

Economics of Tobacco Control

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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 taxes and tobacco control

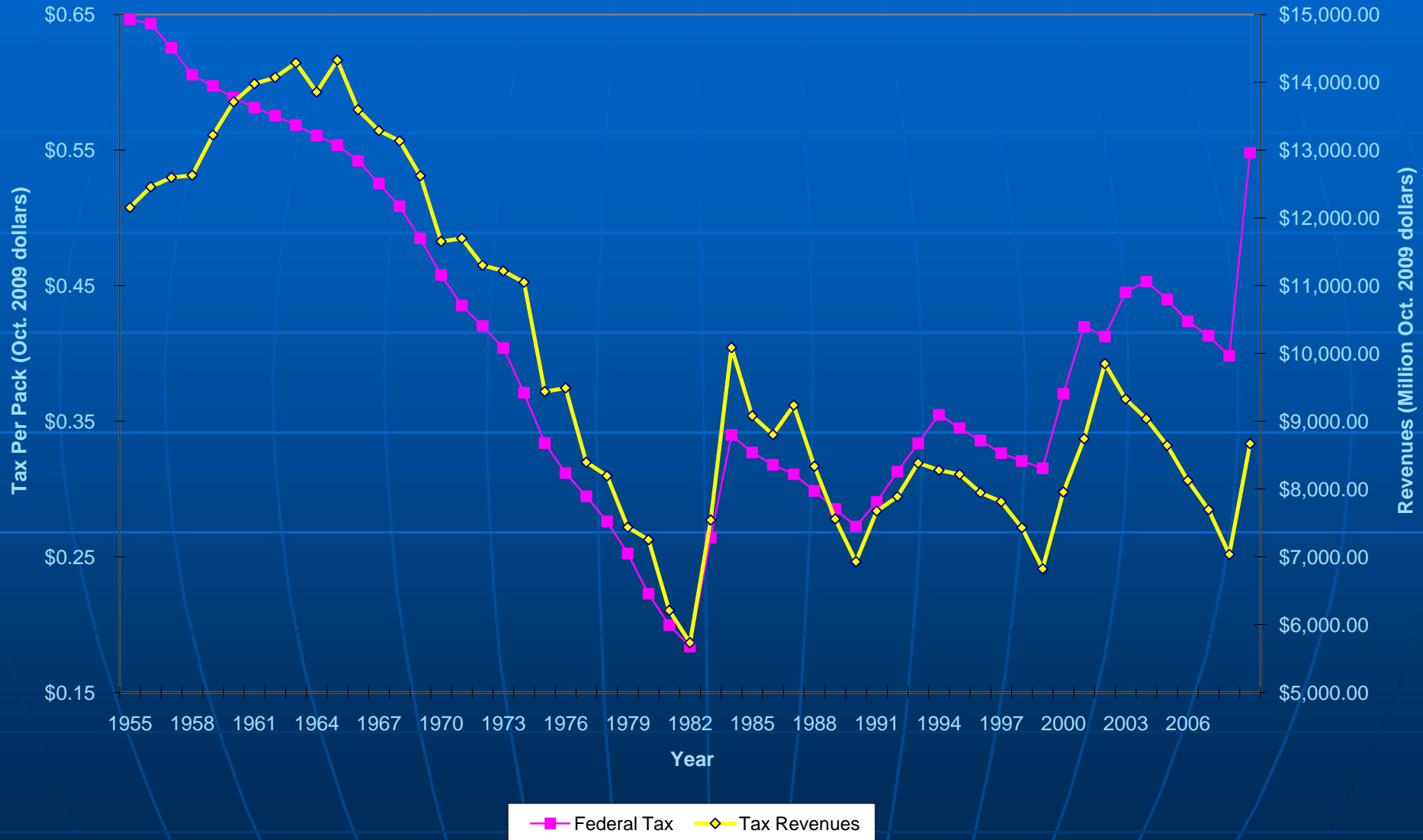
Why Tax Tobacco?

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 nowhere necessities 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)

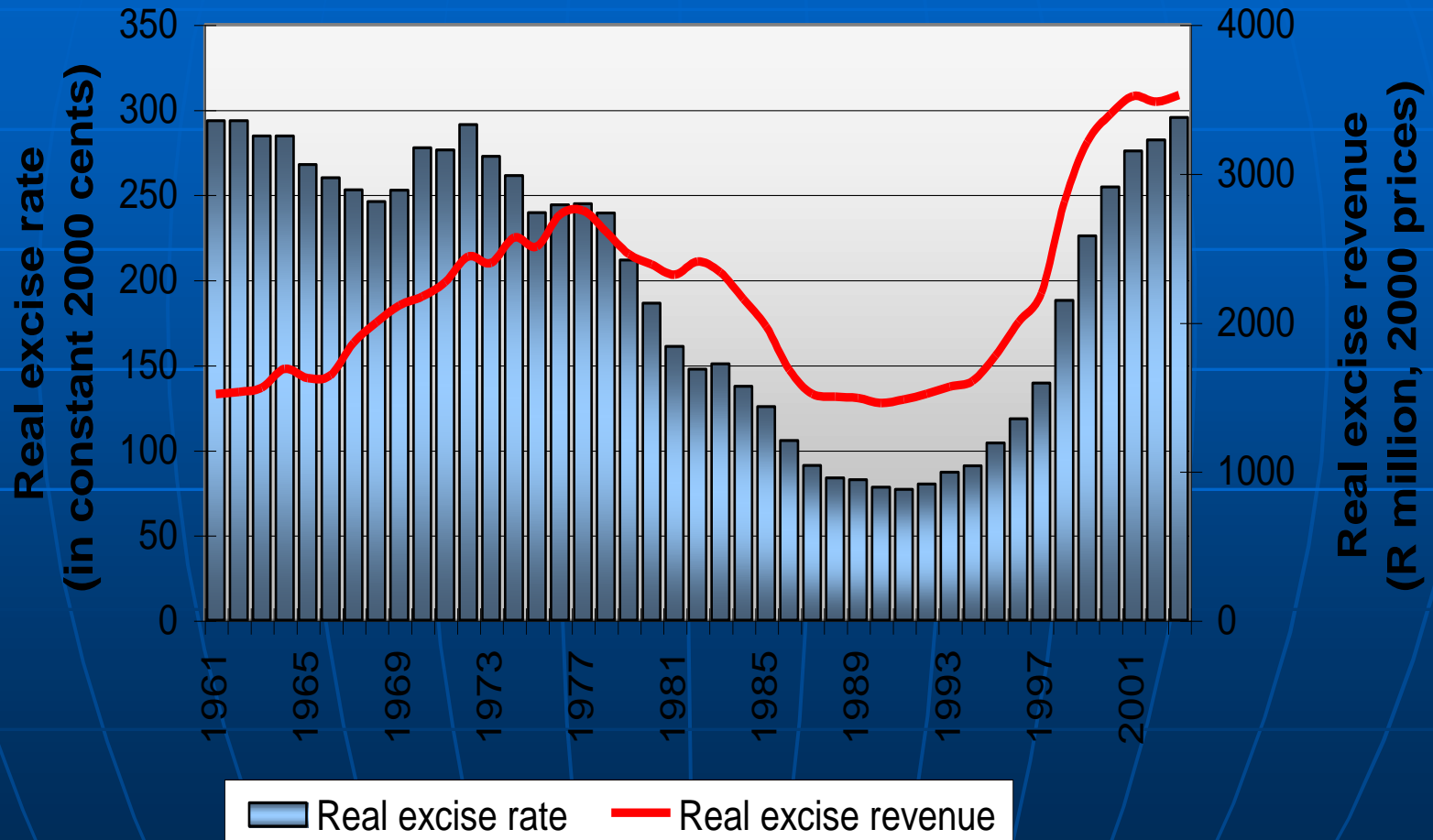
Federal Cigarette Tax and Tax Revenues Inflation Adjusted, 1955-2009



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

Tobacco Taxes and Revenues

Inflation Adjusted Cigarette Taxes and Cigarette Tax Revenues, South Africa, 1961-2003



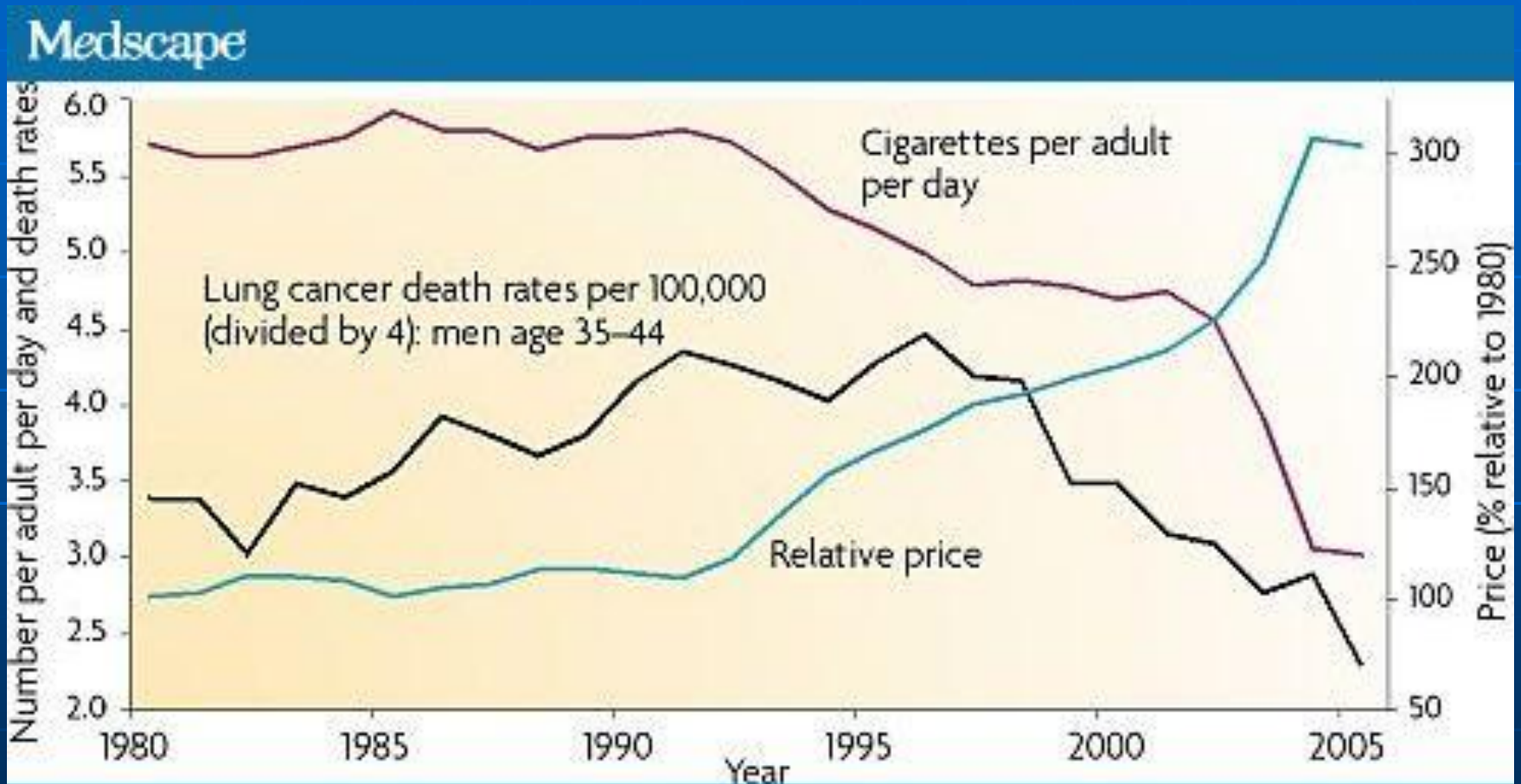
Source: Van Walbeek, 2003

Why Tax Tobacco?

■ **Promote public health**

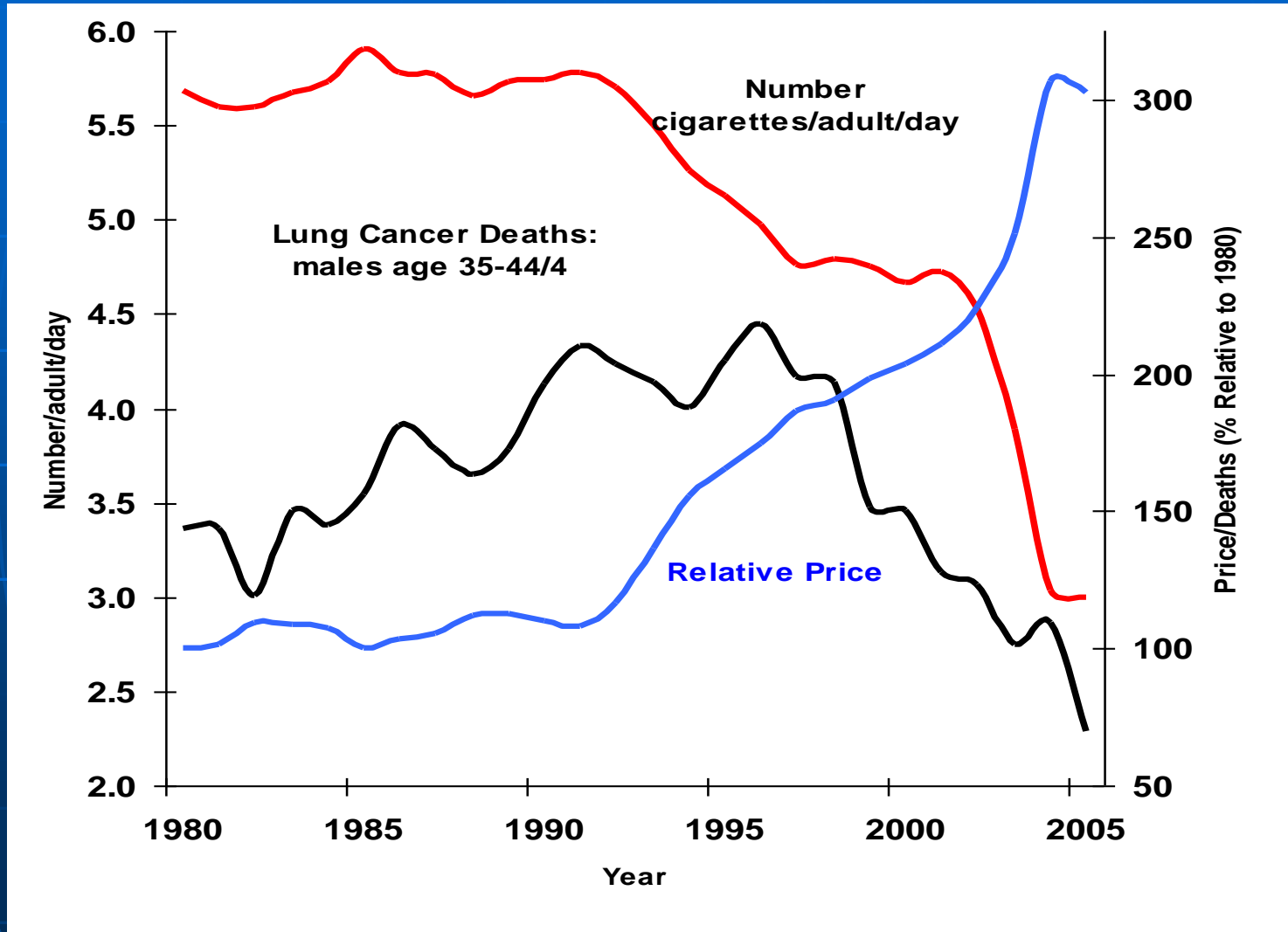
- Increasingly important motive for higher tobacco taxes in many high income countries
 - Emerging as important factor in some low and middle income countries
- Based on substantial and growing evidence on the effects of tobacco taxes and prices on tobacco use
 - Particularly among young, less educated, 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”

Taxes, Prices and Health: US, 1980-2005



Source: Nat Rev Cancer © 2009 Nature Publishing Group

France: smoking, tax and male lung cancer, 1980-2000



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?

- **Other Motives affecting tax structure:**
 - To protect domestic industry and employment
 - To keep some brands/products affordable to the poor

WHO's Best Practices in Tobacco Taxation

- Use tobacco excise tax increases to achieve the public health goal of reducing the death and disease caused by tobacco use
 - As called for in Article 6 of the WHO FCTC
 - Additional benefit of generating significant increases in tobacco tax revenues in short to medium term

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
 - 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)

Cigarette Taxation Globally

Table 2: The types of cigarette excise taxes applied by income group and WHO region

Income Group	Excise System on Cigarettes			No Excise	Total countries *
	Only Specific	Only Ad-Valorem	Both Specific and Ad-valorem		
High	11	2	25	7	45
Upper Middle	16	11	9	6	42
Lower Middle	18	19	12	3	52
Low	10	28	2	3	43
By Region					
AFRO	14	29	1	2	46
AMRO	13	16	2	3	34
EMRO	1	7	5	7	20
EURO	10	3	36	0	49
SEARO	3	2	2	1	8
WPRO	14	3	2	6	25
All Countries	55	60	48	19	182

* Countries for which data are available

Source: WHO calculations using WHO GTCR 2009 data

Cigarette Taxation Globally

Table 2: Different bases for tiered systems around the world

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

*Note :Of the 155 countries with available data in TMA, 10 countries has no excise
Some countries differentiate based on more than on criteria.*

8 countries differentiate their excises based on more than 1 criteria

Source: TMA 2009

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

WHO's Best Practices in Tobacco Taxation

- *Simpler is better*
 - Complex tax structures more difficult to administer
 - Greater opportunities for tax evasion and tax avoidance under complex tax structures
 - Where existing structure is more complex, simplify over time with goal of achieving single uniform tax

WHO's Best Practices in Tobacco Taxation

- *Rely more on specific tobacco excises as the share of total excises in prices increases*
 - Greater public health impact of specific excises given reduced opportunities for switching down in response to tax/price increases
 - Sends clear message that all brands are equally harmful
 - Where existing tax is ad valorem, adopt a specific tax and increase reliance on specific tax over time

WHO's Best Practices in Tobacco Taxation

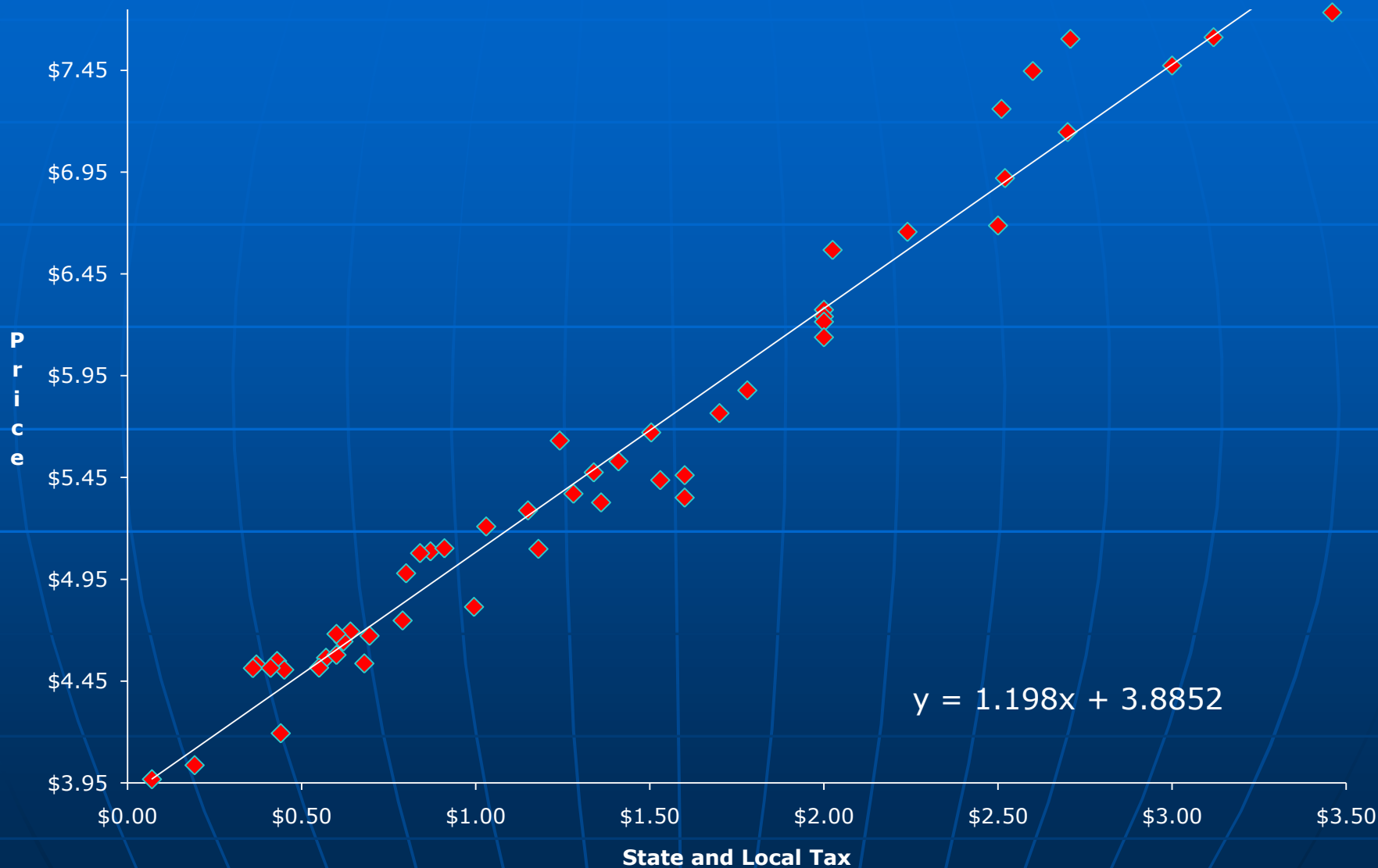
- *Automatically adjust specific tobacco taxes for inflation*
 - Unless adjusted, real value falls over time, as does the real value of revenues generated by tax
 - Ensures the public health impact of tax is maintained
 - To date, not widely done (Australia, New Zealand)

WHO “Best Practices” for Tobacco Excise Taxes

- *Adopt comparable taxes and tax increases on all tobacco products*
 - Maximizes public health impact of tobacco tax increases by minimizing opportunities for substitution
 - Harm reduction?

Tobacco Taxes and Tobacco Product Prices

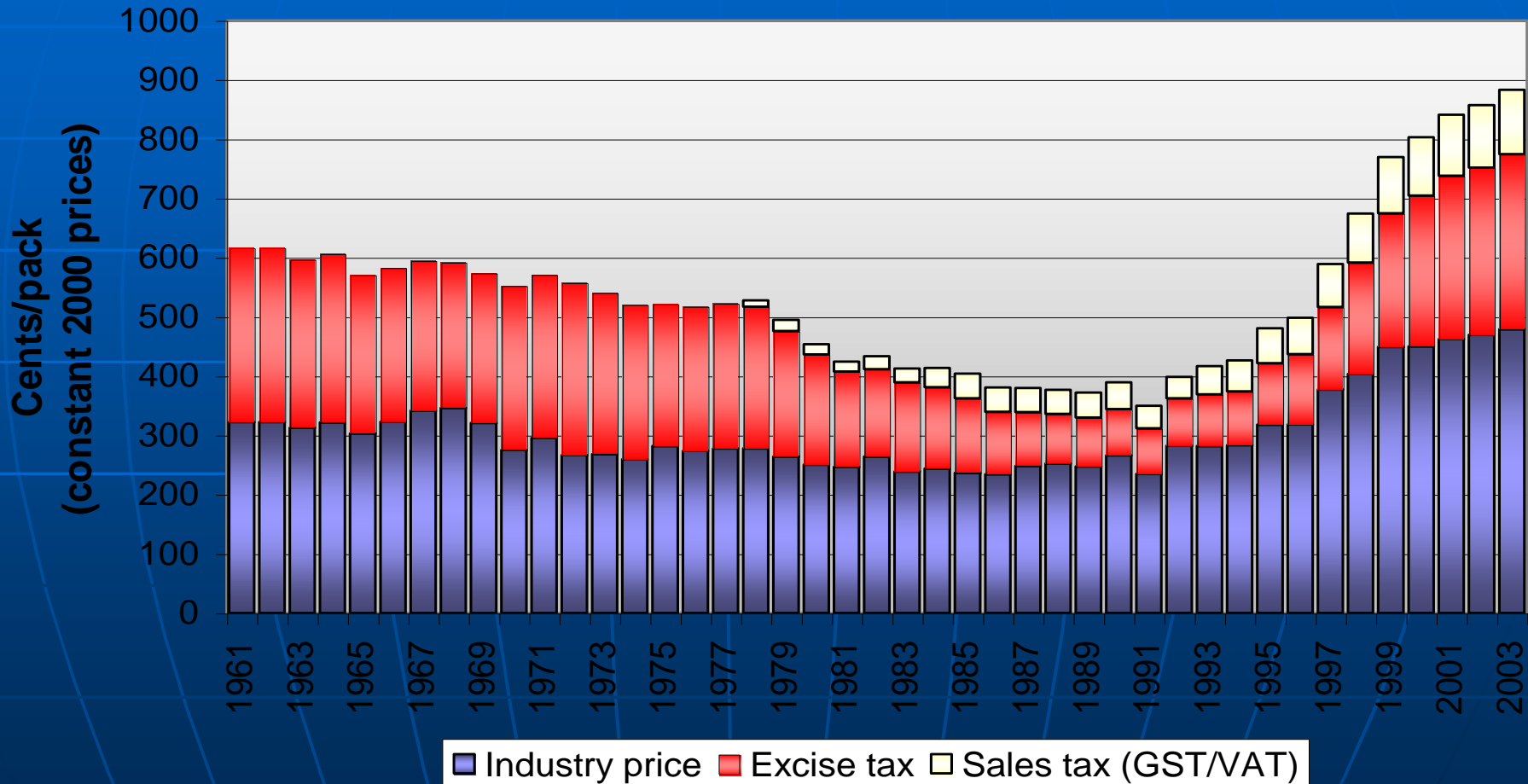
State and Local Cigarette Taxes and Average Price per Pack November 1, 2009



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

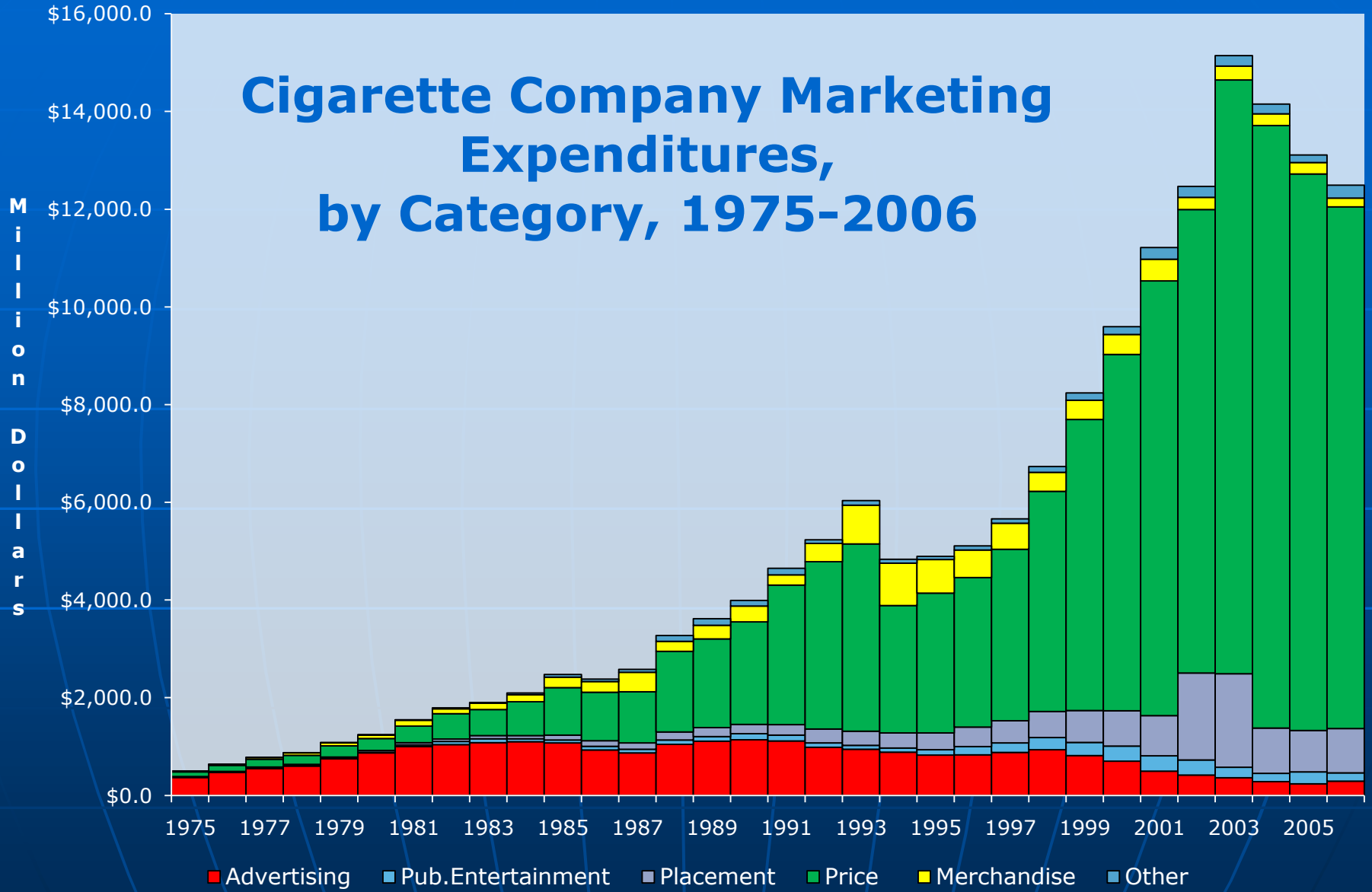
Taxes and Tobacco Product Prices

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



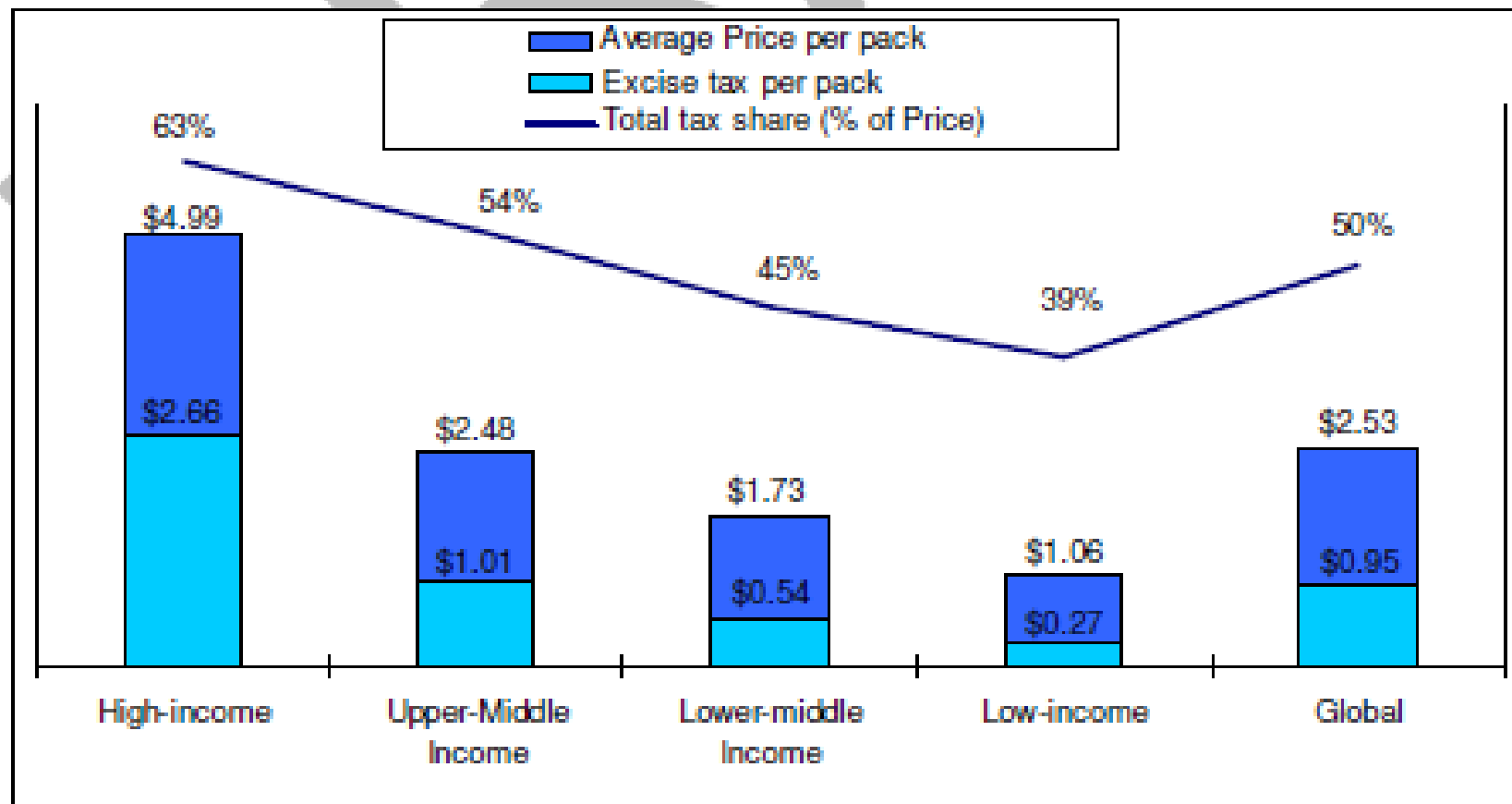
Source: Van Walbeek, 2003

Cigarette Company Marketing Expenditures, by Category, 1975-2006



Cigarette Taxes and Prices Globally

Figure 1: Simple Average Price of the Most Sold Brand & Excise Tax per pack, and Total Tax Share by Income Group 2008



WHO's Best Practices in Tobacco Taxation

- *Set tobacco excise tax levels so that they account for at least 70 percent of the retail prices for tobacco products*
 - Update of World Bank 'yardstick' of any taxes accounting for 2/3 to 4/5 of retail prices
 - Well above where most countries are currently
 - Further increases in countries that do reach this target

Tobacco Taxes, Prices and Tobacco Use

Taxes, Prices and Tobacco Use

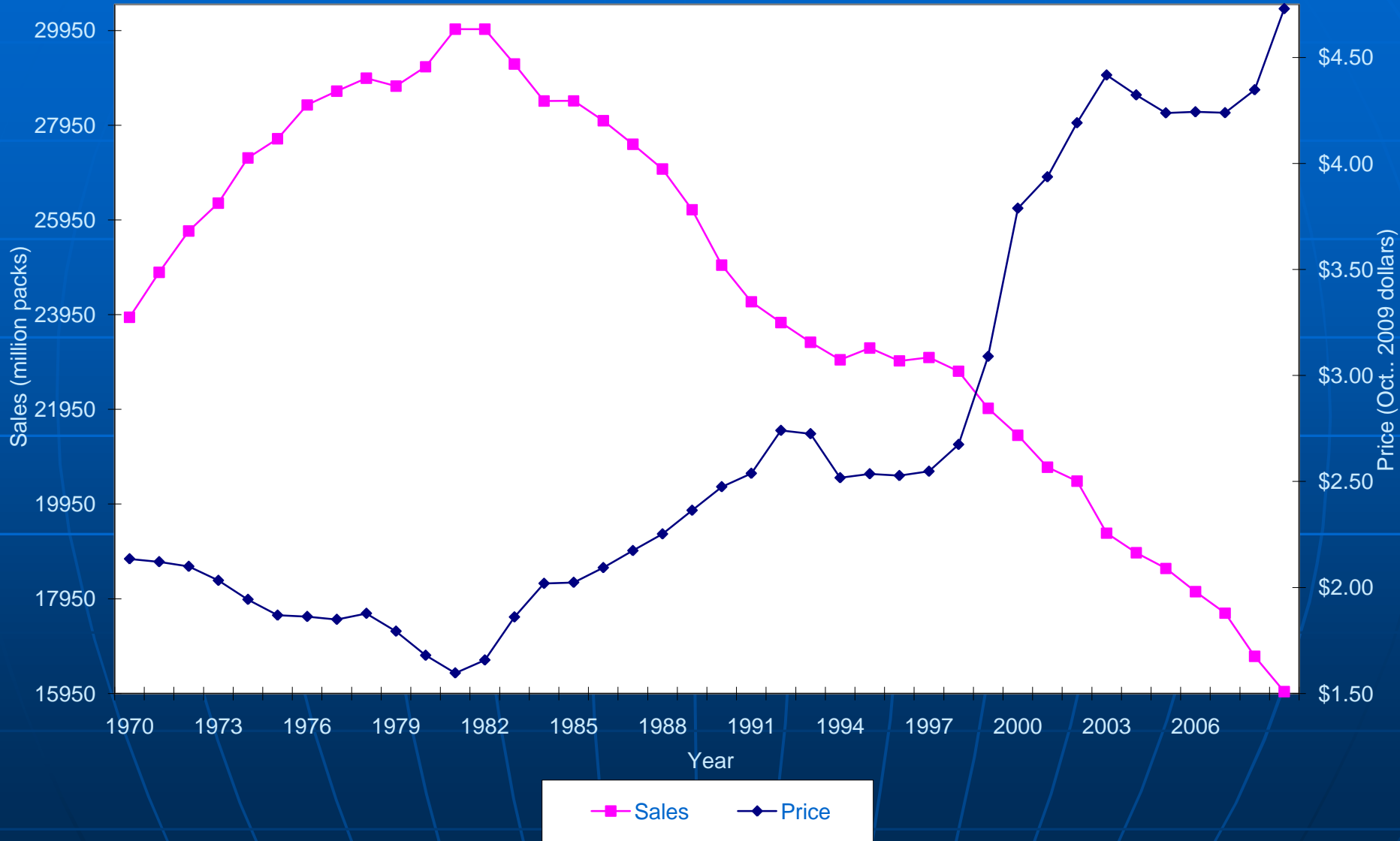
- **Increases in tobacco product taxes and prices:**
 - Induce current users to try to quit
 - Many will be successful in long term
 - Keep former users from restarting
 - Prevent potential users from starting
 - Particularly effective in preventing transition from experimentation to regular use
 - Reduce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

Cigarette Prices and Cigarette Sales, United States, 1970-2009



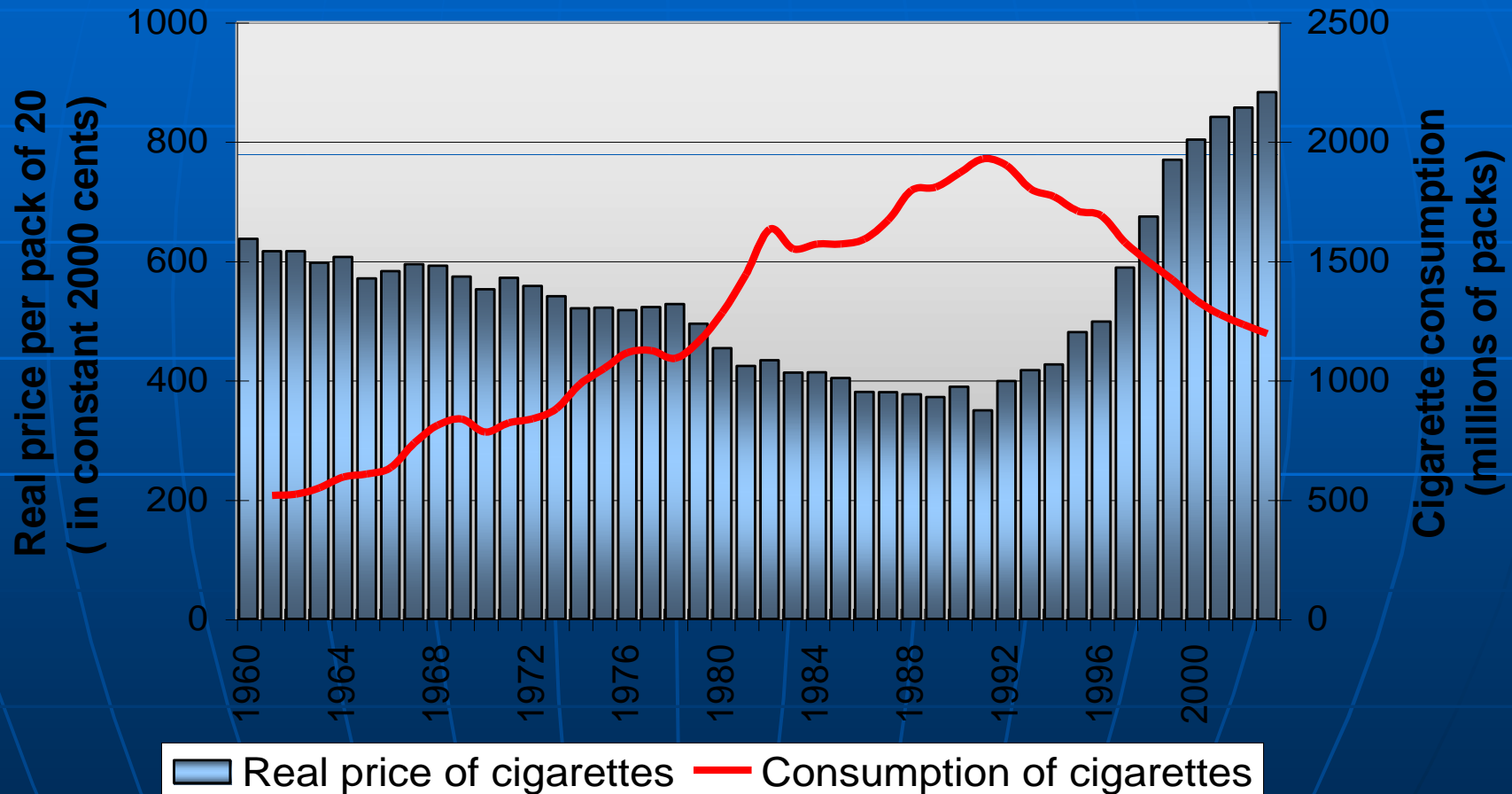
Source: *Tax Burden on Tobacco*, 2009, and author's calculations

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
 - Indonesia: -0.27 to -0.67
 - 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

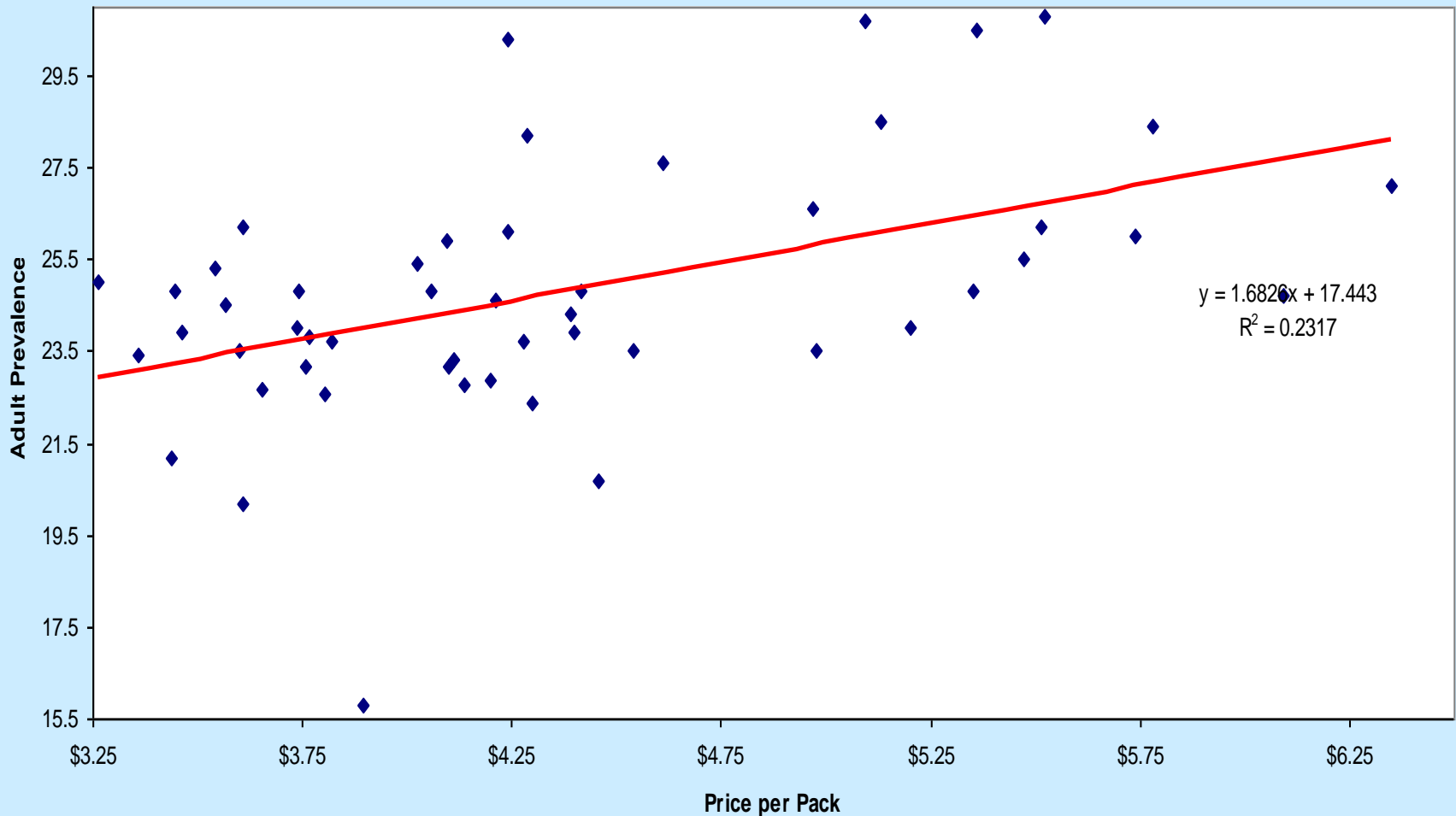
- **Price, Smoking Prevalence, and Cessation**
 - Estimates suggest that about half of the impact of price on overall tobacco use result from changes in prevalence
 - Implies that a 10% price increase reduces prevalence by 1 - 2.5% in high-income countries
 - 2.5 - 5% in low/middle-income countries; 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

Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2008



Source: NHIS, *Tax Burden on Tobacco*, 2009, and author's calculations
 Note: green data points for prevalence are interpolated assuming linear trend

Cigarette Prices and Former Smoking Rates, 50 States & DC, 2007



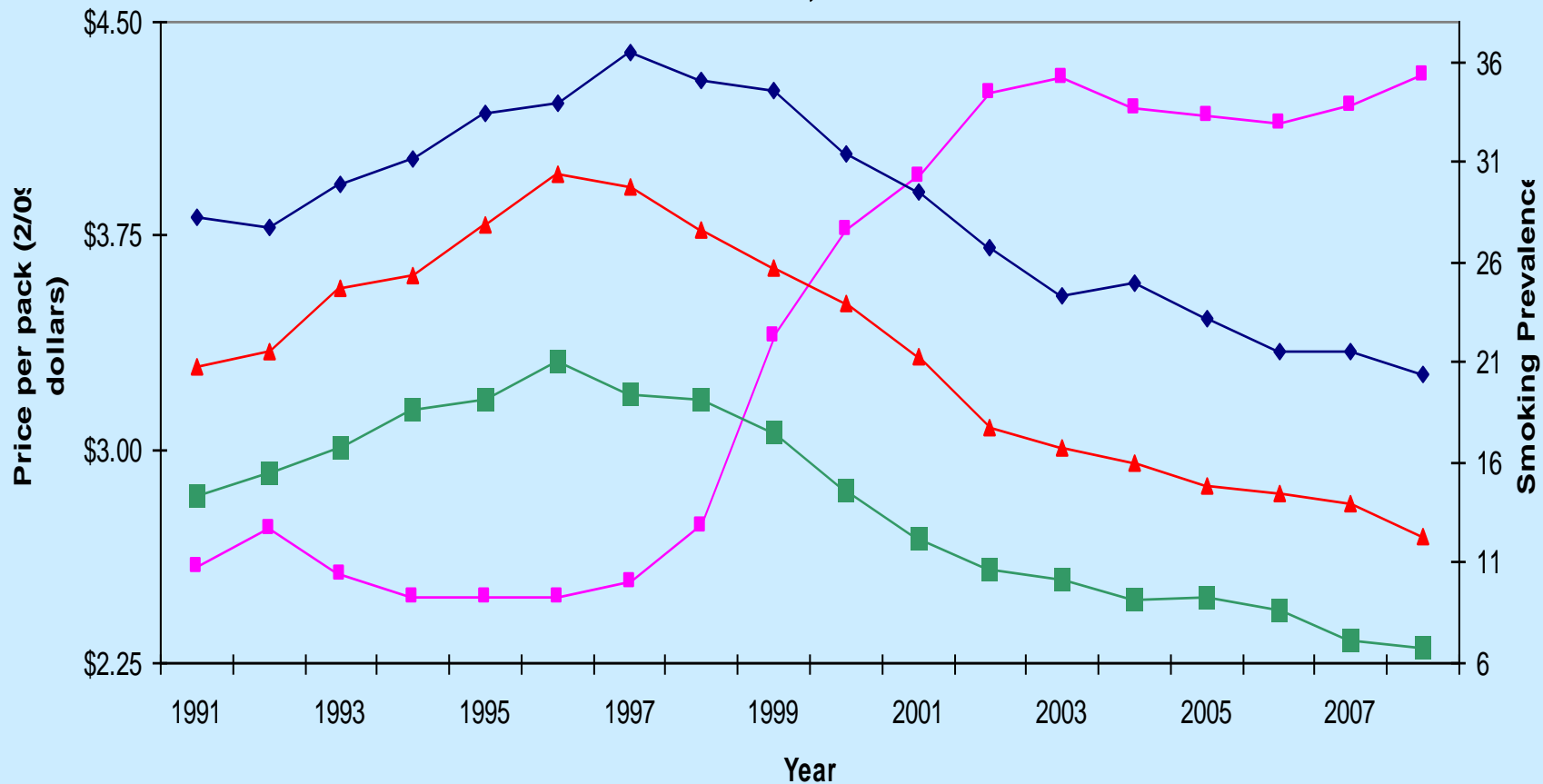
Source: BRFSS, *Tax Burden on Tobacco*, 2009, and author's calculations

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

Cigarette Price and Youth Smoking Prevalence, United States, 1991-2008



■ Cigarette Price
 ◆ 12th grade prevalence
 ▲ 10th grade prevalence
 ■ 8th grade prevalence

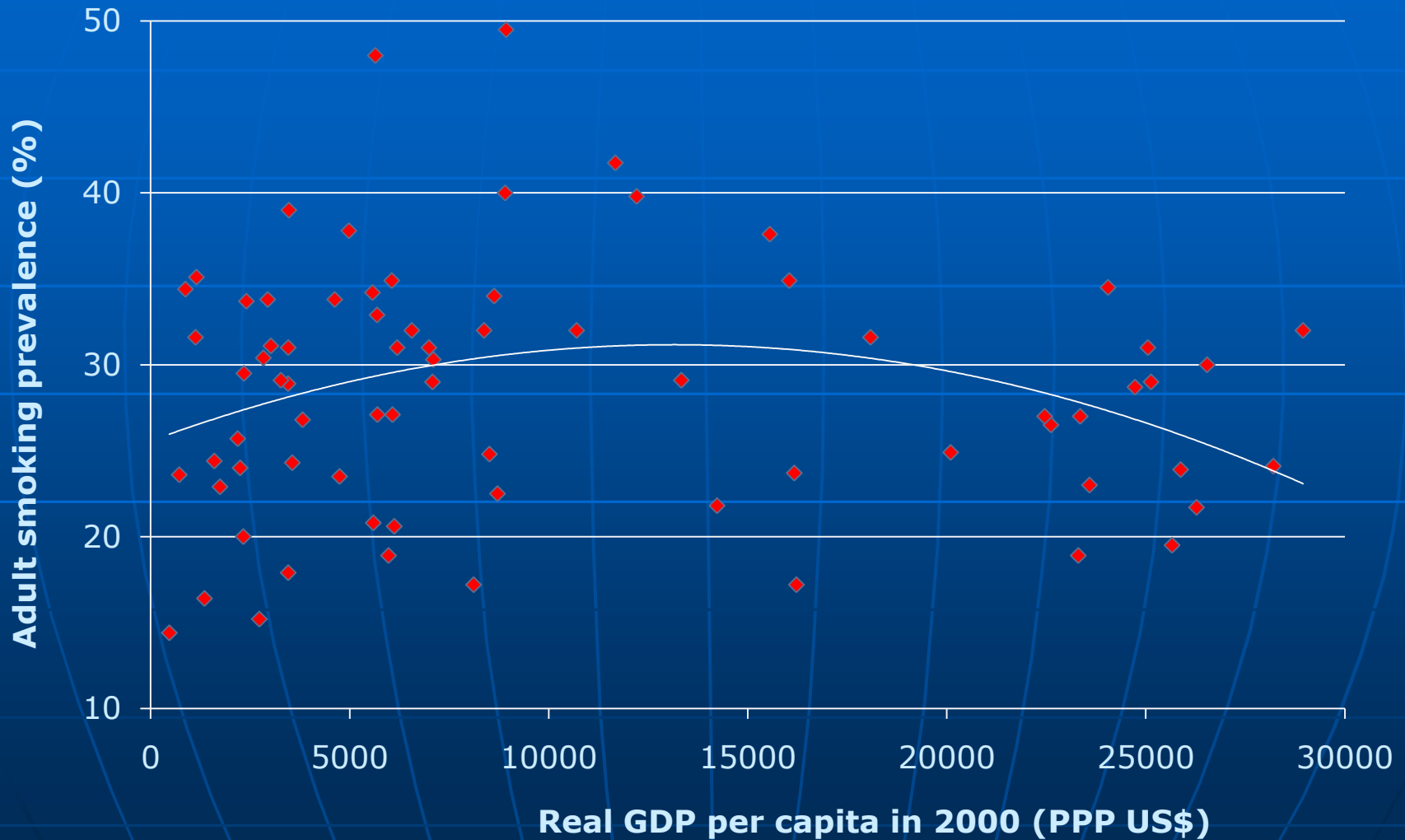
Taxes, Prices and Tobacco Use

- **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

Affordability and Tobacco Use

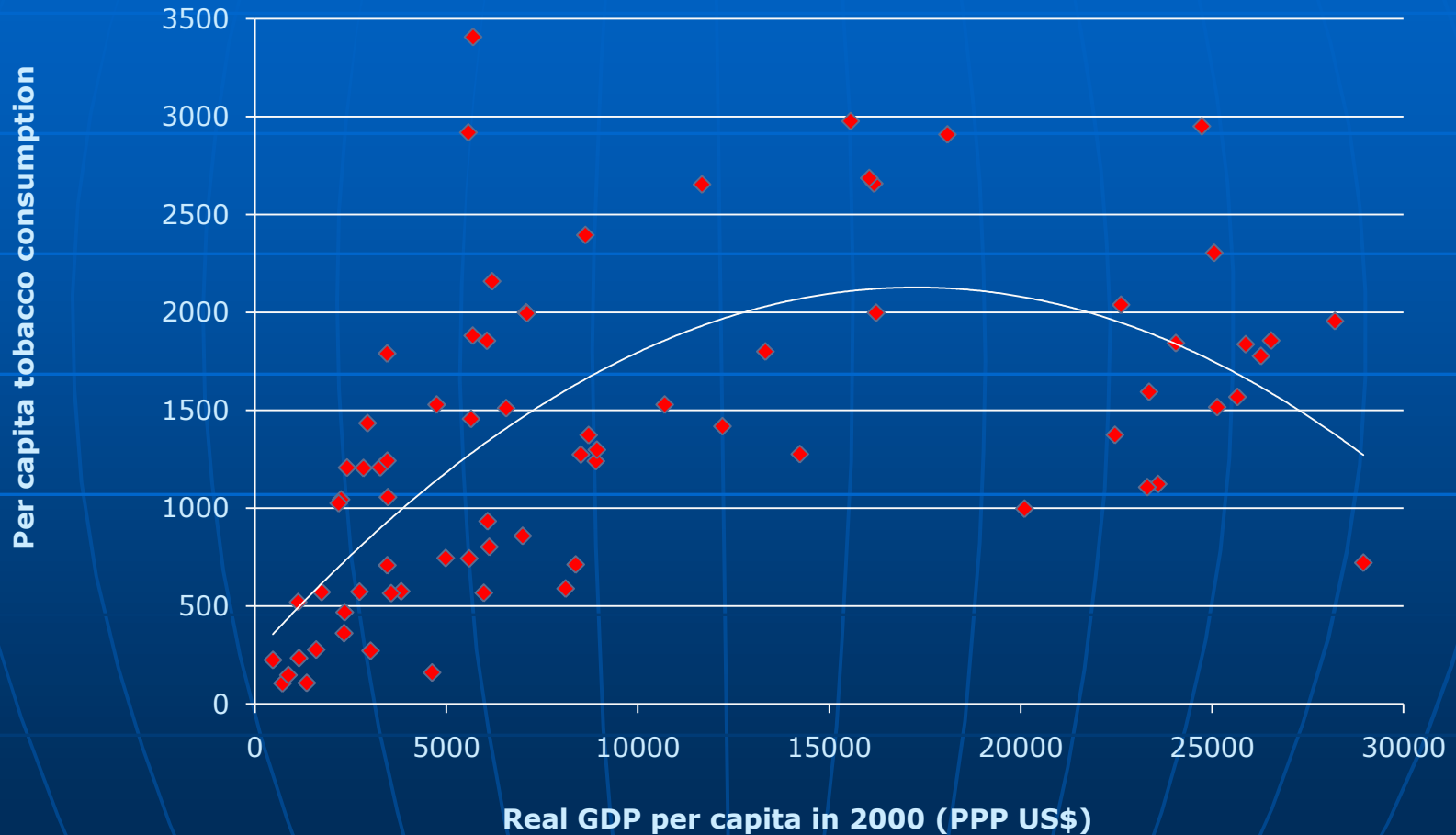
- Income also important determinant of tobacco use
 - Generally a negative relationship in high income countries, but often positive in low and middle income countries

Adult Smoking Prevalence (%) by Per Capita GDP, 2000



Source: Nargis et al., forthcoming

Per Capita Cigarette Consumption by Per Capita GDP, 2000

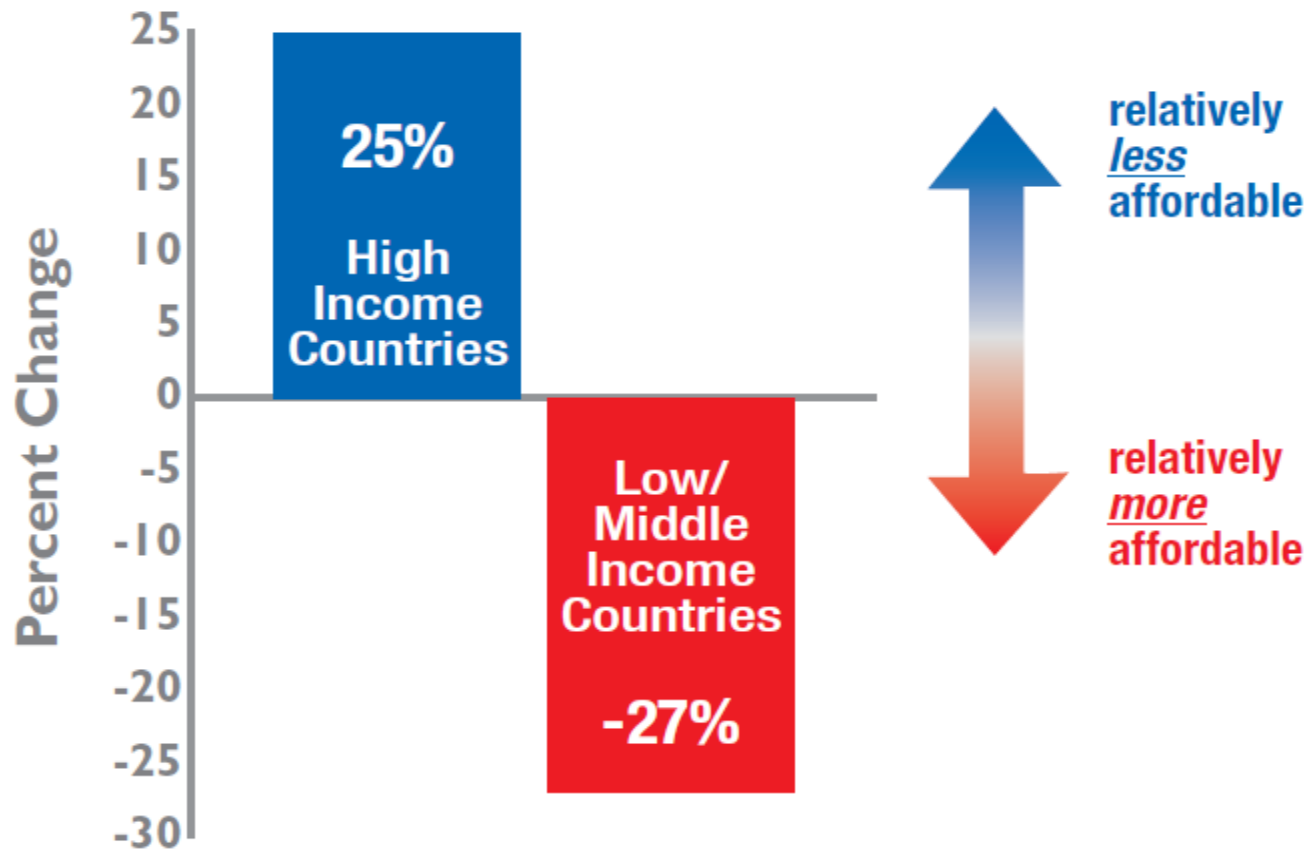


Source: Nargis et al., forthcoming

Affordability and Tobacco Use

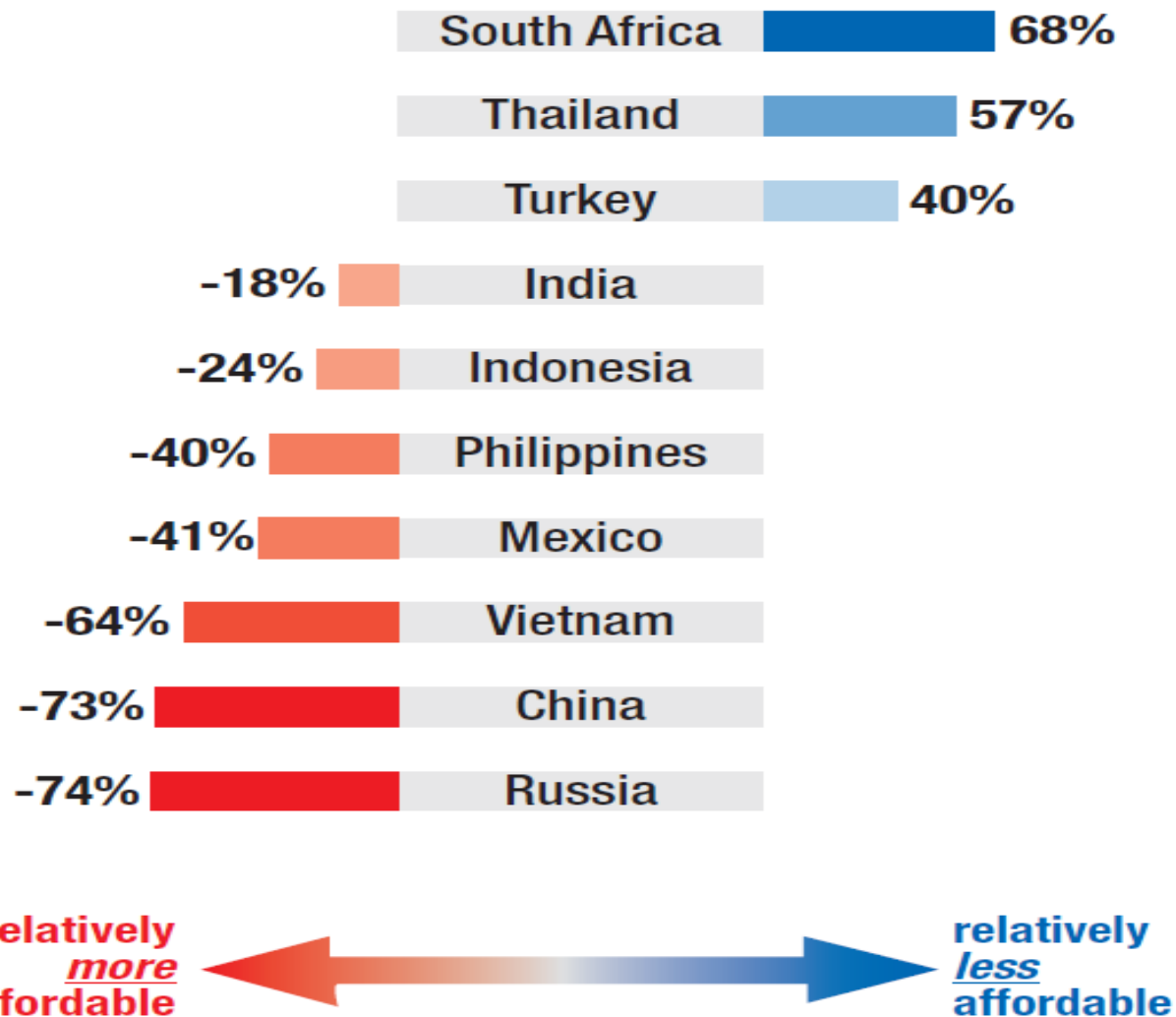
- Implies affordability (price relative to income) is important
- Alternative measures of affordability, based on:
 - “big mac” index
 - Measures of national income (e.g. per capita GDP)
 - Average earnings
 - Minutes of labor required to pay for pack of cigarettes
- More meaningful for looking within a country over time than comparing across countries

Figure 3: Cummulative Change in Affordability of Cigarettes, 1990-2006

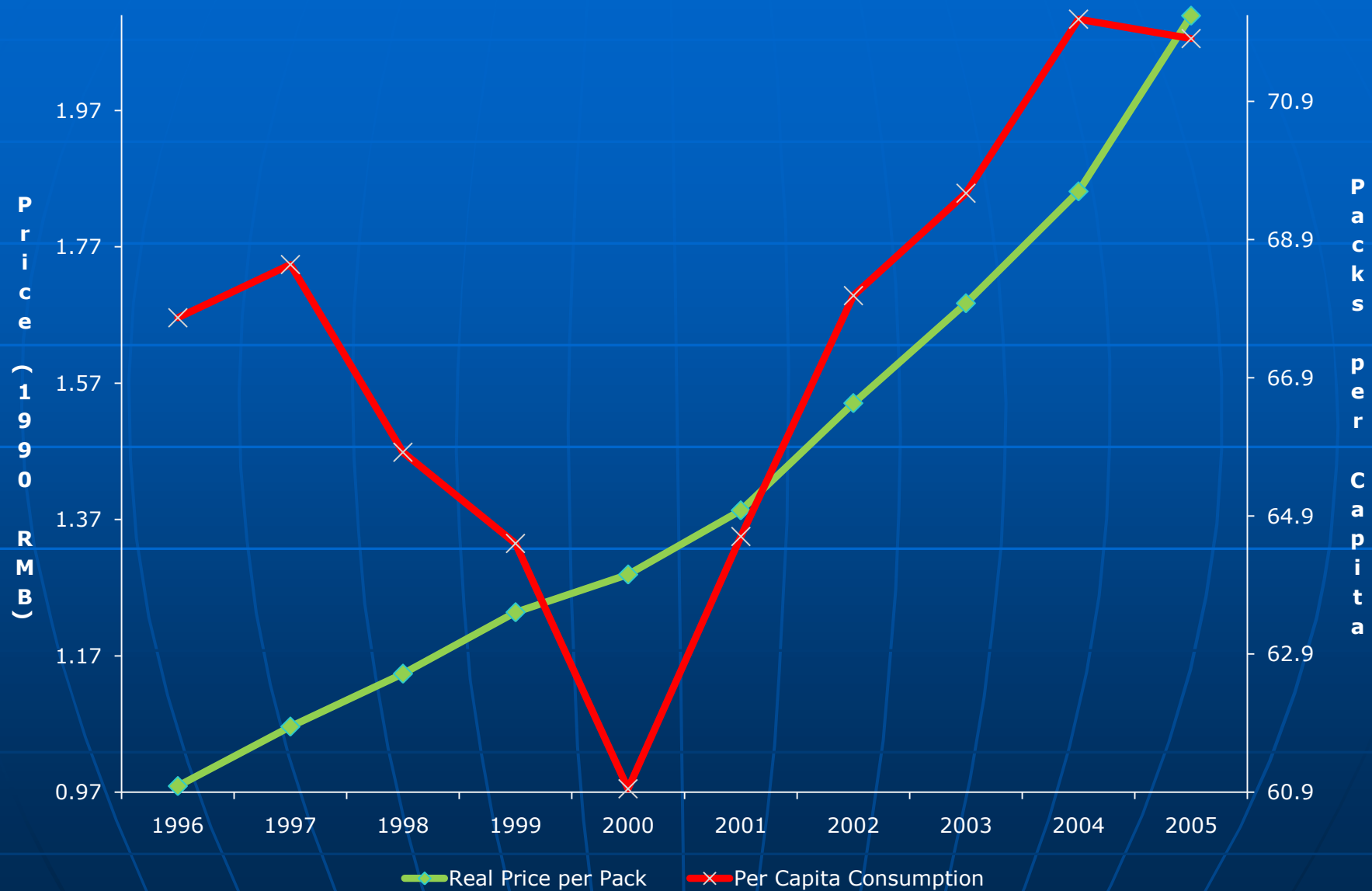


Based on the percent change in the RIP across countries by income.

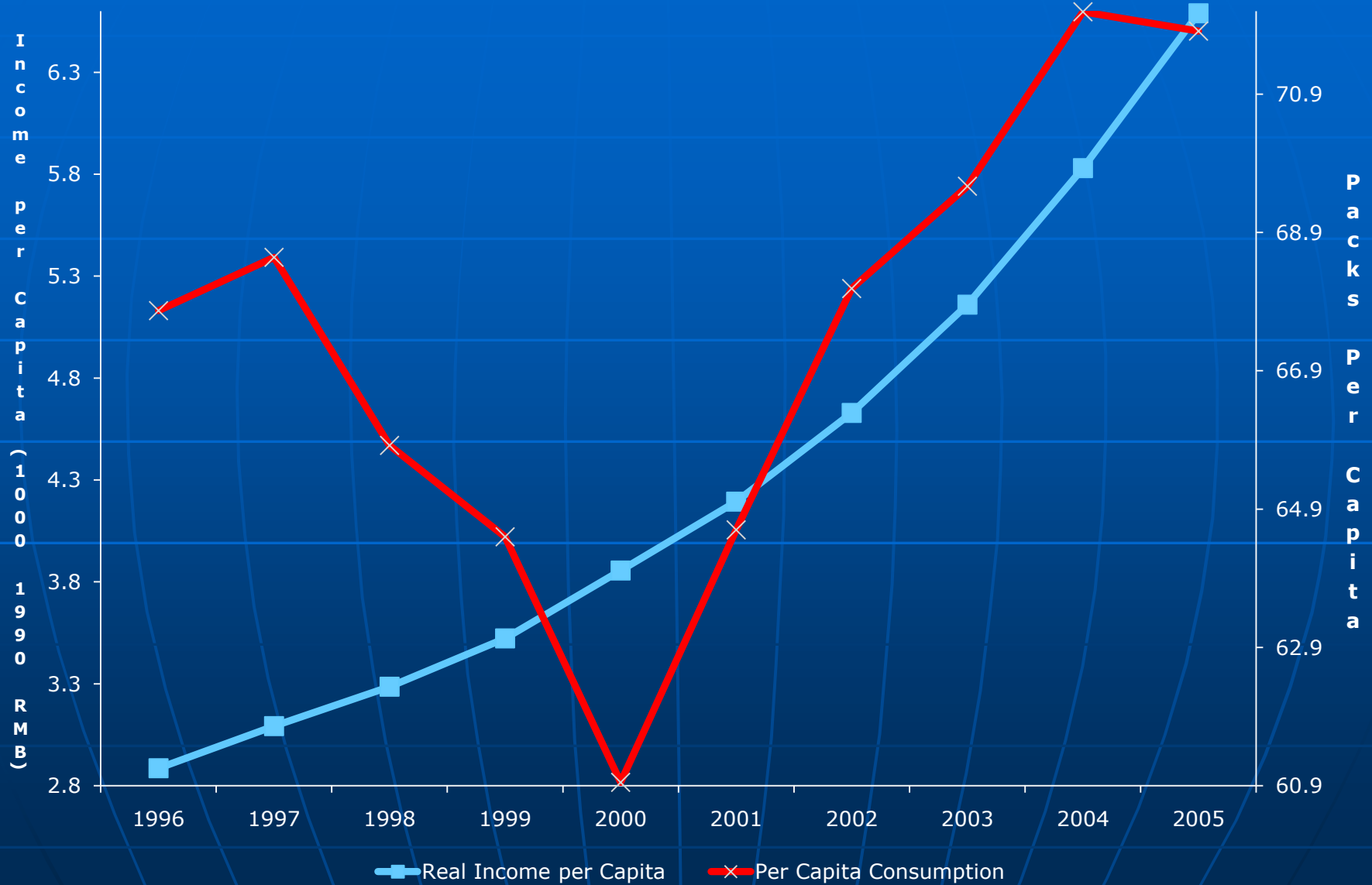
Figure 4: Cumulative Change in Affordability of Cigarettes, 1996-2006



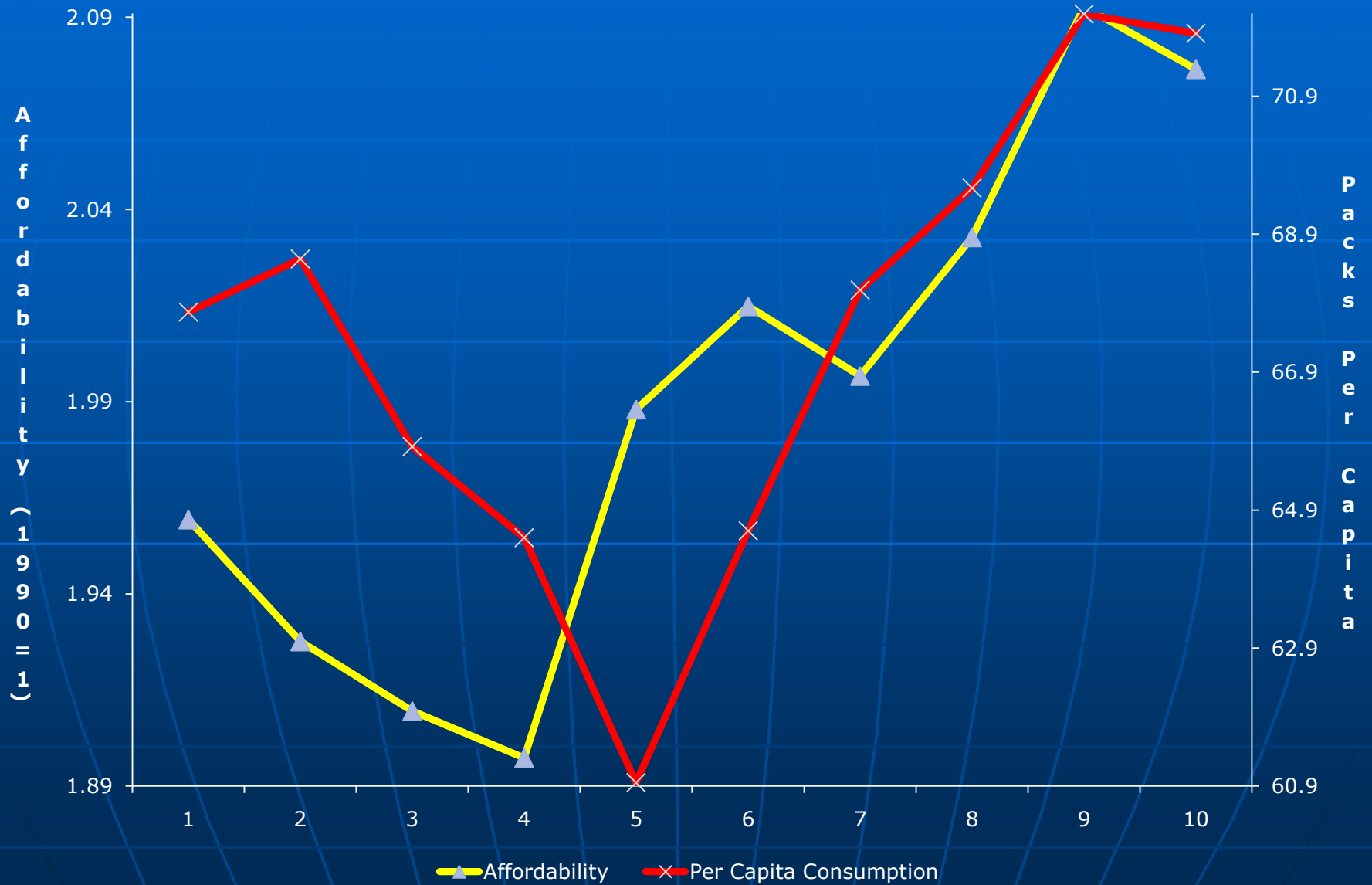
Cigarette Prices and Cigarette Consumption China, 1996-2005



Income and Cigarette Consumption China, 1996-2005



Affordability and Cigarette Consumption China, 1996-2005



WHO's Best Practices in Tobacco Taxation

- Increase tobacco taxes by enough to reduce the affordability of tobacco products
 - In many low/middle income countries, positive relationship between income and tobacco use
 - Implies consumption increases even as taxes increase if increases in income larger
 - Depends on relative price, income elasticity
 - Increasing affordability will result in increasing tobacco use, consequences

Economic Impact of Tobacco Control

Myths & Facts

Tobacco Taxes and Tobacco Tax Revenues

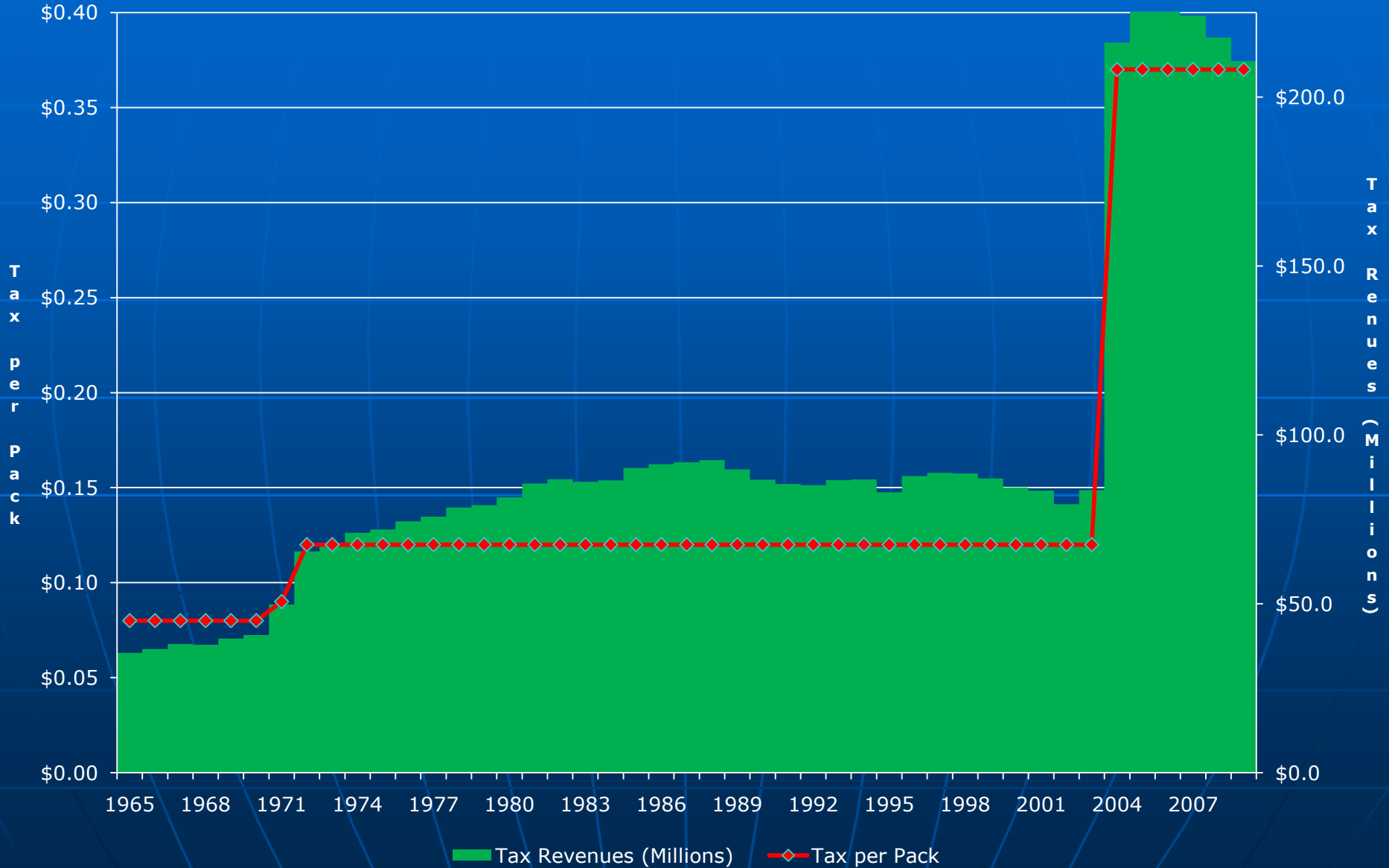
Taxes and Revenues

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



Positive Effect of Tax Increases on Revenues Results from:

Low share of tax in price:

- In US, state taxes account for about 25% of price on average
- total taxes account for less than half of price, on average
- *Implies large tax increase has much smaller impact on price*

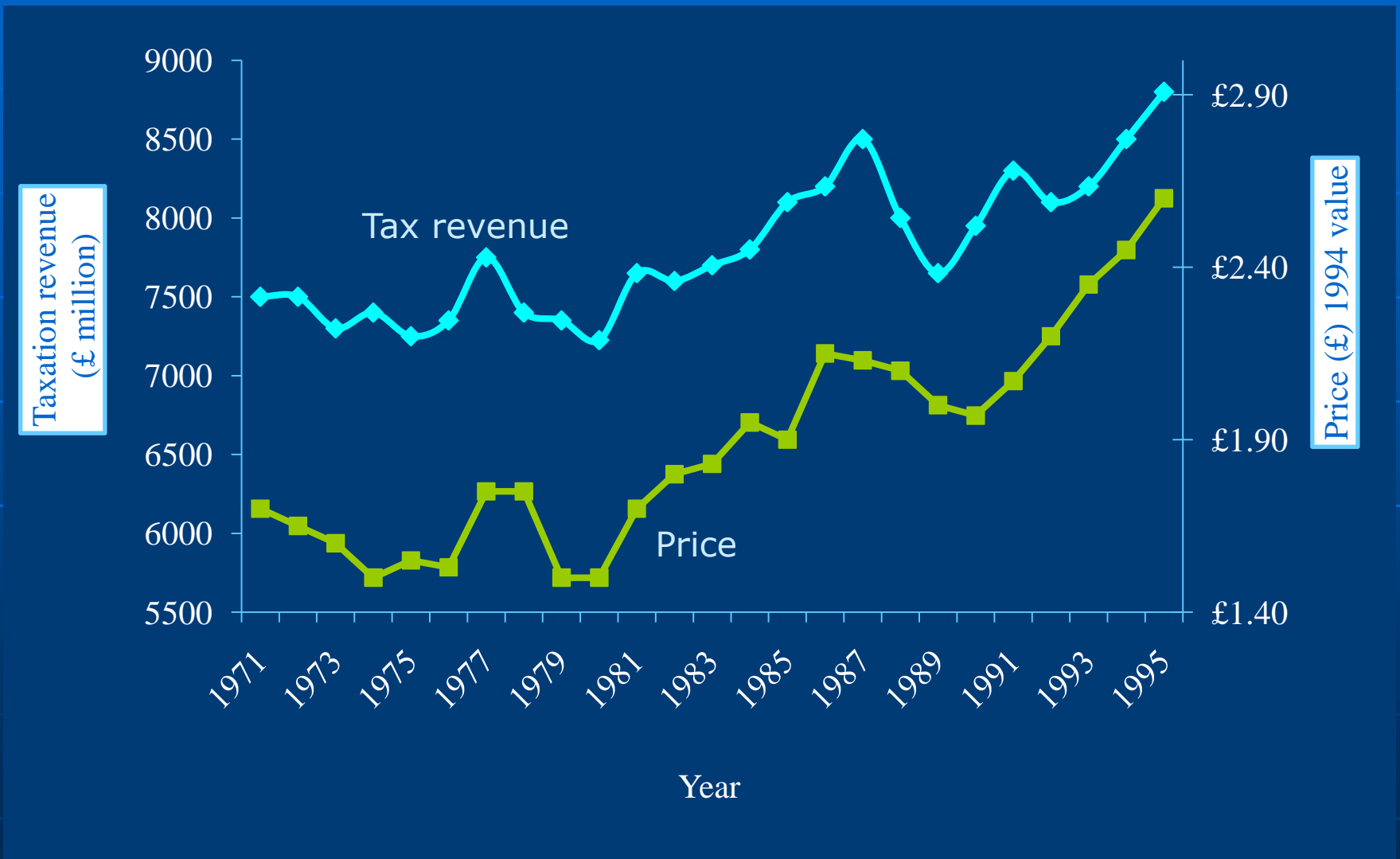
Less than proportionate decline in consumption:

- 10% price increase reduces consumption by 4%

Example:

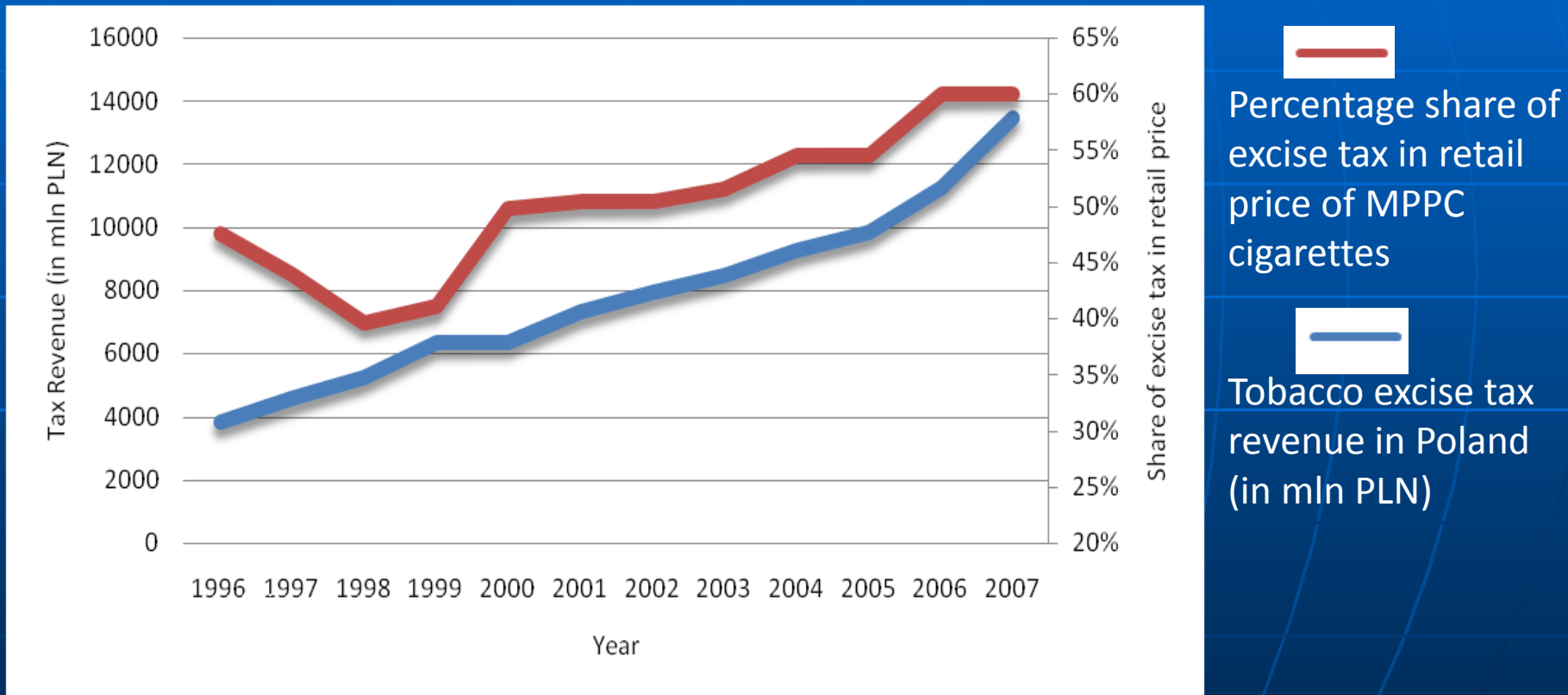
- Price \$4.00, State tax \$1.00
- Doubling of tax raises price to \$5.00
 - 100% increase in tax; 25% increase in price
- 25% price increase reduces sales by 10%
 - *90% of original sales at double the tax increases revenues by 80%*

Cigarette real price & real tax revenue (UK)



Tobacco excise tax revenue in Poland

The excise tax revenue is increasing along with the tax rates



WHO “Best Practices” for Tobacco Excise Taxes

- *Earmark a portion of tobacco tax revenues for related/other tobacco control and/or health promotion efforts*
 - Maximizes the health impact of tobacco tax increases

Tobacco Taxes, Tobacco Control and Employment Concerns

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VANGUARD

Nigeria: Anti-Tobacco Bill - 400,000 Jobs On the Line

 Emeka Aginam

9 March 2009

If passed into law, the National Tobacco Bill which is currently on the floor of the National Assembly will lead to at least 400,000 Nigerians being thrown into the unemployment market.

This was the view expressed by the Chairman, Senate Committee on Industries, Senator Kamorudeen Adedibu while speaking with reporters recently in Iseyin, Oyo State at the 2008 Farmers' Productivity Day/Award Ceremony.

Describing the bill as a "misplaced priority" for the country, Adedibu who represents Oyo South in the Senate also vowed to mobilize his colleagues in the upper legislative chamber to ensure that the bill is defeated.

"The bill is actually more than regulation. It is more than that. The bill if it goes through and Insha Allah, it won't, will render the tobacco companies useless. It is going to increase smuggling and most especially, it is going to stop the necessary means of livelihood for over 400,000 people," the Senator stated.

Economic Impact of Tobacco Taxation and Tobacco Control

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

- Tobacco-related employment generally falling in most countries
 - Privatization, direct investment
 - Technological advances
 - Capital intensive nature of production
- Economic presence does not imply economic dependence
 - Money spent on tobacco products will be spent on other goods/services as demand falls

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

WHO “Best Practices” for Tobacco Excise Taxes

- *Do not allow concerns about employment impact to prevent tobacco tax increases*
 - Reductions in tobacco-dependent employment are offset by increases in employment in other sectors; where concerns are significant, using some new revenues to support transitions from tobacco farming/manufacturing to other activities would be appropriate

Tobacco Taxes and Illicit Trade in Tobacco Products

Types of Illicit Trade

- Individual tax avoidance
 - Reservation, Internet and other direct, duty-free, and cross-border purchases
 - Generally not illegal, but states require local taxes to be paid
- Bootlegging
 - Small scale purchasing of cigarettes in low-tax/price jurisdictions for resale in high tax/price jurisdictions

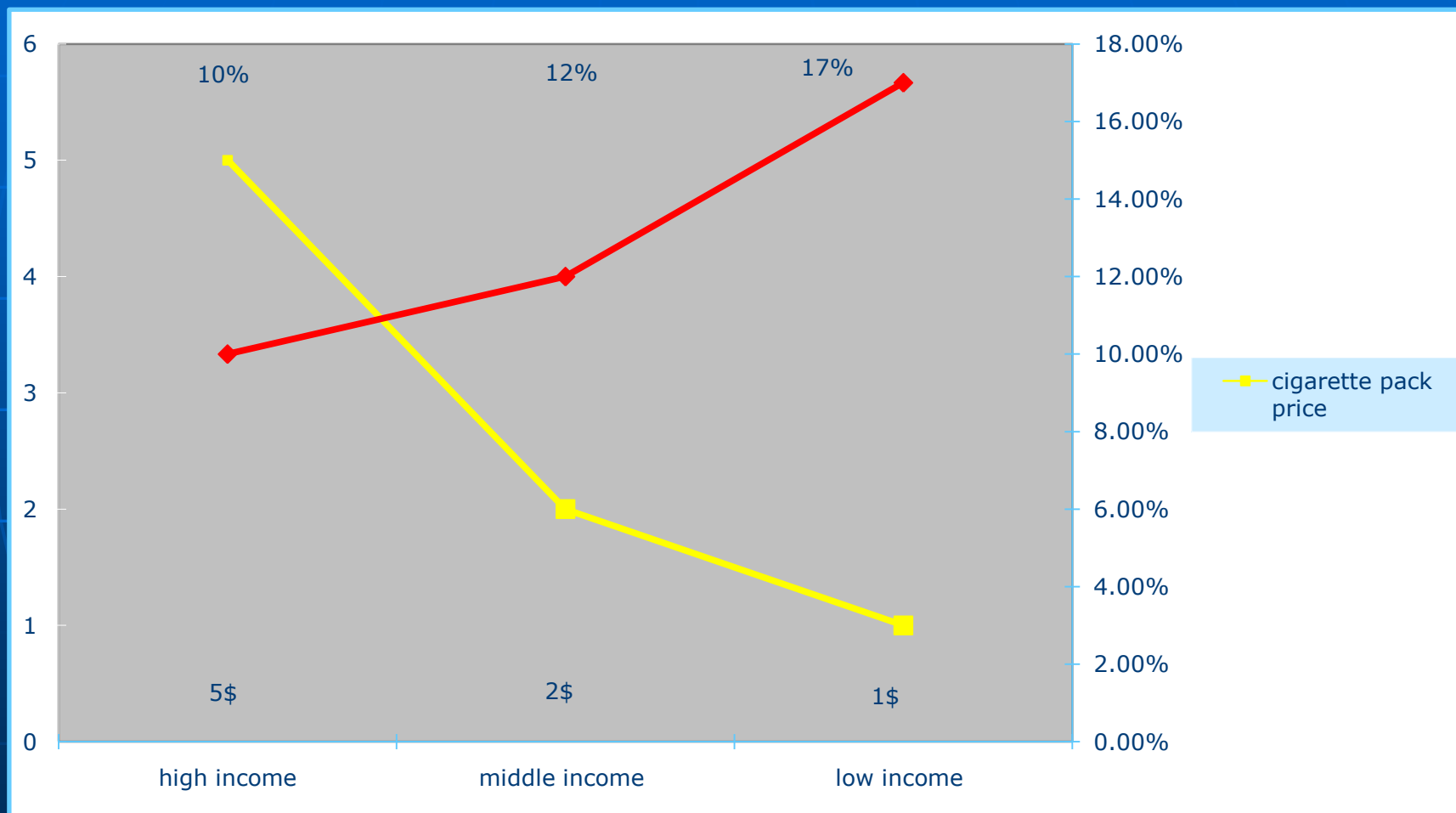
Types of Illicit Trade

- Large scale, 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

Determinants of Illicit Trade

- Tax and price differentials
 - More important for individual tax avoidance and bootlegging
 - Larger scale efforts avoid all taxes

The illicit cigarette market share (%) and the average cigarette pack price (\$) in high, middle and low income countries in 2007.

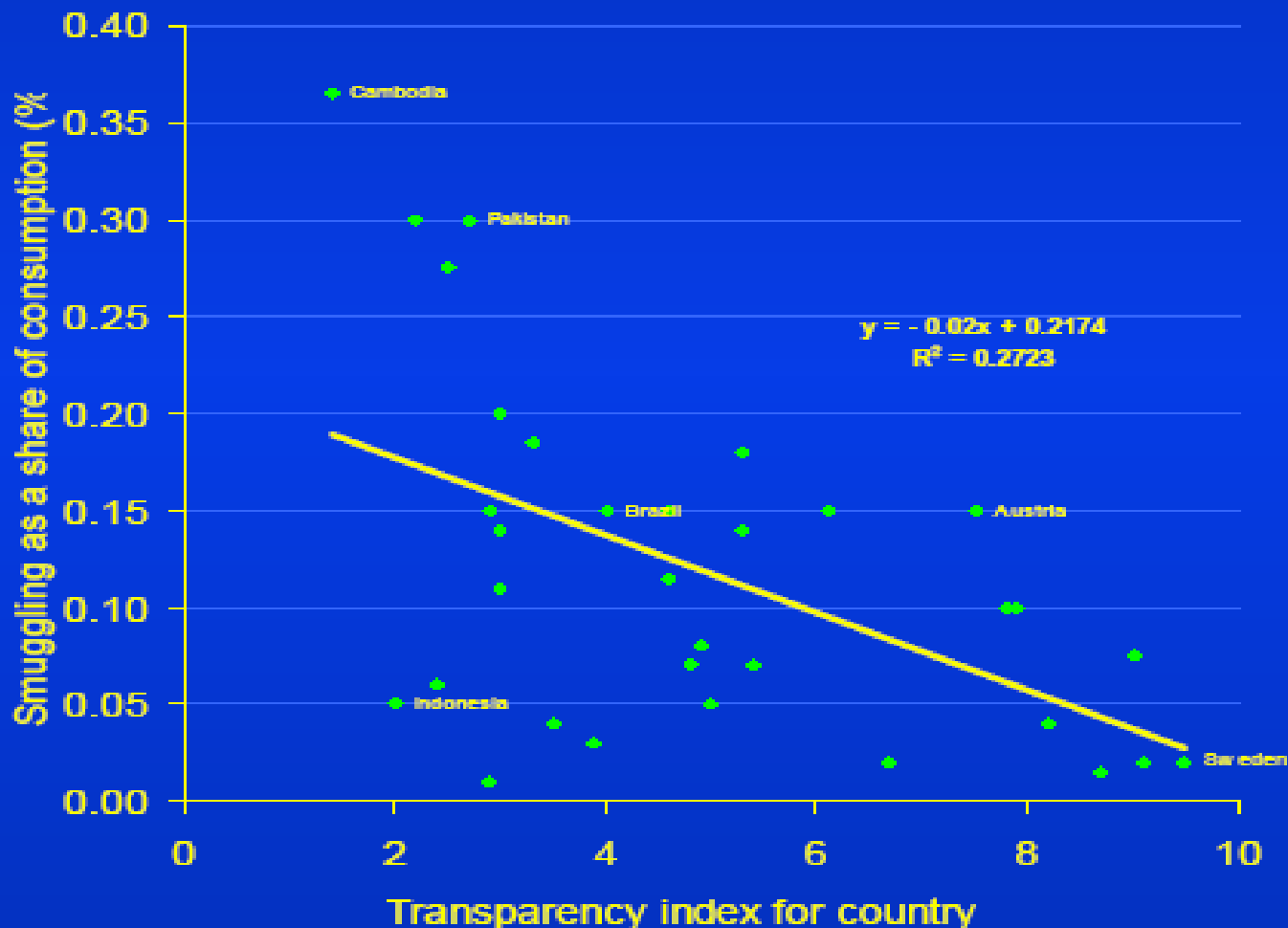


Determinants of Illicit Trade

- Presence of informal distribution channels
 - e.g. Street vendors, unlicensed distributors
- Presence of criminal networks
 - e.g. Organized crime, terrorist organizations
- Weak tax administration
 - Absence of tax stamps; weak or non-existent physical controls; unlicensed manufacturers, distributors, retailers; weak customs authorities
- Poor enforcement
 - Limited resources for border patrols, customs authorities, etc; low penalties
- Corruption

Smuggling and Corruption

Smuggling as a function of transparency index



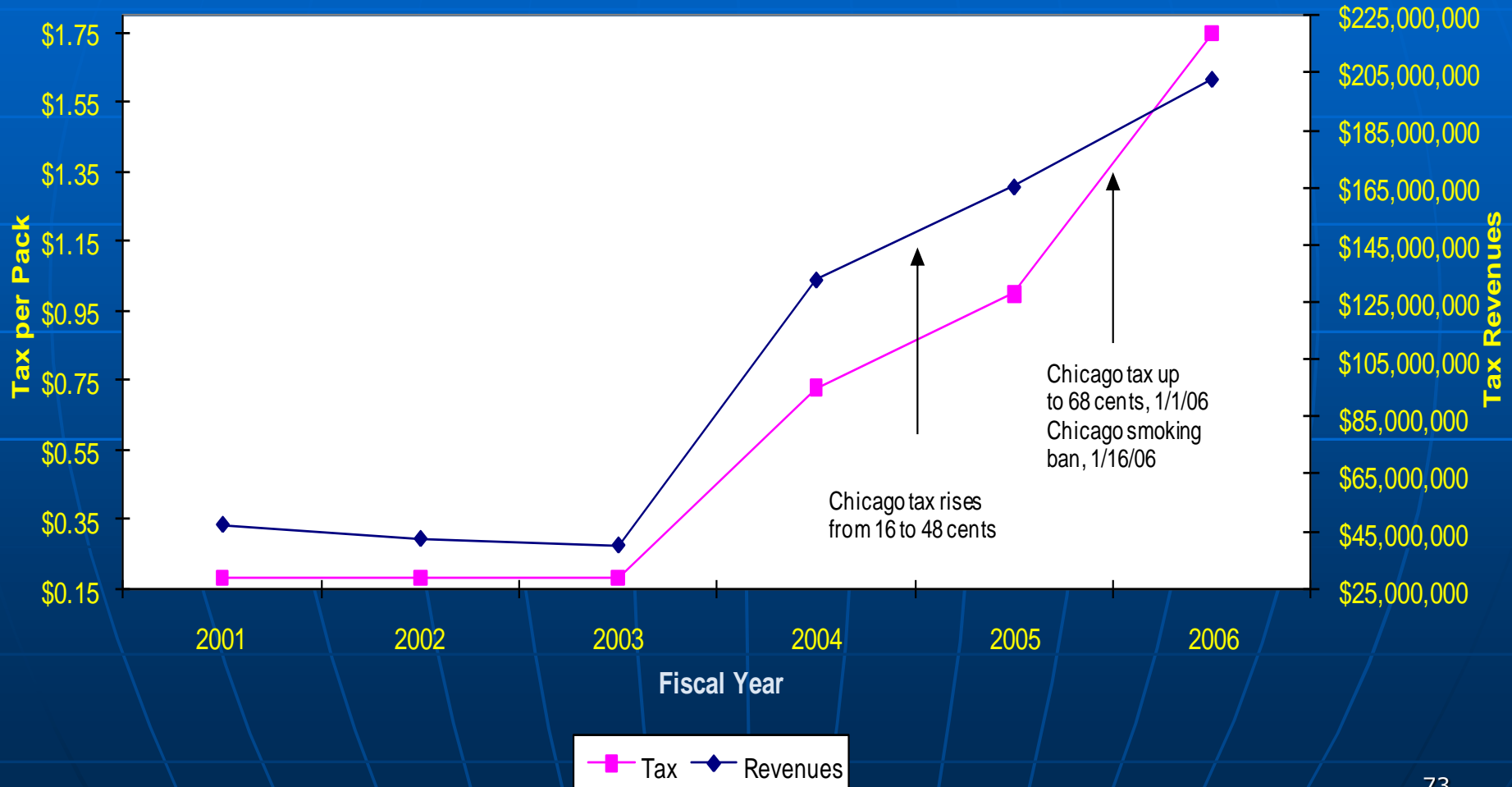
Source: Merriman *et al.*, 2000

Illicit Trade, Public Health, and Revenues

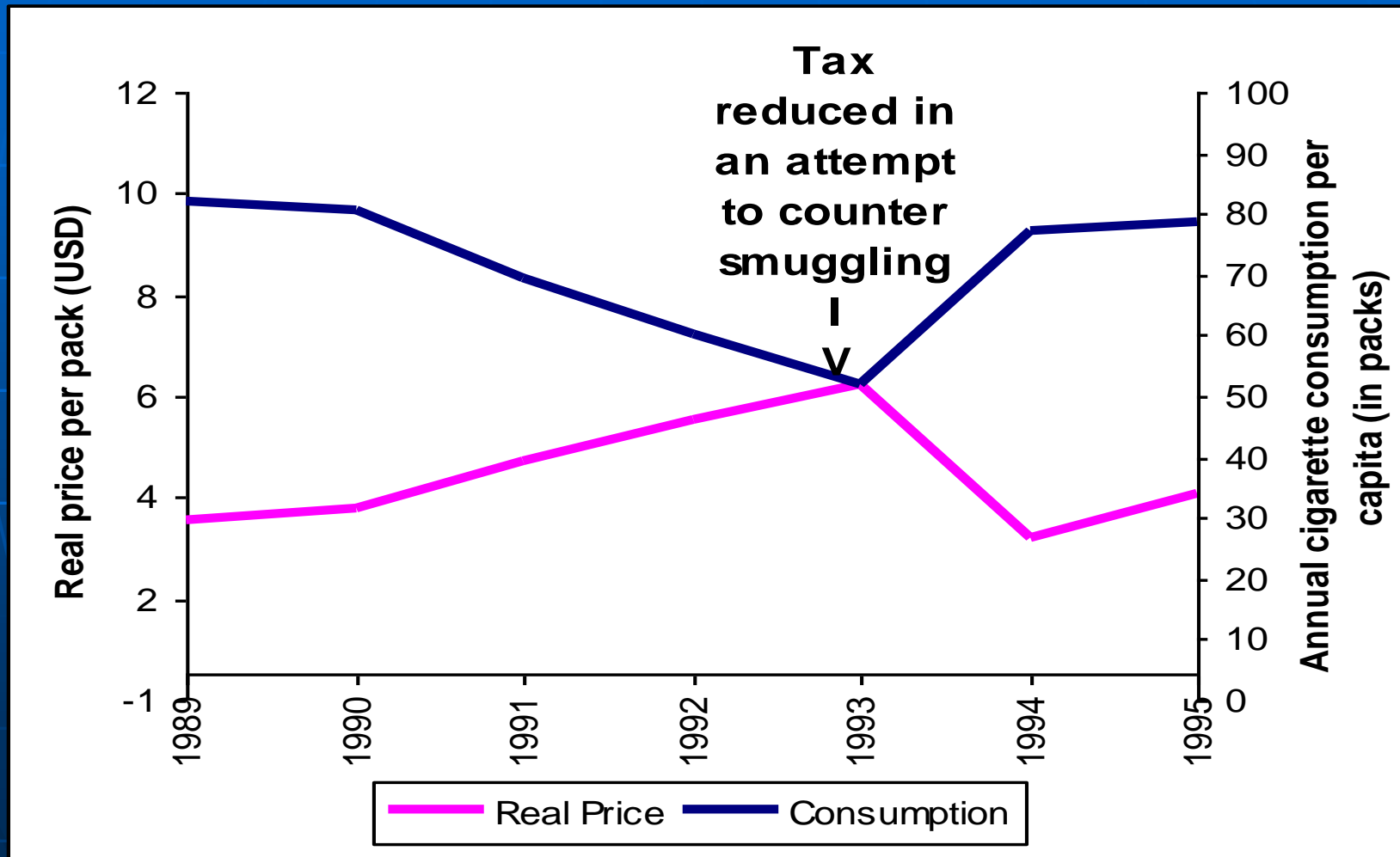
- Even in the presence of illicit trade, higher cigarette and other tobacco taxes lead to:
 - Reductions in youth and adult tobacco use
 - Increases in tobacco tax revenues
- Rather than forego tax increases, appropriate response is to crack down on illicit trade

Tax Increases and Tax Avoidance

Cook County Cigarette Tax and Tax Revenues - FY01-FY06



Canada Sharply Reduced Taxes in 1993



Source: World Bank, 2003

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

Tobacco Taxes and the Poor

Tobacco Taxes & Equity

- Concerns about “fairness” of tobacco taxes
 - Clearly regressive in high income countries
 - Given greater prevalence of smoking in lower income populations
 - Likely regressive in most low/middle income countries
 - Depends on distribution of tobacco use by income level and tax structure
 - Less regressive in countries where differences in prevalence by income level are smaller;
 - even less where prevalence/consumption rises with income
 - Less regressive in countries with *ad valorem* taxes and/or tiered taxes where tax as share of price increases with price

Tobacco and Poverty

Family falls into poverty

Foregone income 3:

Breadwinner dies prematurely



Poor men smoke



Cycle of tobacco and poverty



Foregone income 2:

Treatment cost & Lost working days & income



Breadwinner gets sick due to tobacco use



Foregone income 1:

More money spent on tobacco:

Less money spent on Education, nutrition etc

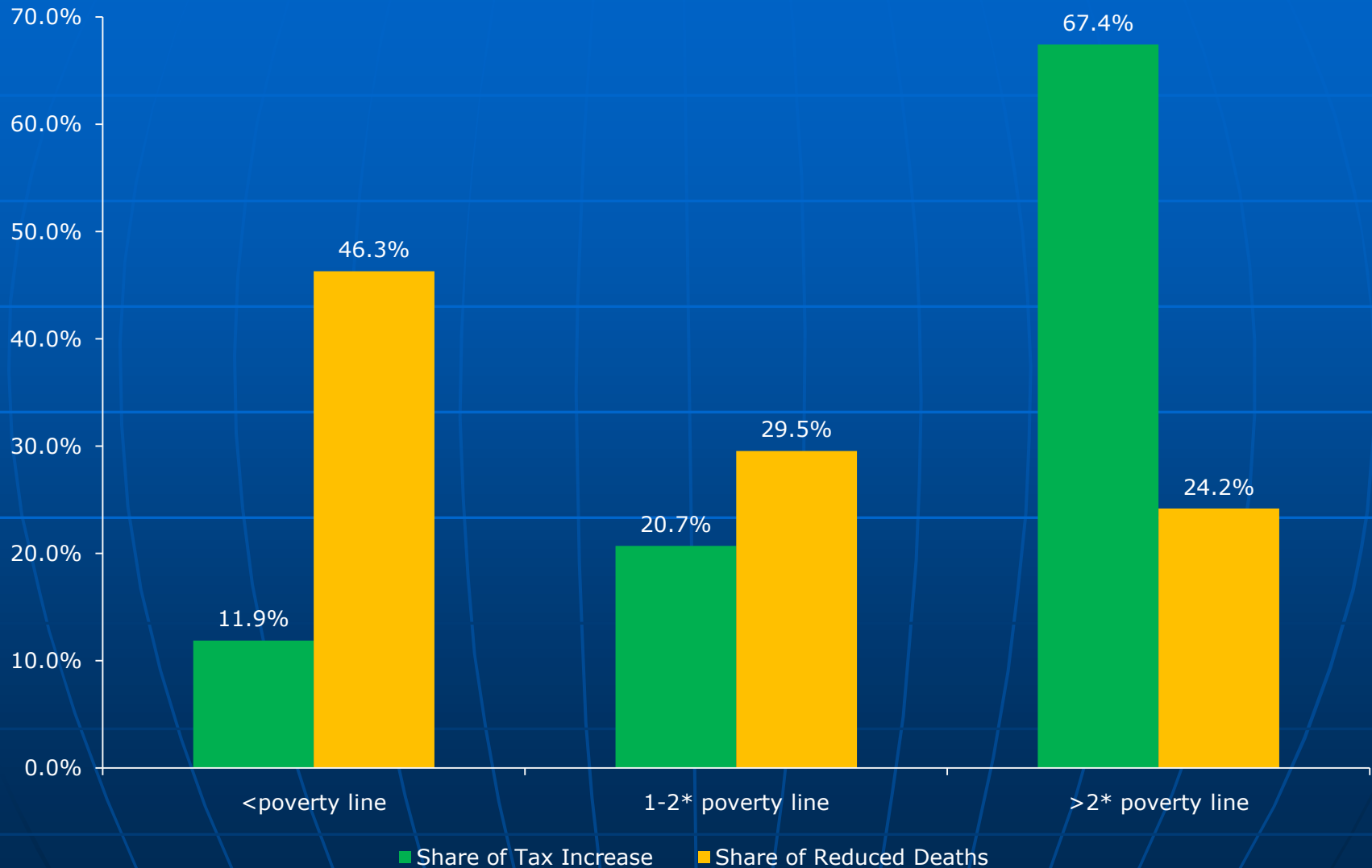
High opportunity cost

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
 - Distribution of health benefits from tax also progressive
 - Given “regressive” burden of tobacco-caused disease
 - Greater use of tobacco among lower income
 - 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

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 “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 and to 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

Summary

- Countries impose a variety of taxes on tobacco products
- Higher tobacco taxes will lead to higher tobacco product prices
- Large increases in tobacco taxes are single most effective policy for reducing tobacco use
 - 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

Research Priorities

- Country specific research on impact of tax/price on tobacco use in LMICs
- Research on the economic costs and benefits of tobacco and tobacco control
- Research on the interrelationships between tobacco use, poverty, and tobacco control
- In small number of highly tobacco-dependent countries, research on economically viable alternatives to tobacco growing and manufacturing
- In HICs, research to assess changes in price elasticity of tobacco products over time and at different tax/price levels