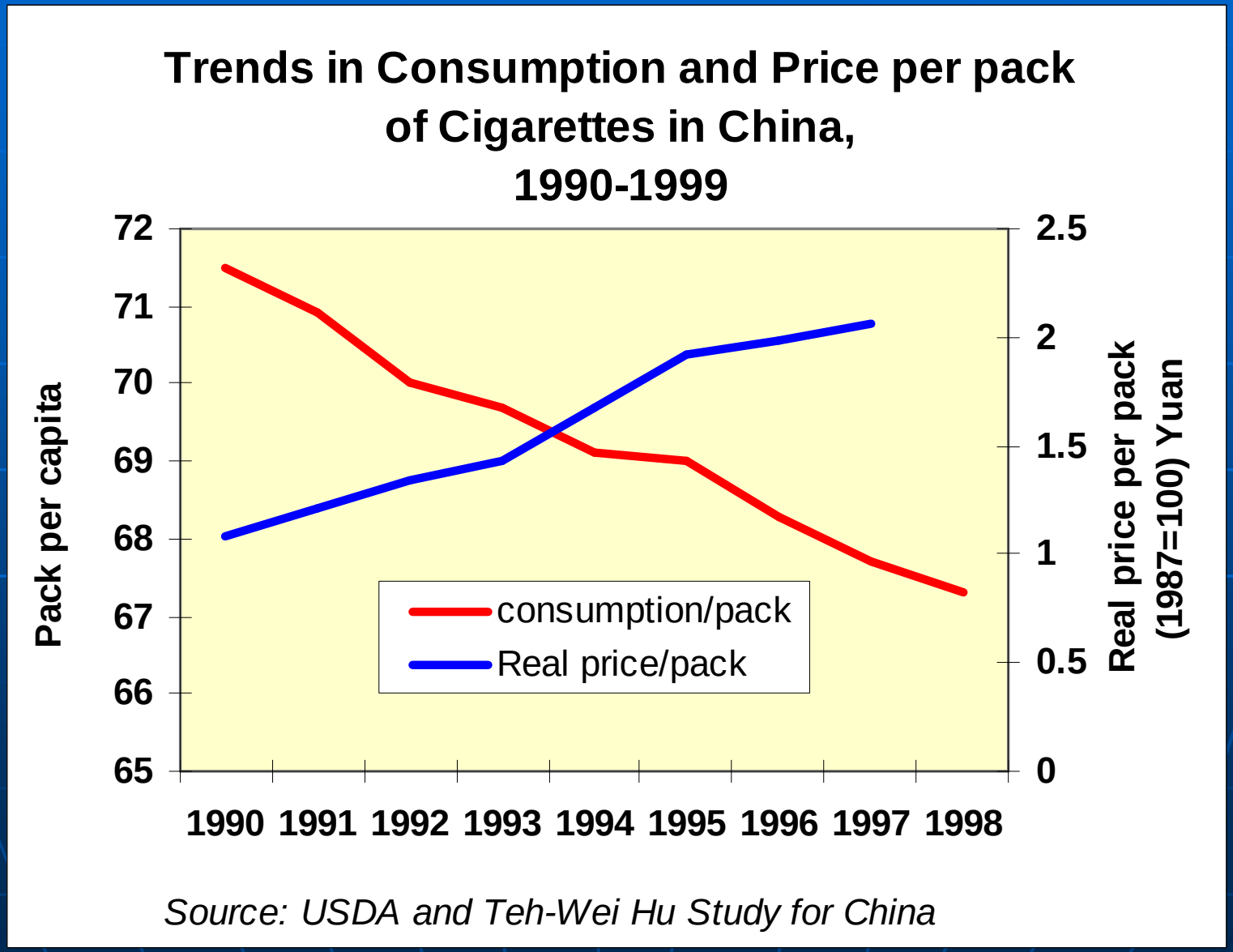
Taxes, Prices and Tobacco Use

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



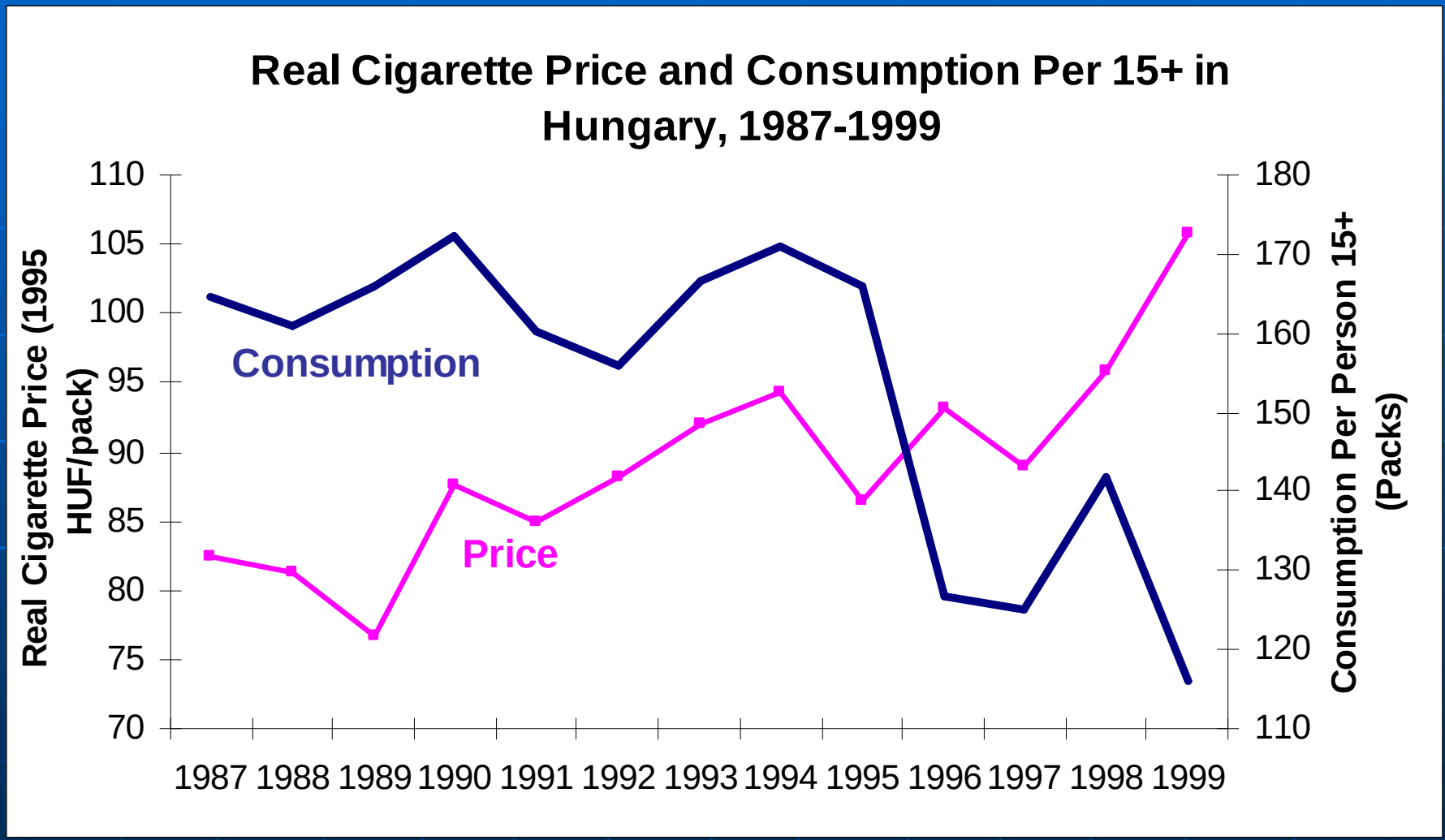
Source: Aloui, 2003

Taxes, Prices and Tobacco Use



Source: USDA and Teh-Wei Hu Study for China

Taxes, Prices and Tobacco Use



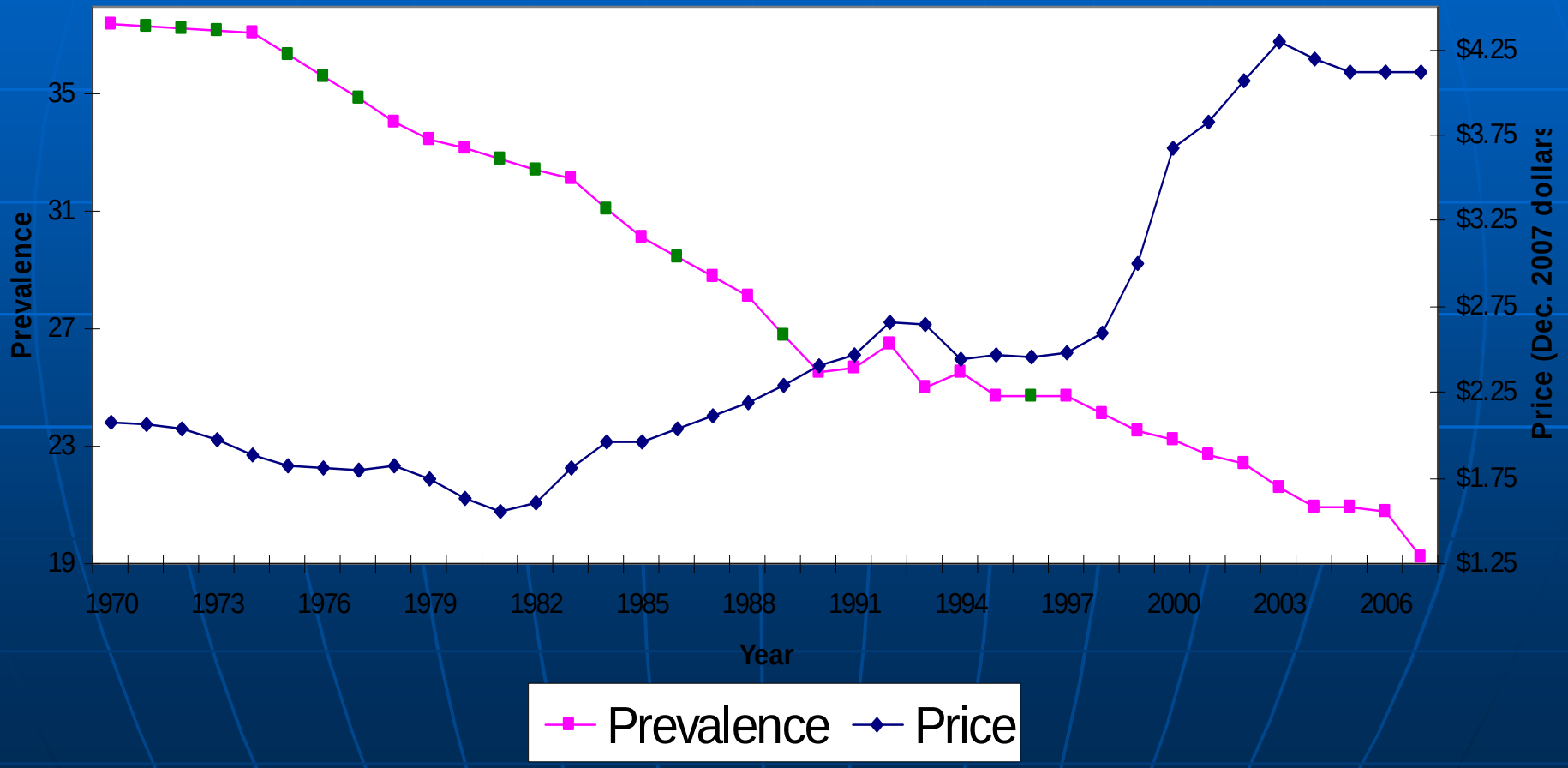
Source: Yurekli 2001

Taxes, Prices and Tobacco Use

- **Price, Smoking Prevalence, and Cessation**
  - Estimates suggest that about half of the impact of price on overall tobacco use result from changes in prevalence
    - Implies that a 10% price increase reduces prevalence by 1 - 2.5% in high-income countries
    - 2.5 - 5% in low/middle-income countries; fewer studies given general lack of necessary data
      - Myanmar: -1.28
      - Nepal -0.4 to -0.5
      - Turkey -0.4
    - Changes in prevalence in response to price increase largely result from cessation among current users
      - U.S. estimates suggest 10% price increase increases number of smokers trying to quit by more than 10%, with about 2% successful in long term

Taxes, Prices and Tobacco Use

Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2007

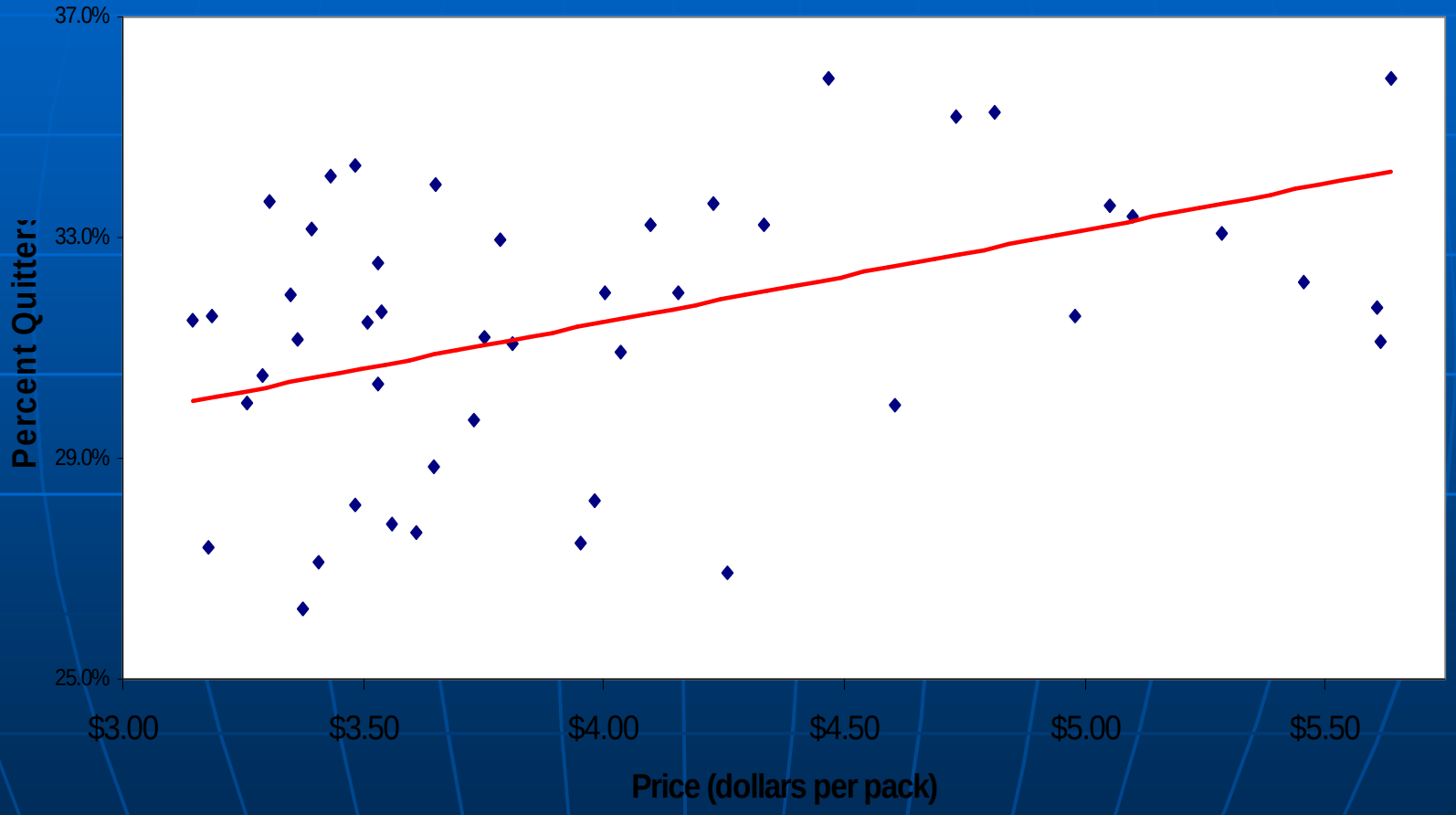


Source: NHIS, *Tax Burden on Tobacco*, 2007, and author's calculations

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

Taxes, Prices and Tobacco Use

Cigarette Prices and Percentage of Ever Smokers Who Have Quit Smoking, U.S. States, 2005



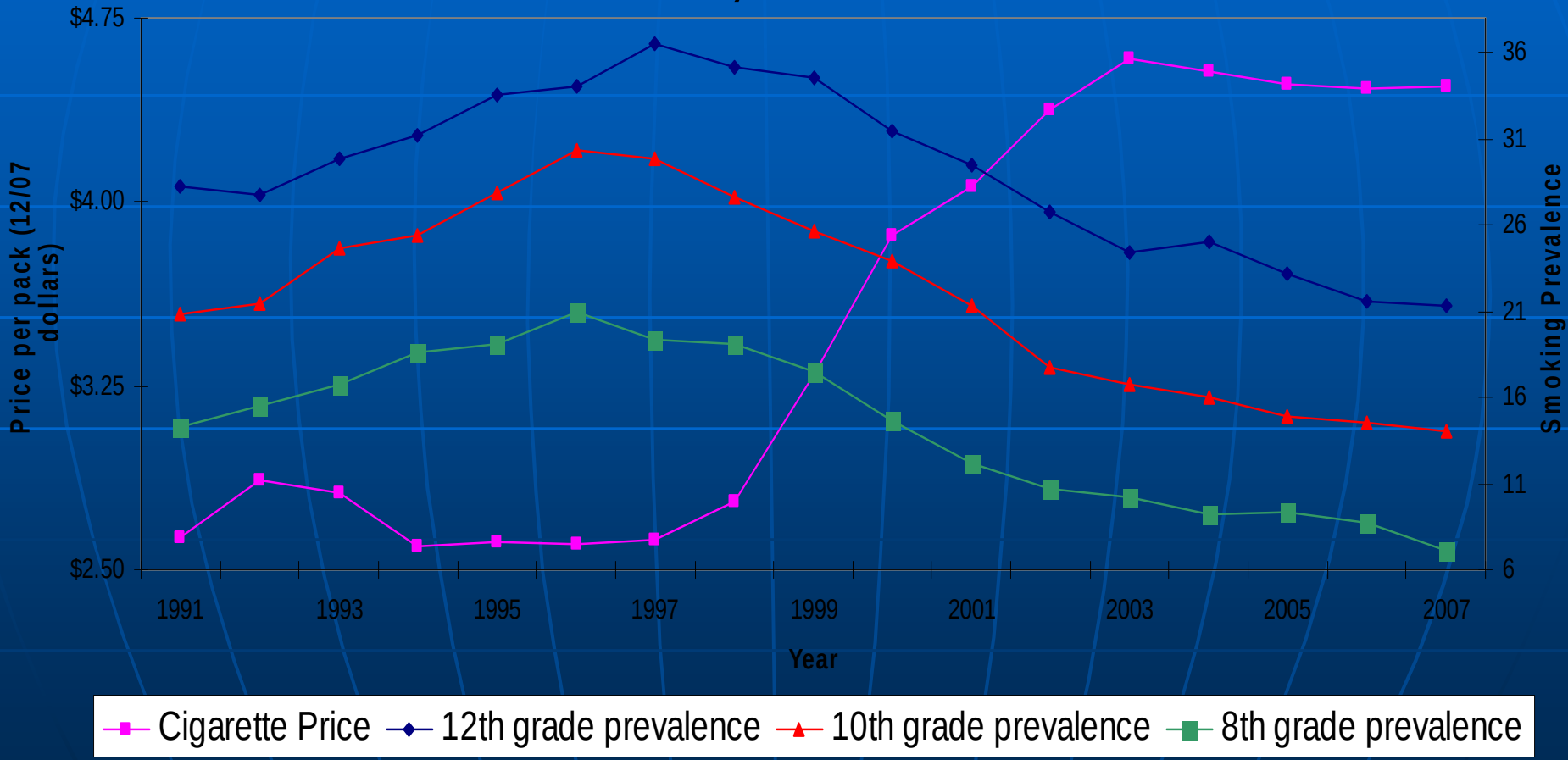
Source: *Tax Burden on Tobacco*, 2006, U.S. Behavioral Risk Factor Surveillance System, 2005, and author's calculations

Taxes, Prices and Tobacco Use

- **Price sensitivity and age**
  - Evidence that tobacco use among younger persons 2 to 3 times more responsive to price than tobacco use among older persons
    - Largely based on studies from the U.S., but some evidence from other countries
    - Consistent with economic theory, given:
      - Lower incomes of youth
      - Greater importance of peer influences on youth
      - Influence of addiction
      - Greater preference for the present among youth
    - Changes in youth prevalence largely result from reductions in initiation of tobacco use
    - Evidence suggests that higher taxes and prices are most effective in preventing youth from moving beyond experimentation and into regular tobacco use

Taxes, Prices and Youth Smoking

Cigarette Price and Youth Smoking Prevalence, United States, 1991-2007



Source: MTF, *Tax Burden on Tobacco*, 2007, and author's calculations

Taxes, Prices and Tobacco Use

- **Price sensitivity and income/education**
  - A growing number of studies find that tobacco use among less-educated and/or lower-income persons more responsive to price
    - Predicted by economic theory
    - Confirmed by evidence from high-income countries
    - Similar evidence emerging in low/middle-income countries
      - South Africa –
        - -1.39 lowest quartile, -0.81 highest quartile
      - Turkey – overall elasticities
        - -1.10 for poorest, -0.82 for highest
      - Vietnam:
        - Male Participation: -1.16 lowest quintiles
          -0.75 highest quintiles
        - Conditional demand: -0.57 to -0.84 lowest
          -0.35 to -0.42 highest

Taxes, Prices and Tobacco Use

- **Dedicated Tobacco Taxes**
  - Growing number of governments using dedicated (also called "hypothecated" or "earmarked") tobacco taxes to support tobacco control activities
    - Include "health promotion foundations" and "comprehensive tobacco control programs"
      - Victoria, Australia – "Vic Health" Model
      - Thai Health Foundation
      - Malaysia Health Promotion Foundation
      - Korean Health Promotion Foundation
      - Many others dedicate part of tobacco tax or other tobacco-related revenues for tobacco control and/or health promotion:

        India, Nepal, Peru, Estonia, Poland, Slovenia, Ecuador

        Several US states

Taxes, Prices and Tobacco Use

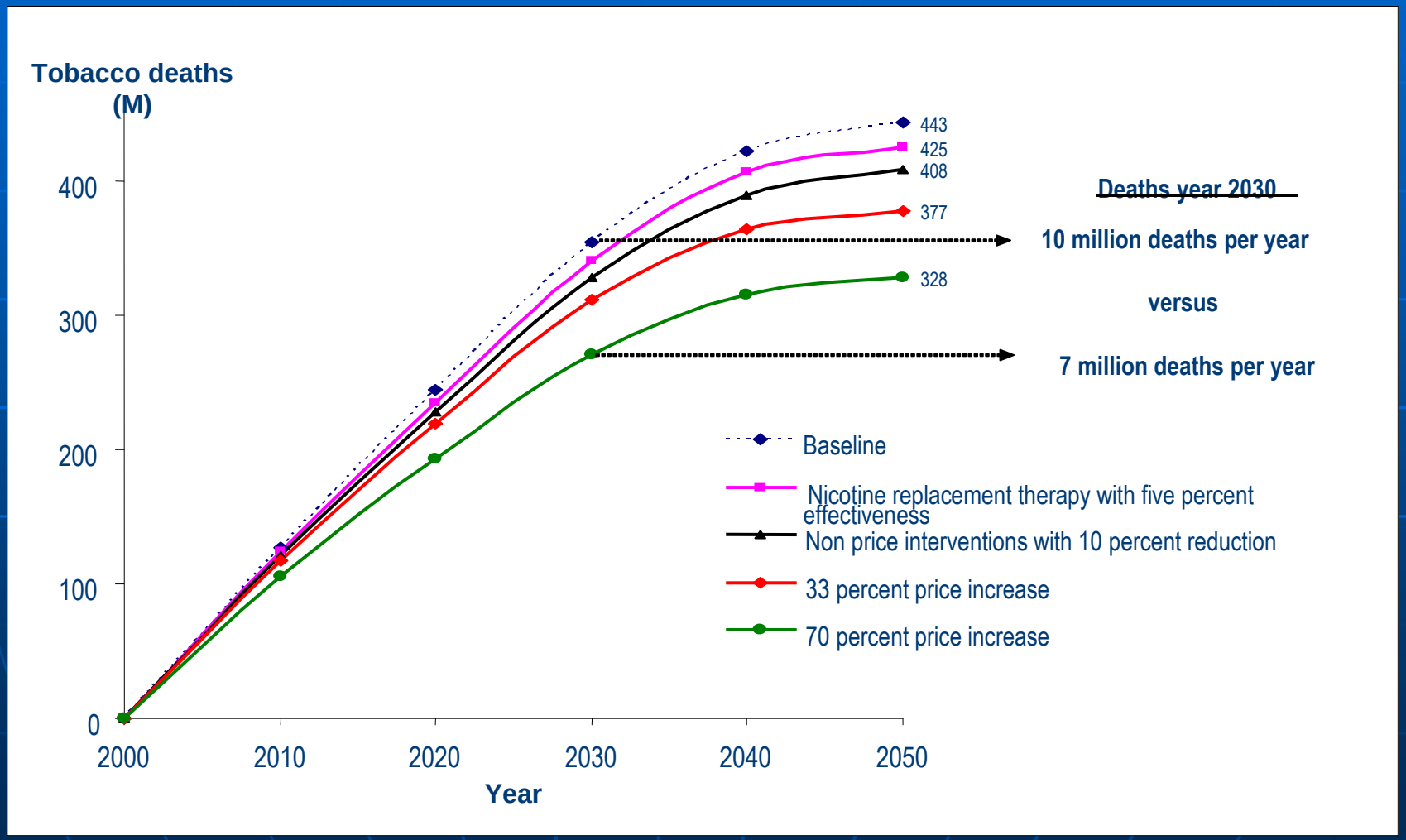
- **Dedicated Tobacco Taxes**
  - Research evidence from high-income countries, shows that funding for tobacco control programs:
    - Reduces overall tobacco consumption
    - Increases adult cessation and prevents youth initiation
    - Reduces tobacco use in other high risk populations

Tobacco Taxes and Public Health

- **Tobacco taxes and deaths caused by tobacco**
  - Given evidence on impact of tobacco taxes and prices on tobacco use, large increases in taxes globally would significantly reduce premature deaths caused by tobacco use
    - Short run reductions in deaths result from increased cessation
      - Significant health benefits of cessation
    - Long run reductions result from preventing initiation

Tobacco Taxes and Public Health

Tobacco Deaths and Tobacco Control



Source: Jha, et al., 2006

Myths and Facts

- Opponents of tax increases often raise concerns about potential for negative economic impact
  - Loss of tobacco tax revenues
  - Job losses
  - Smuggling
  - Impact on the poor

What is the “Right” Level?

Complex question that depends on:

- Motives for tobacco taxation
  - If to improve public health, then rate likely to be higher
    - Increased impact when revenues used to support cessation, prevent initiation
  - If to raise revenues, depends on several factors, including:
    - Potential for tax avoidance and illicit trade
    - Rates in nearby jurisdictions
    - Demand elasticity
- Importance of tobacco tax revenues in total government revenues

What is the “Right” Level?

World Bank suggests that a useful yardstick is the 2/3 to 4/5 of price accounted for by tax in countries that have taken a comprehensive approach to reducing tobacco use

- Implies large increases in nearly all of the countries that are the focus of the Bloomberg Initiative

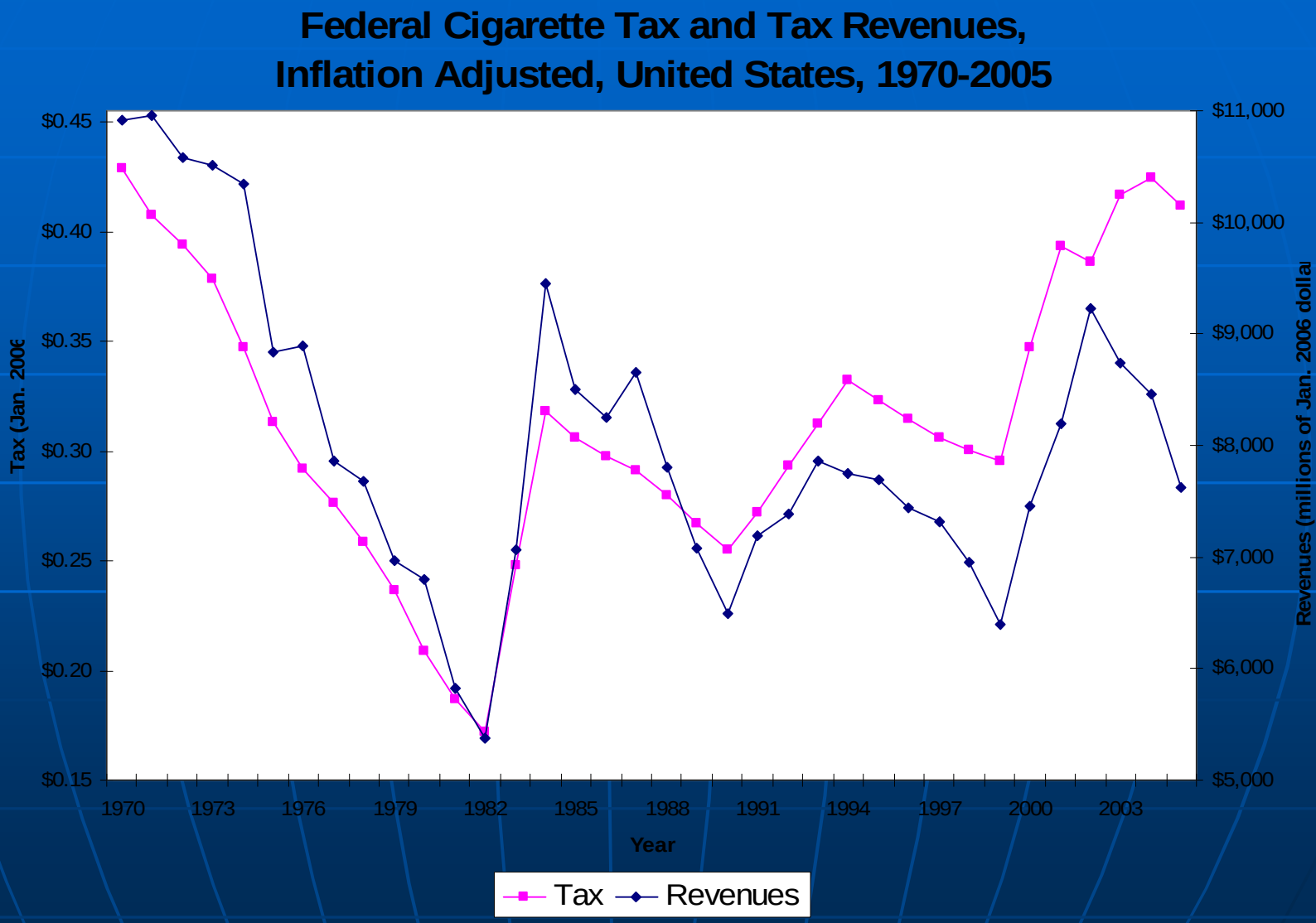
Summary

- Countries impose a variety of taxes on tobacco products
- Higher tobacco taxes will lead to higher tobacco product prices
- Increases in tobacco taxes and prices will reduce tobacco use and the disease and death it causes
  - Increase cessation among current users
  - Prevent relapse among former users
  - Preventing initiation of regular tobacco use
  - Reduce consumption among those who continue to use
- Arguments about negative economic impact of tobacco tax increases either false or overstated
- Considerable gaps in evidence for most low/middle income countries

Tobacco Taxes and Revenues

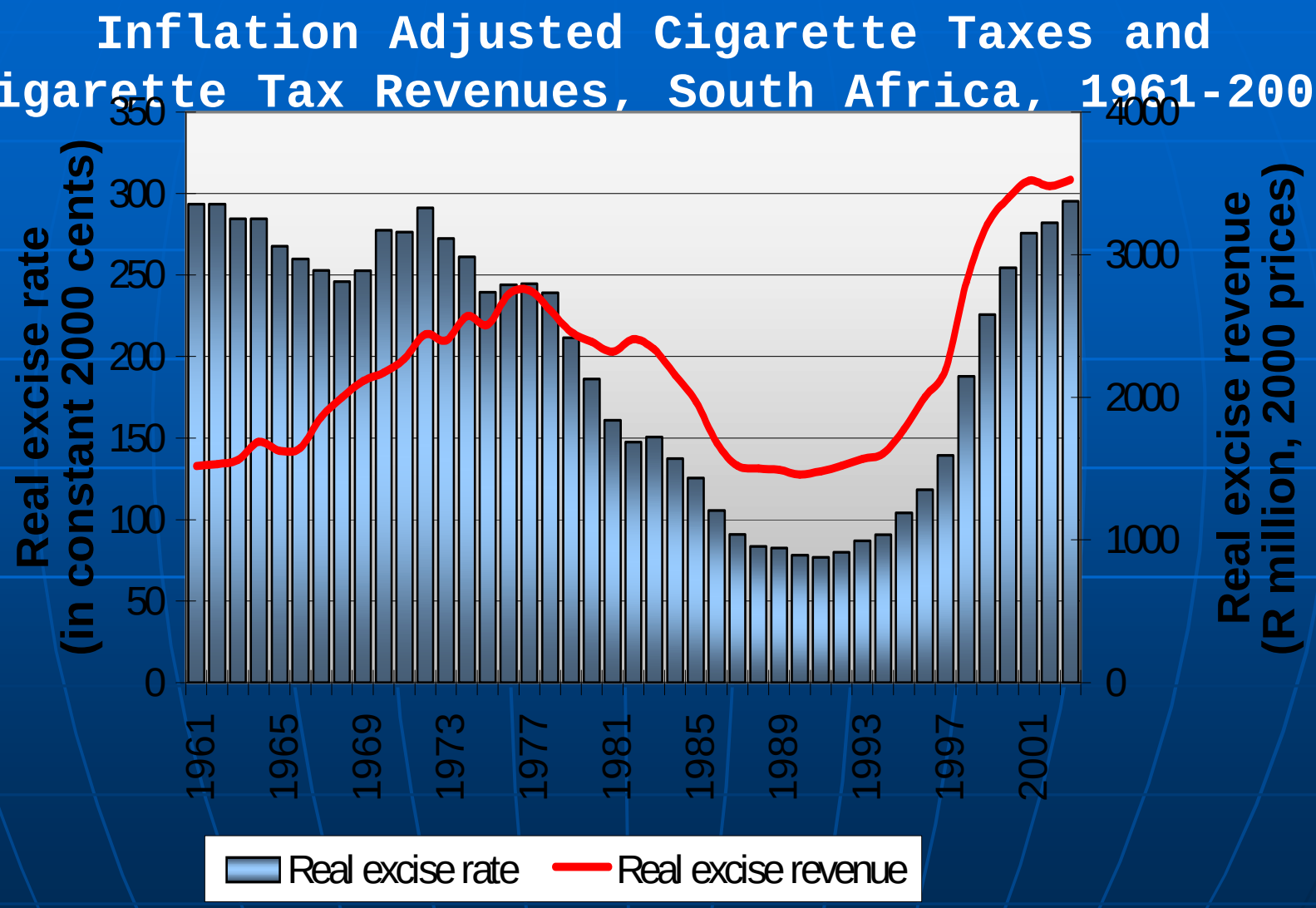
- Increases in tobacco taxes lead to increases in tobacco tax revenues, despite reductions in tobacco use
  - Low share of tax in price in most countries
  - Inelastic demand in most countries
- Evidence shows revenues rise even in presence of tax avoidance and smuggling

Tobacco Taxes and Revenues



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

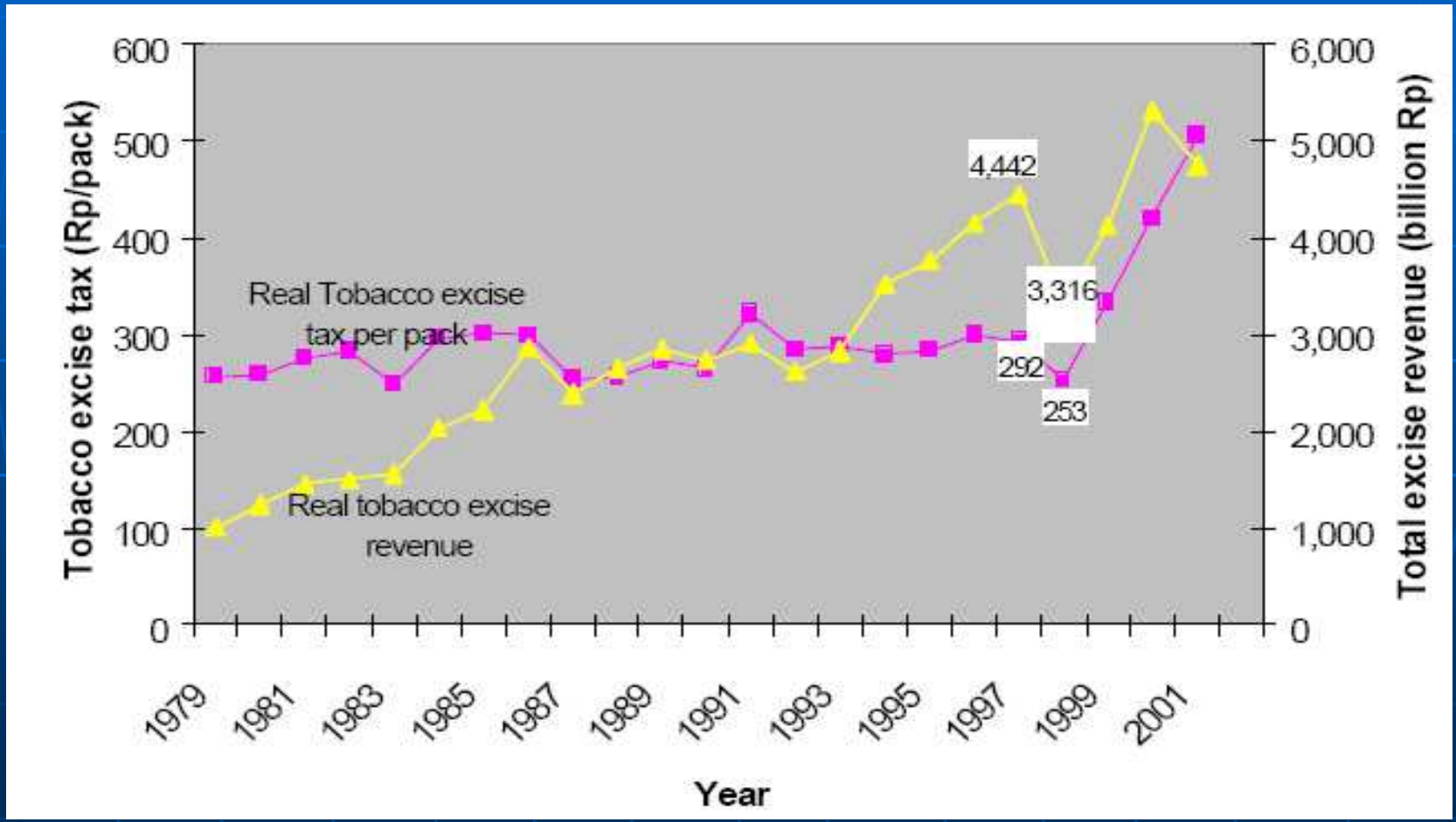
Tobacco Taxes and Revenues



Source: Van Walbeek, 2003

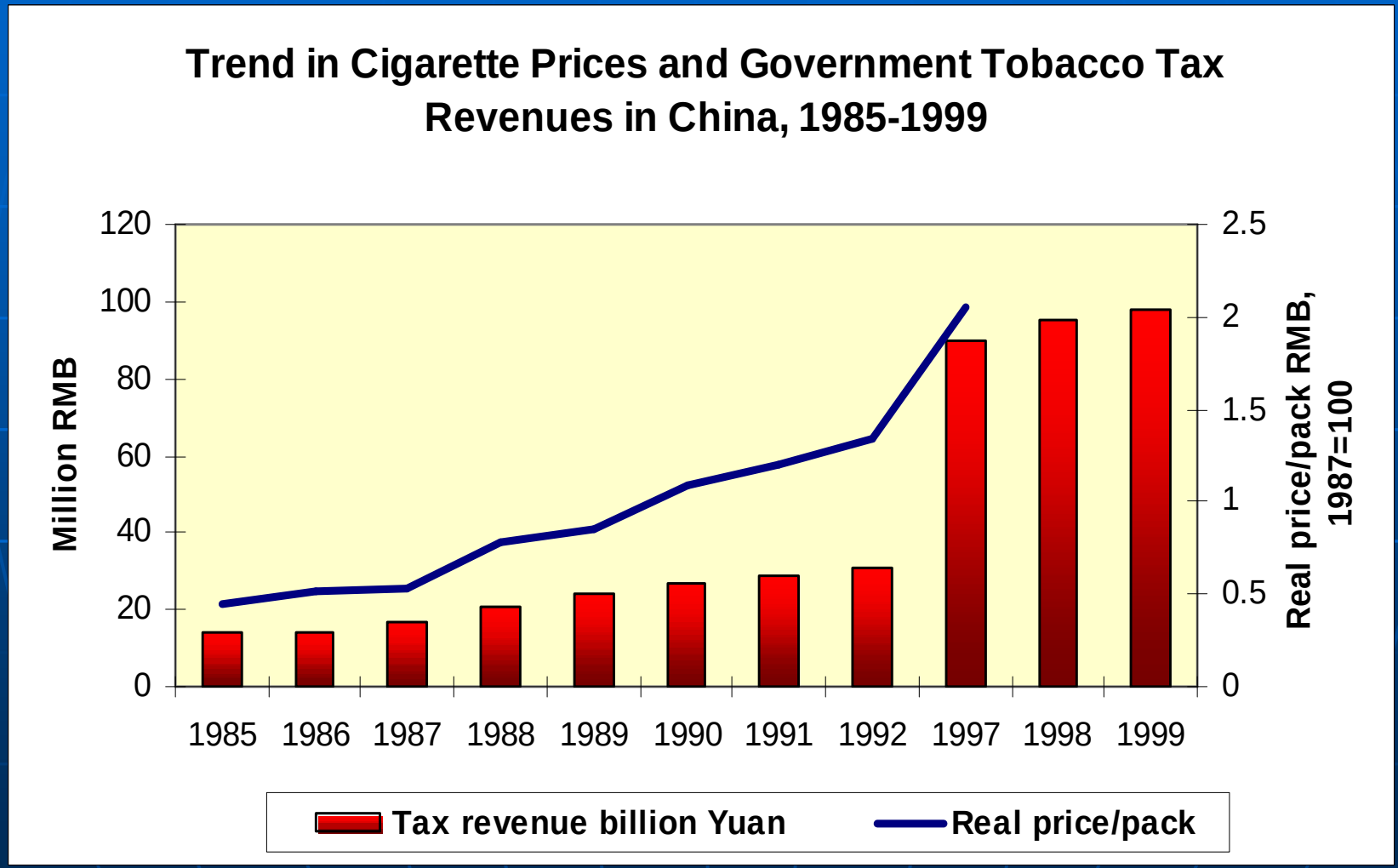
Tobacco Taxes and Revenues

Inflation Adjusted Cigarette Taxes and Cigarette Tax Revenues, Indonesia, 1979-2001



Source: Djutaharta, et al., 2005

Tobacco Taxes and Revenues

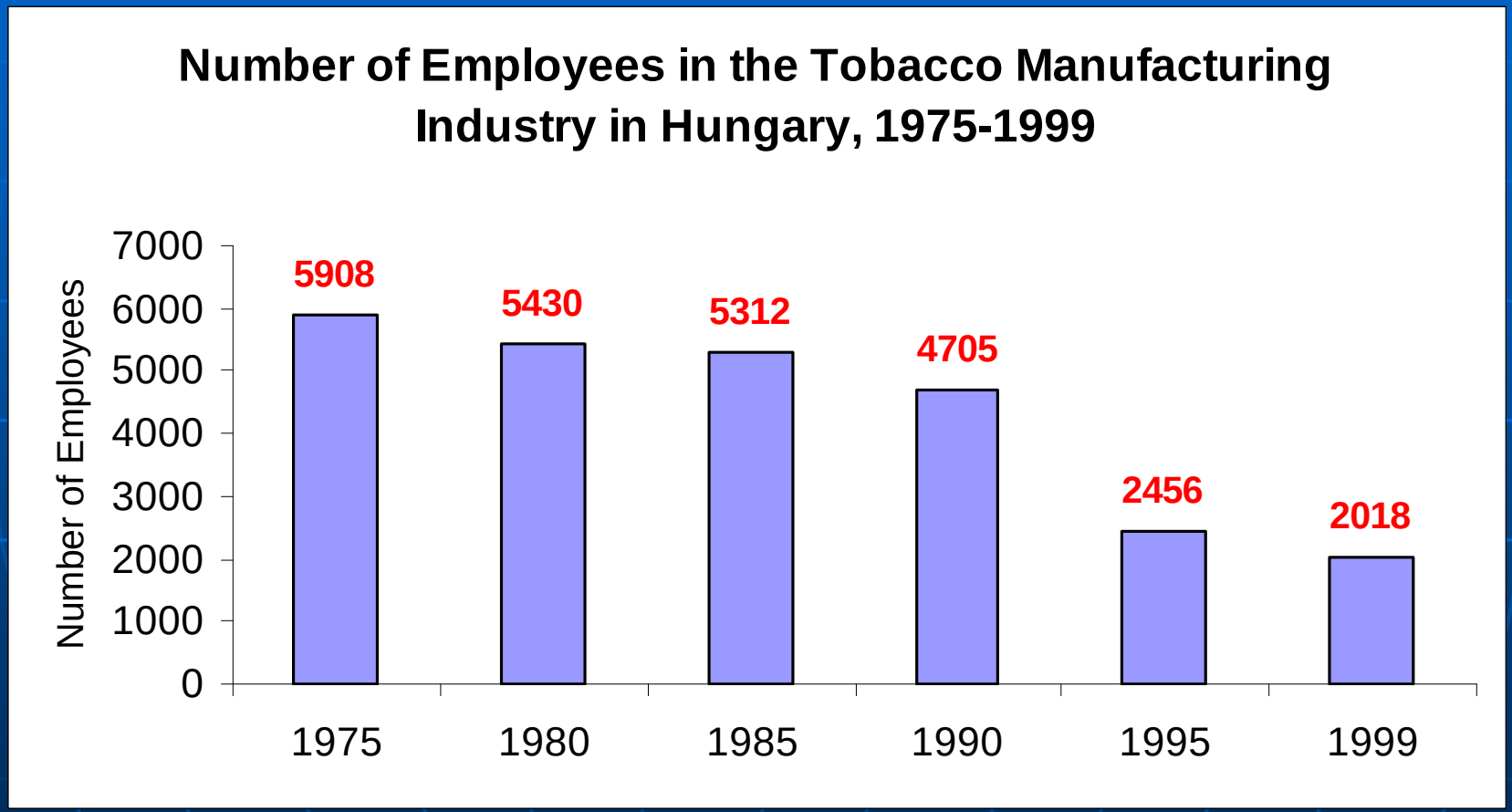


Source: Yurekli, 2000

Tobacco Taxes and Jobs

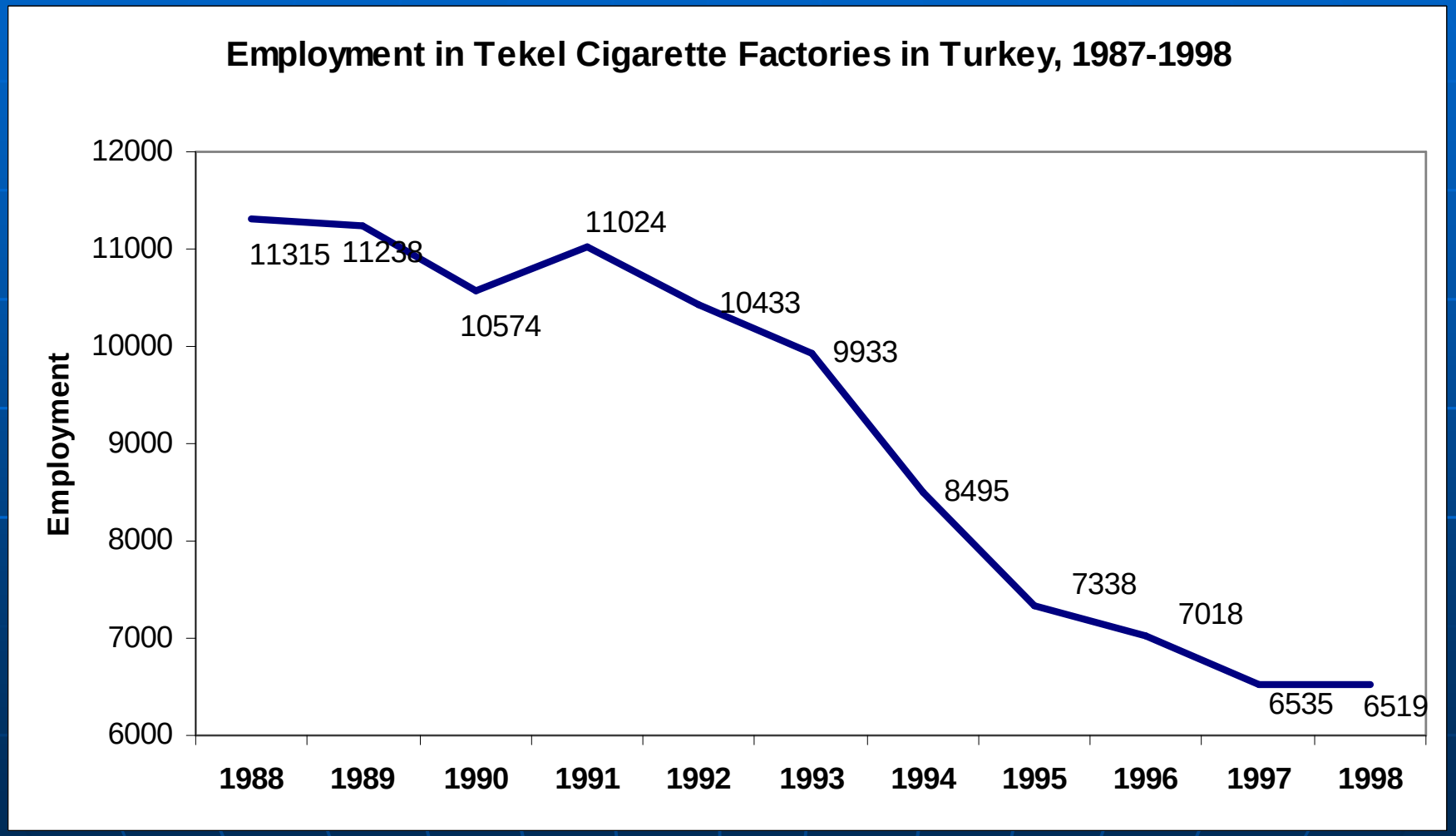
- Tobacco-related employment generally falling in most countries
  - privatization
  - Technological advances
- Economic presence does not imply economic dependence
  - Money spent on tobacco products will be spent on other goods/services as demand falls

Tobacco Taxes and Jobs



Source: Yurekli, 2001

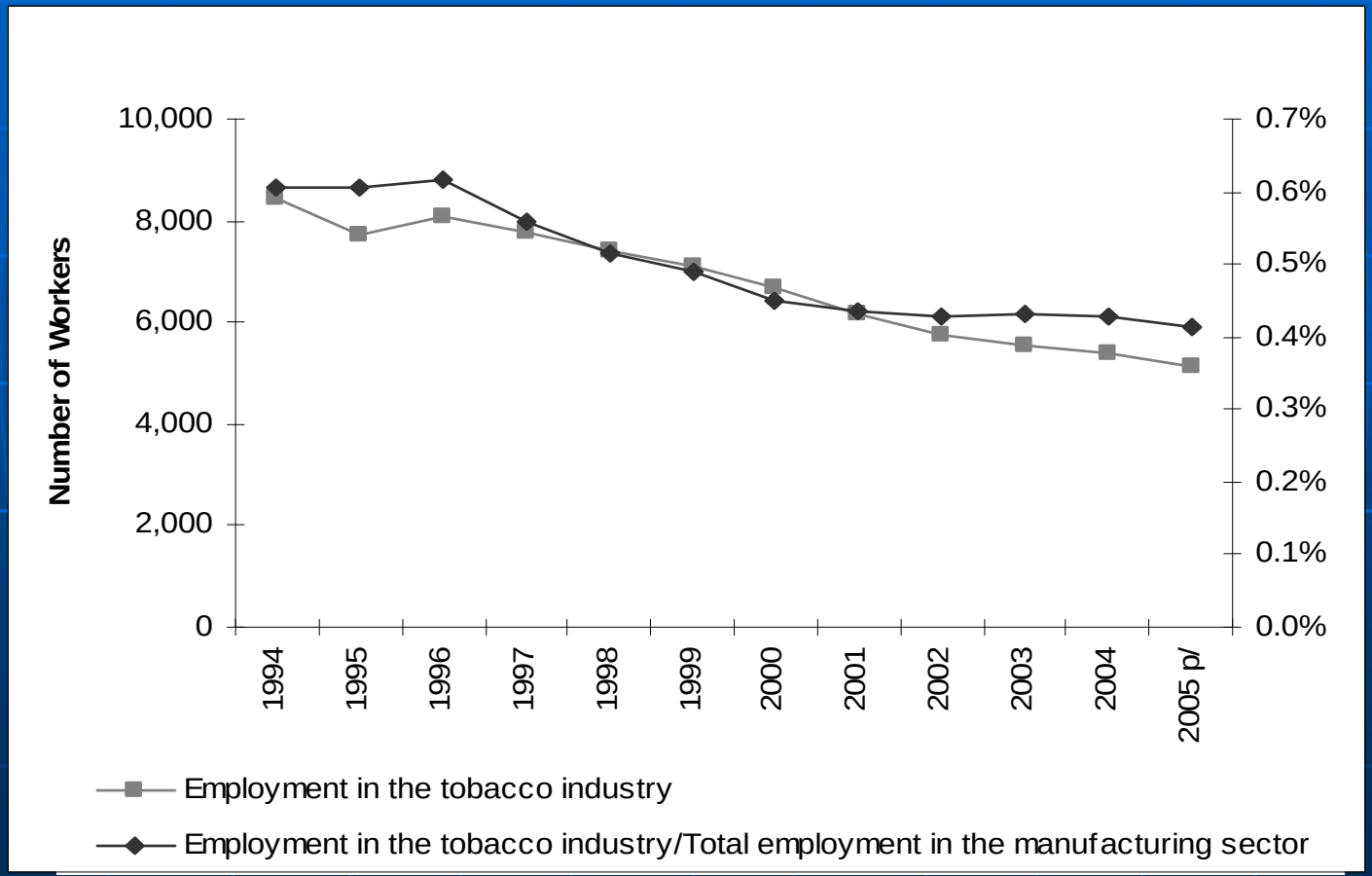
Tobacco Taxes and Jobs



Source: Yurekli, 2001

Tobacco Taxes and Jobs

Tobacco Industry Employment and Share Of Manufacturing Employment, Mexico, 1994-2005



Source: Sáenz de Miera Juárez, et al., 2007 (draft)

Evidence on Employment Impact of Reduced Tobacco Consumption

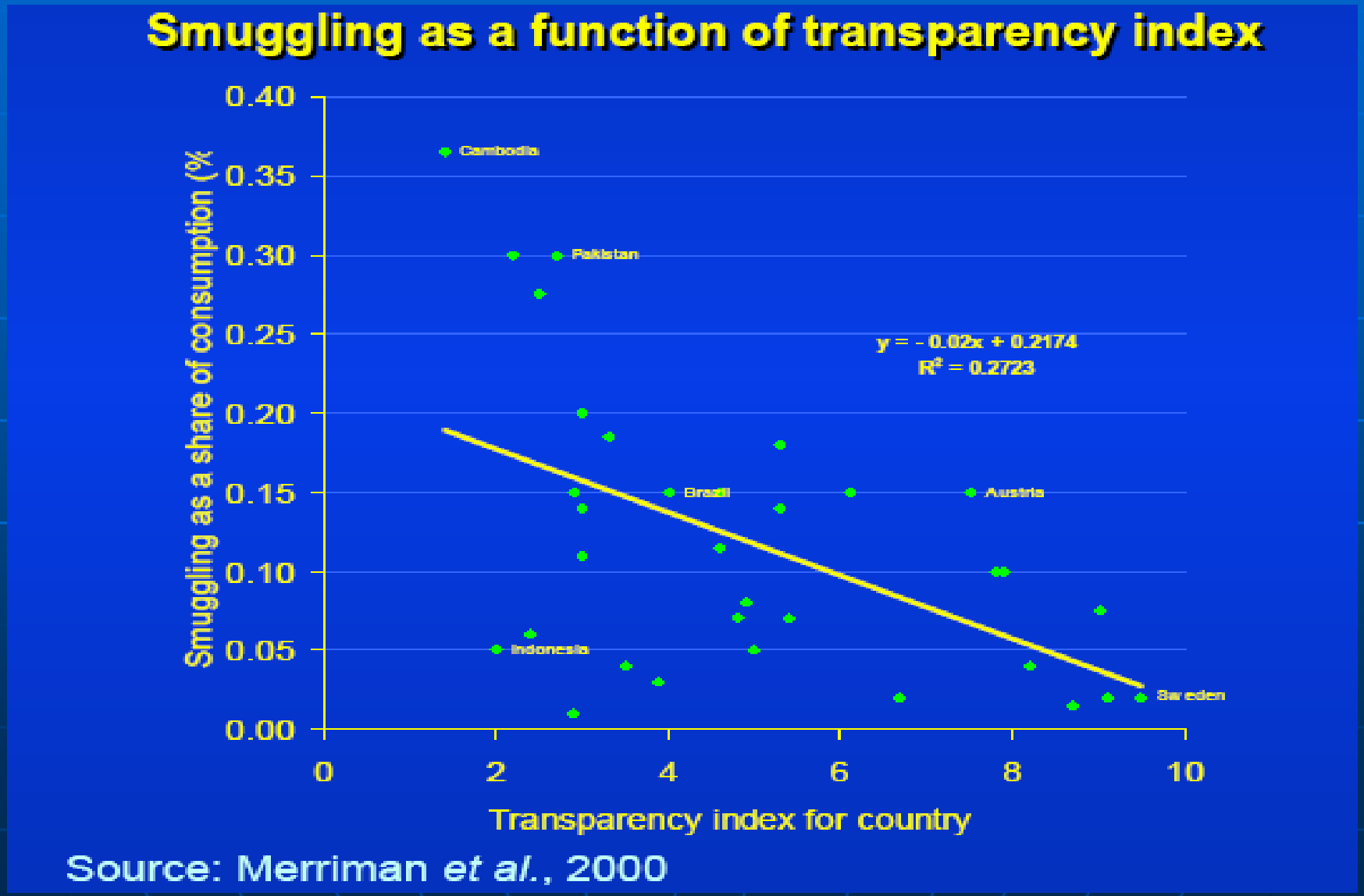
Type of Country	Name and year	Net change as % of employment in base year
Net Exporters	US (1993)	0%
	UK (1990)	0.5%
	Zimbabwe (1980)	-12.4%
Balanced Tobacco Economies	South Africa (1995)	0.4%
	Scotland (1989)	0.3%
Net Importers	Bangladesh (1994)	18.7%

Source: Jacobs, et al., 2000

Tobacco Taxes and Smuggling

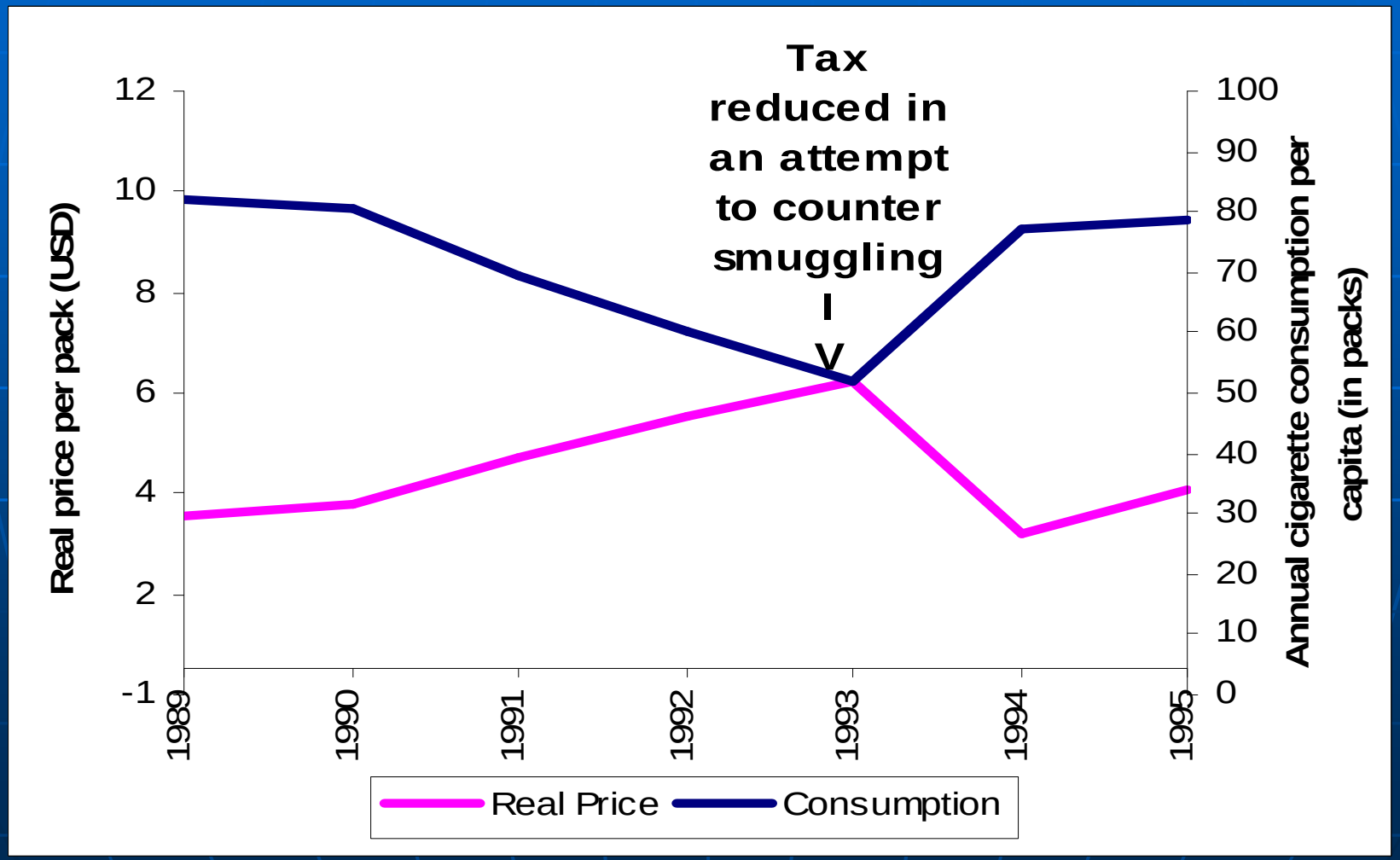
- Variety of factors contribute to smuggling
  - Including: extent of corruption, lack of enforcement, weak tax administration, informal distribution channels
- Even in presence of increased smuggling, increased taxes nearly always increase revenues and reduce tobacco use
- Respond by cracking down on smuggling rather than foregoing tax increases

Smuggling and Corruption



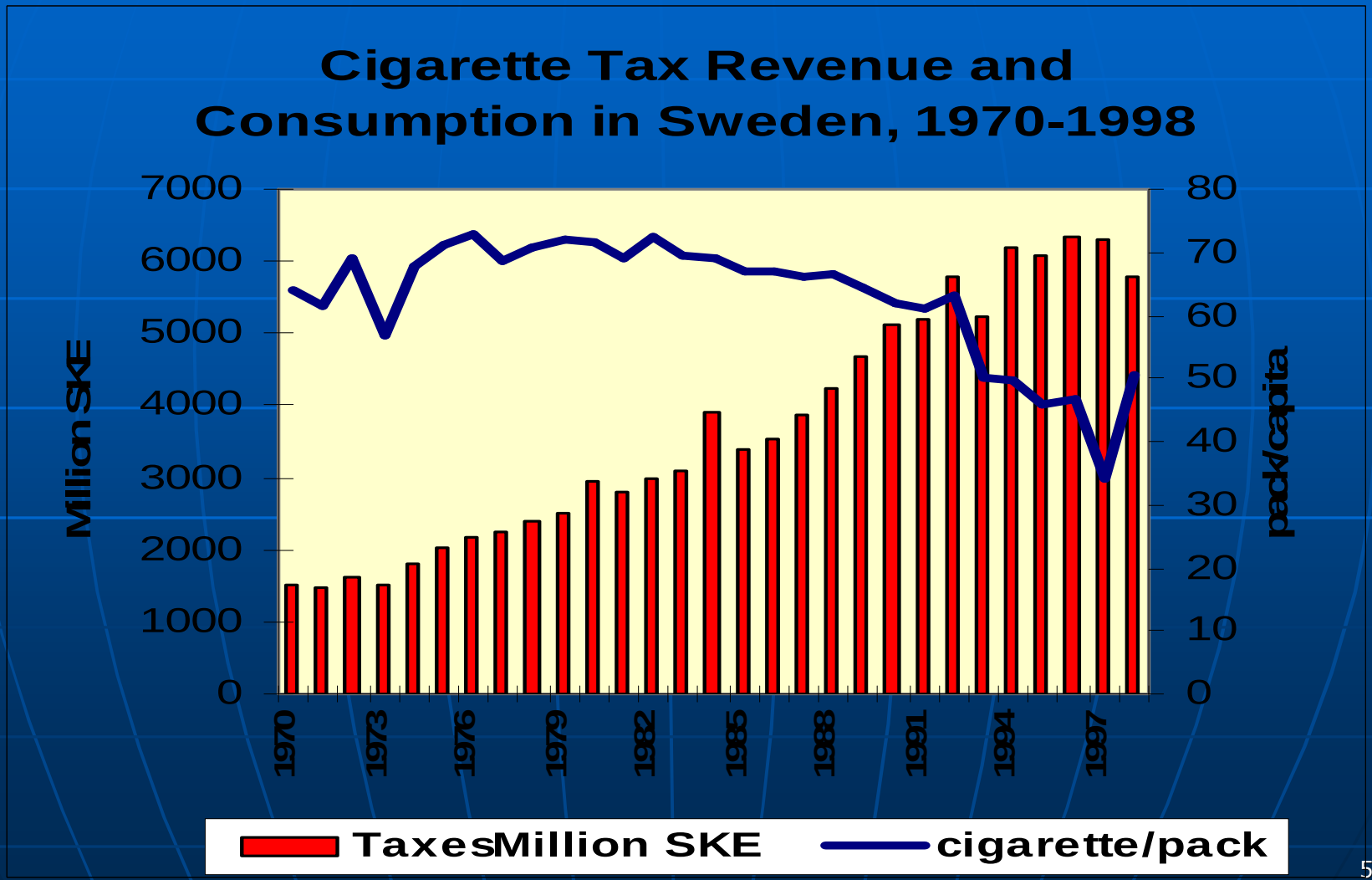
Source: Merriman *et al.*, 2000

Canada Sharply Reduced Taxes in 1993



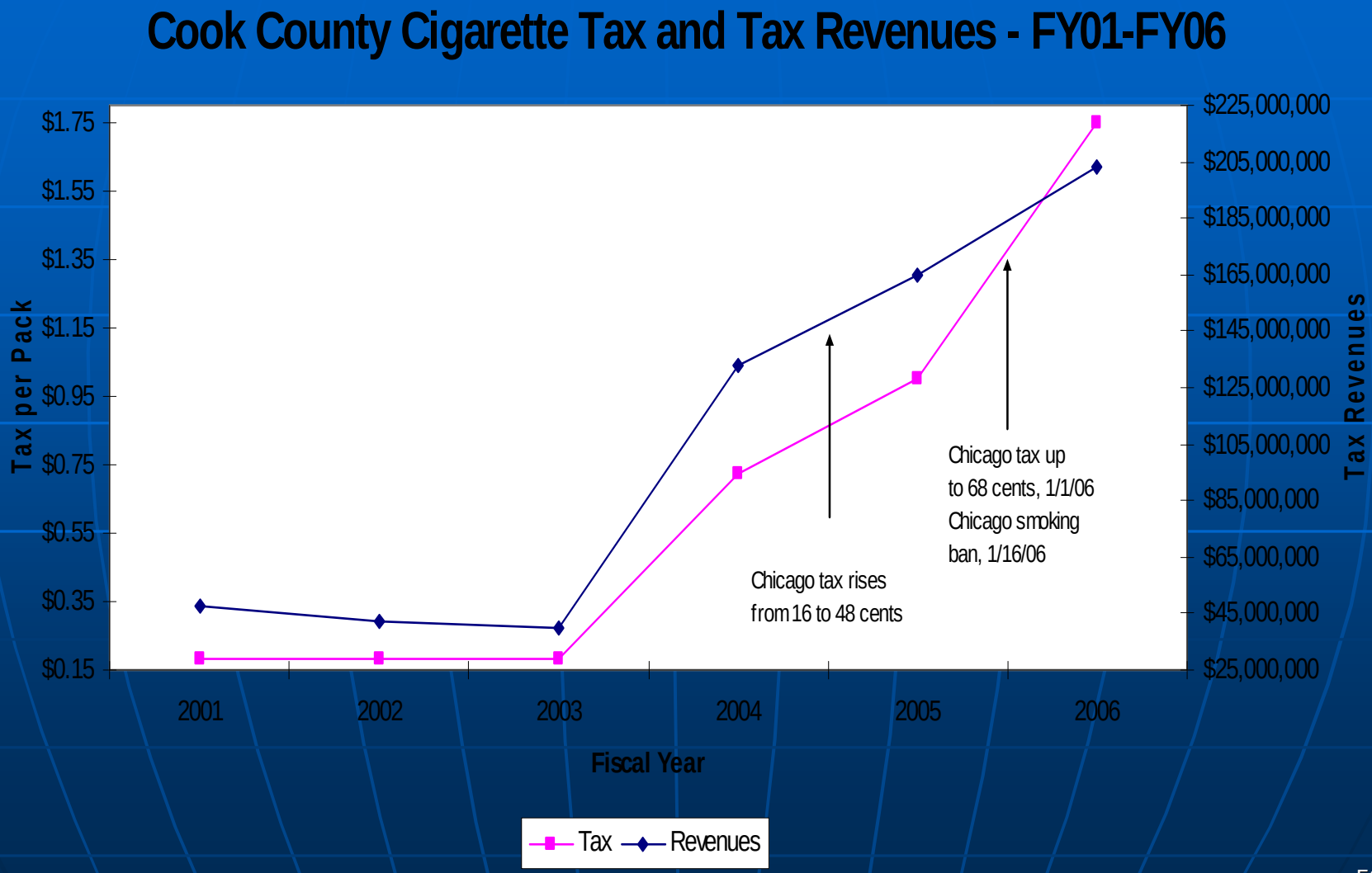
Source: World Bank, 2003

Sweden Reduced Cigarette Taxes by 17% in 1998



Source: World Bank, 2003

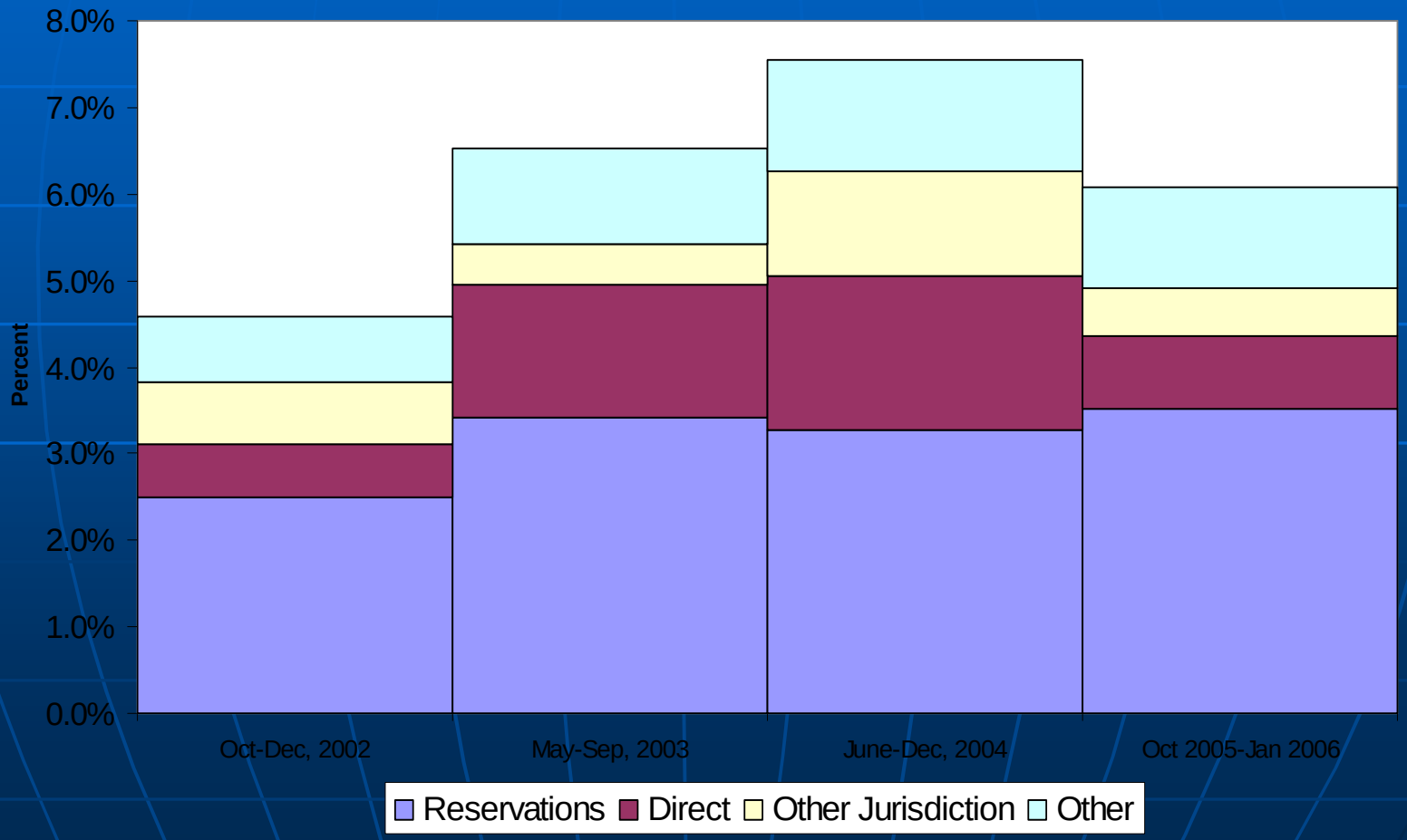
Tax Increases and Tax Avoidance



Tax Avoidance and Enforcement

United States, 2002-2005

Percent of Smokers' Last Cigarette Purchase from Untaxed or Lower Taxed Sources



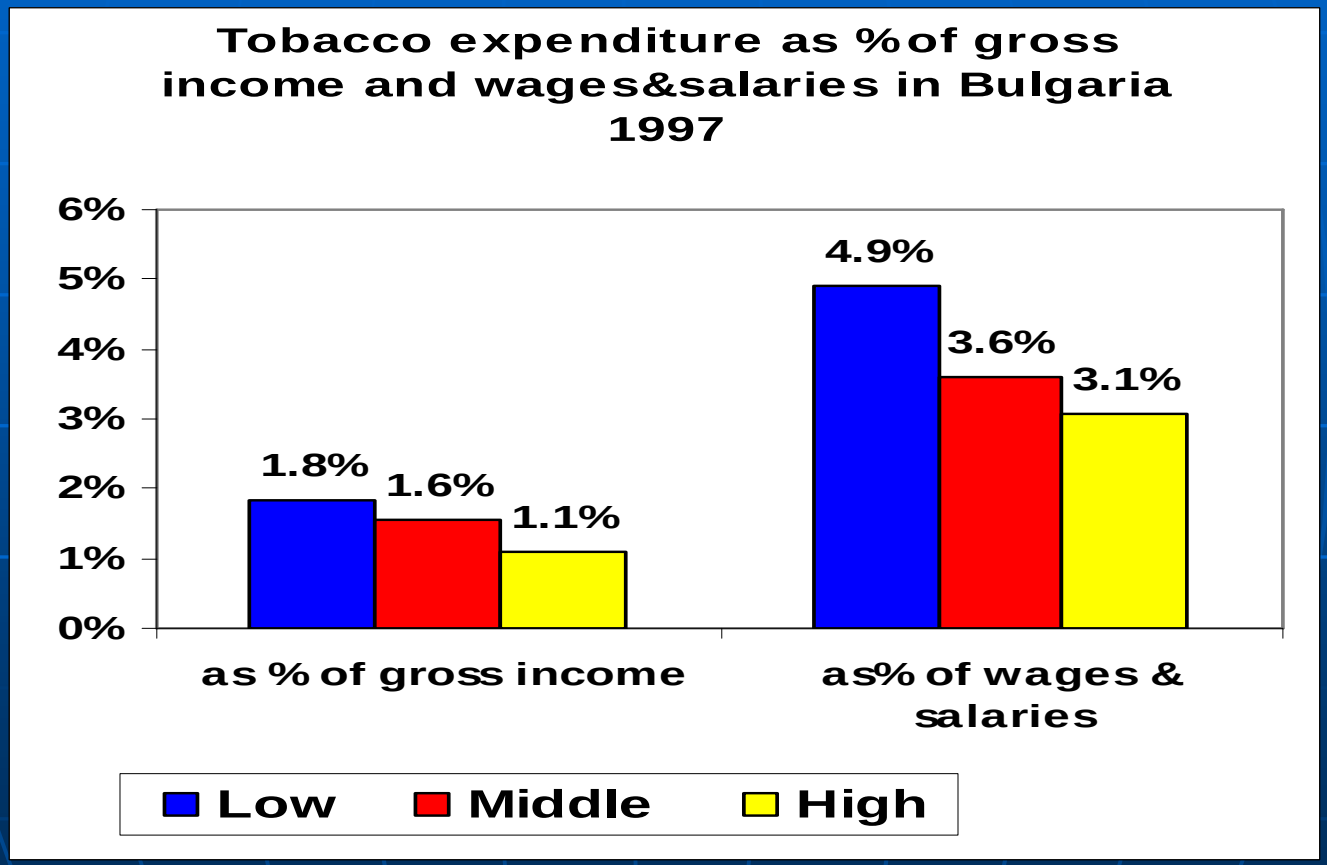
Combating Smuggling

- 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
- Stronger penalties
- Multilateral tax increases

Tobacco Taxes and the Poor

- Share of income spent on tobacco generally falls as income rises
  - Implies tobacco taxes are regressive in that tax burden is greater on lower income
  - Health burden of tobacco use also falls more heavily on lower income persons
  - Tobacco use contributes to poverty
- Greater elasticity of tobacco use among lower income persons suggests tax increases can be progressive
  - Impact on low income users who continue can be significant
- Use of tax revenues for progressive programs can offset negative impact
  - Important to consider overall fiscal system, not just tobacco tax

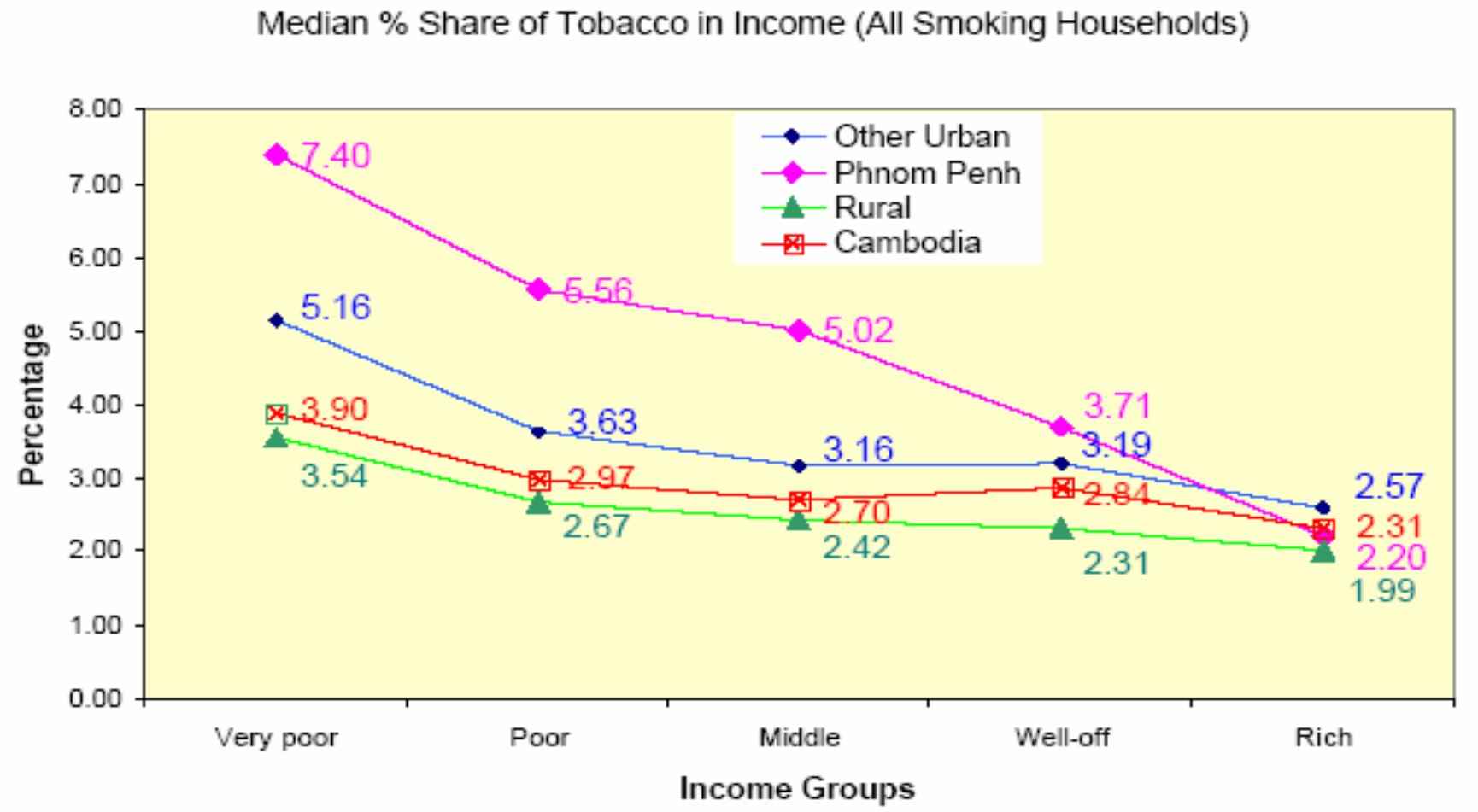
Tobacco Spending and Income



Source: Yurekli, 2001

Tobacco Spending and Income

Cambodia



Source: Ross, 2005