

Social Policy and Taxation of Nicotine Products: General Impact on Reducing Nicotine Addiction and Specific Impact on Psychiatric Population

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June 12, 2008

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Overview

- History/description of cigarette and other tobacco taxes in the US and states
- Review of evidence on the impact of taxes on prices and tobacco use
 - Including limited evidence on psychiatric population
- Brief review of evidence on the impact of earmarked tobacco taxes
- Short discussion of myths and facts about “economic costs” of tobacco taxation and tobacco control

Tobacco industry clearly understands the impact of tobacco taxation

"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

Tobacco Taxation in the U.S.

- Federal cigarette tax
 - Specific (per unit) excise tax
 - initially adopted in 1864
 - Raised during war time/lowered during peace time
 - Set at 8 cents per pack in 1951
 - Doubled to 16 cents per pack in 1983
 - Currently 39 cents per pack
 - About 60% of inflation adjusted value of 1951 tax
- Other federal tobacco taxes
 - Specific excise taxes on most products, including cigars, pipe tobacco, chewing tobacco, snuff, and roll-your-own tobacco (and separately on rolling papers)
 - Generally lower than cigarette tax
 - Similar infrequent increases in taxes

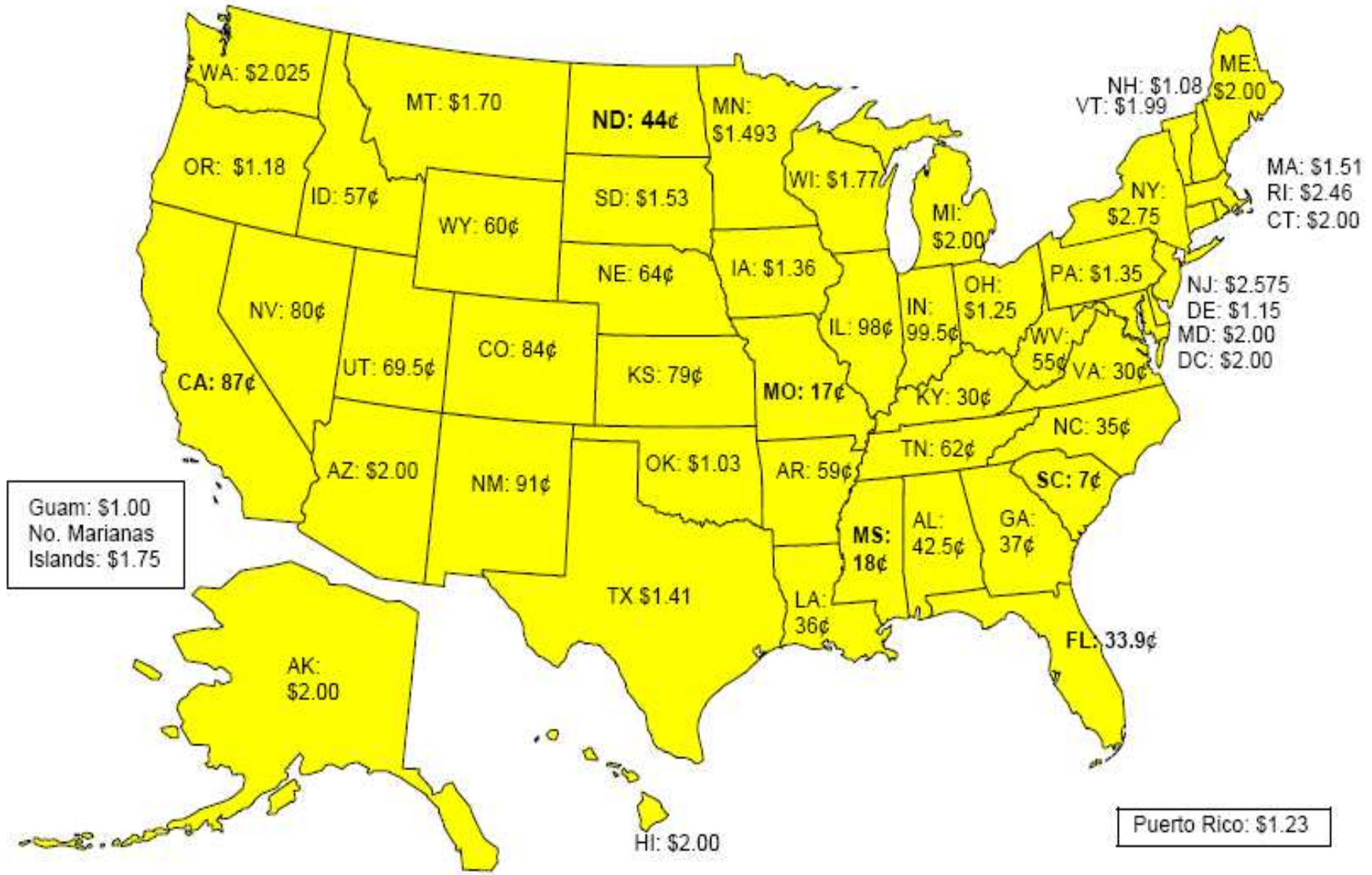
Tobacco Taxation in the U.S.

- State cigarette taxes
 - First adopted by IA in 1921; NC last to adopt in 1969
 - Specific excise tax in all states
 - Currently: 7.0 cents/pack (SC) to \$2.75/pack (NY)
 - Numerous state tax increases over past 5 years
 - Average \$1.16 per pack (33.5 cents in tobacco growing states; \$1.28 in other states)
 - Several proposing additional increases
 - Most states tax other tobacco products
 - Almost always an *ad valorem* tax (% of price)
 - Sales tax applied to tobacco products in most states

Local Taxes

- Many localities add additional tax
 - Typically a few cents/pack, with some exceptions:
 - » \$1.50 in New York City
 - » \$2.68 in Chicago/Cook county

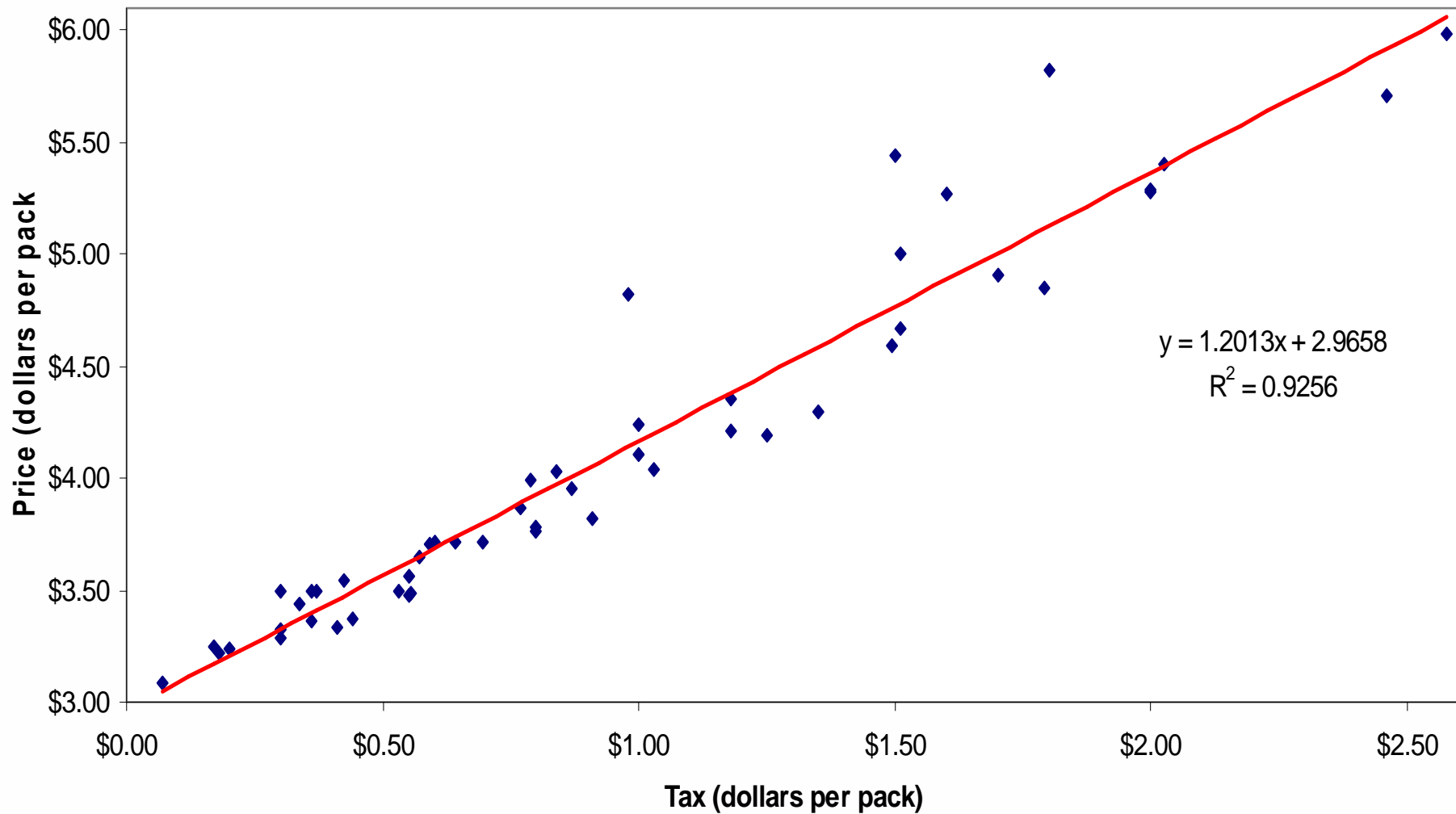
State Cigarette Excise Taxes



As of 6/1/08

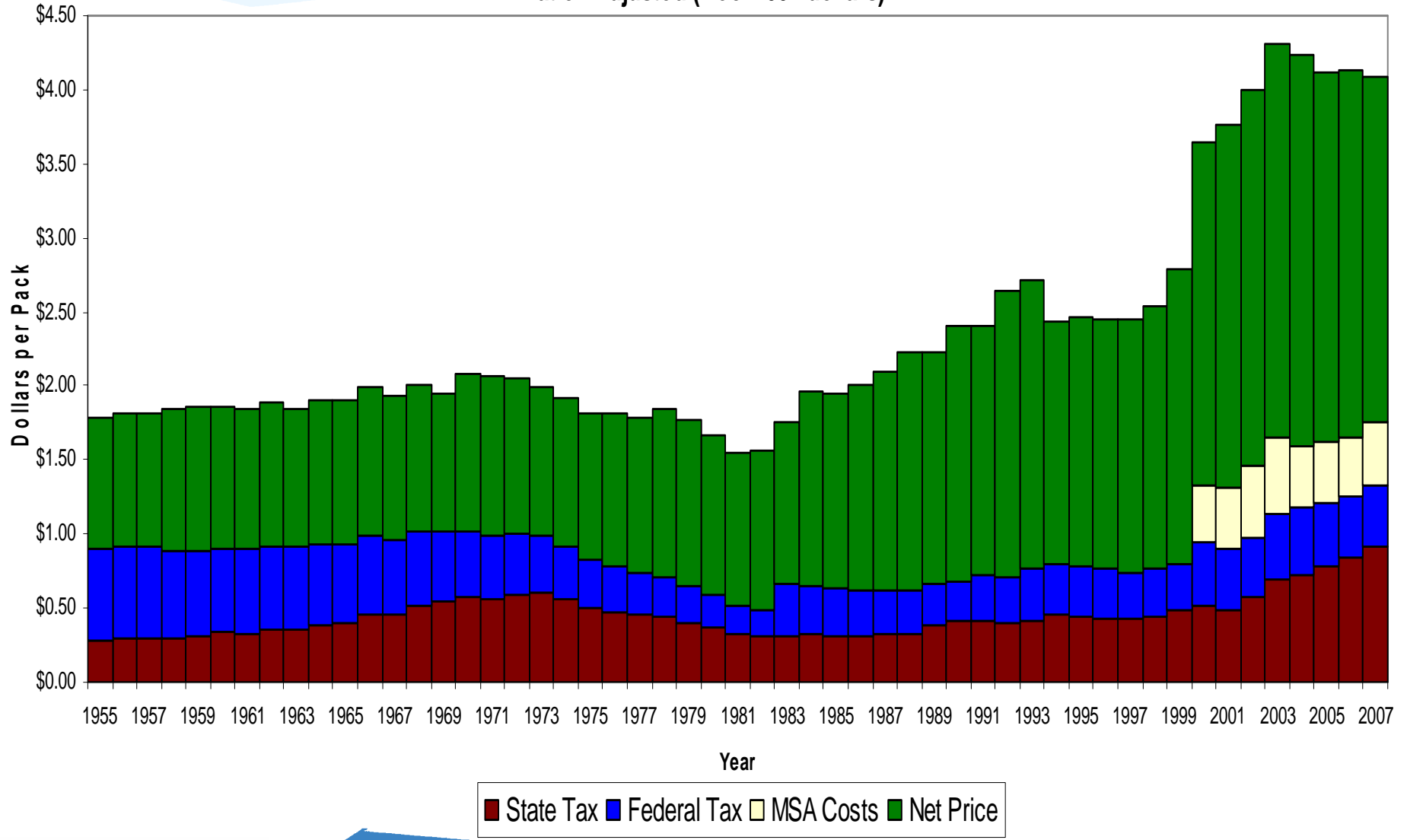
Source: Campaign for Tobacco-Free Kids

State Cigarette Taxes and Prices, November 1, 2006

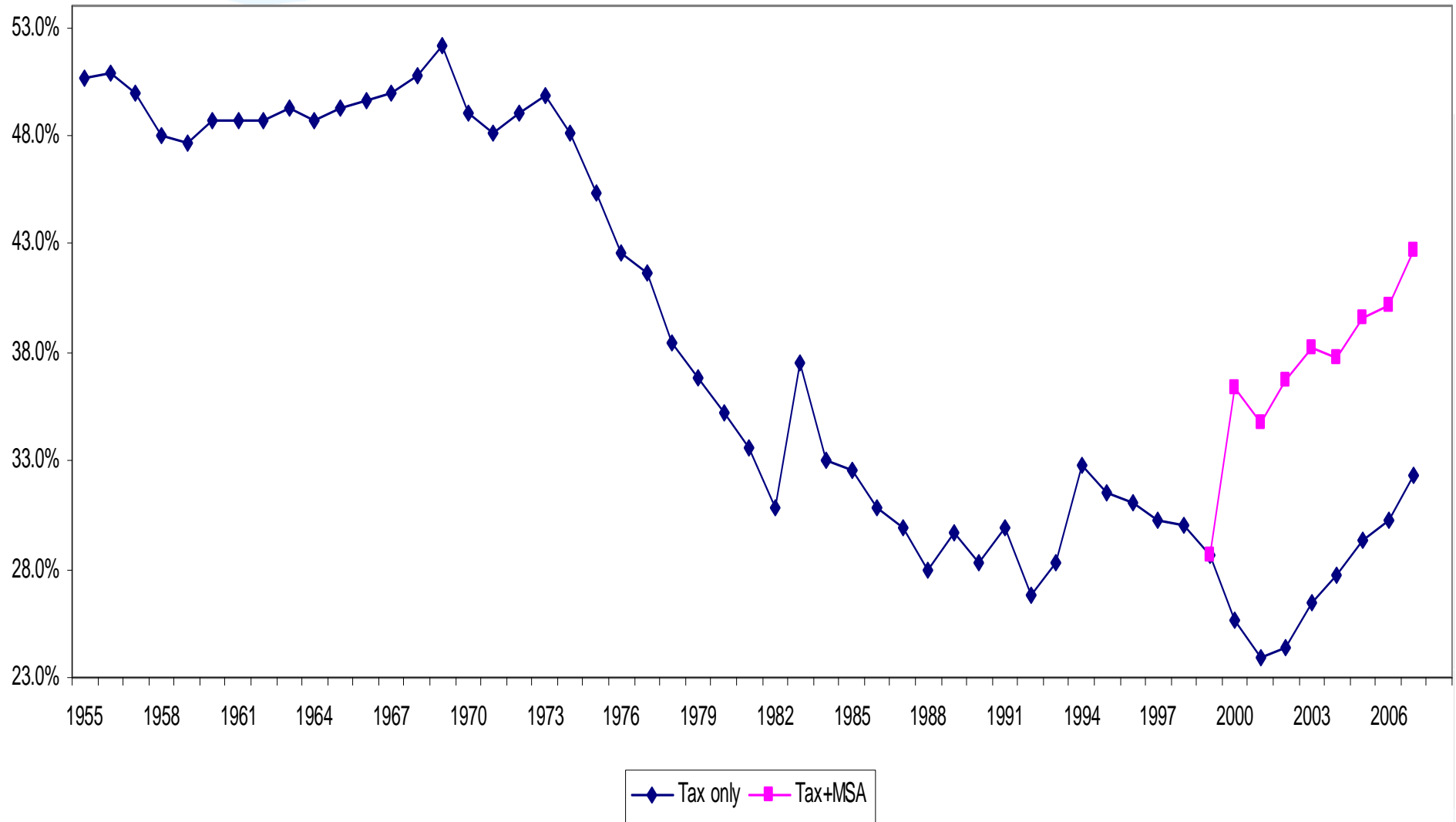


Cigarette Taxes and Prices, 1976-2007

Inflation Adjusted (Dec. 2007 dollars)

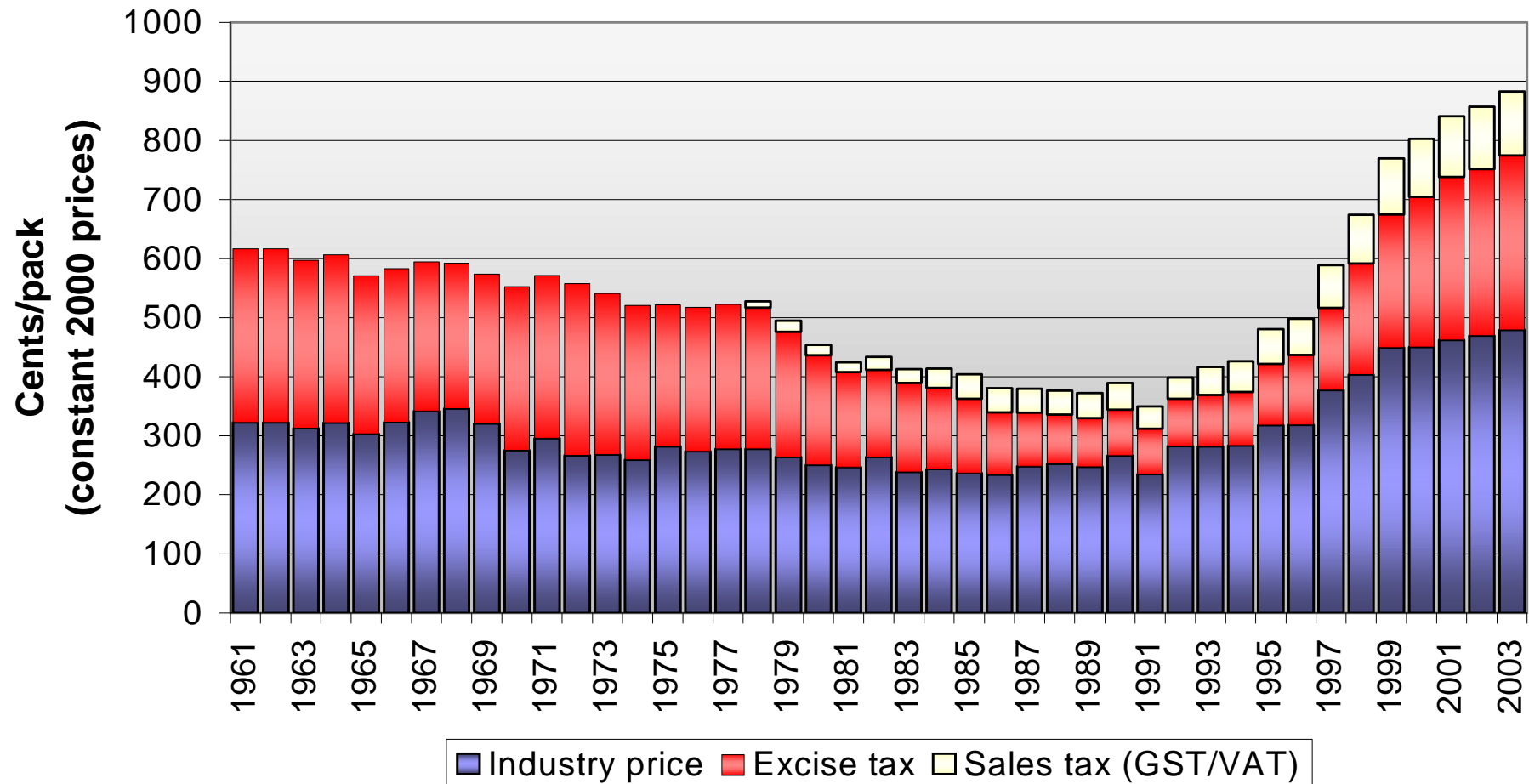


Tax as Percent of Price United States, 1955-2007



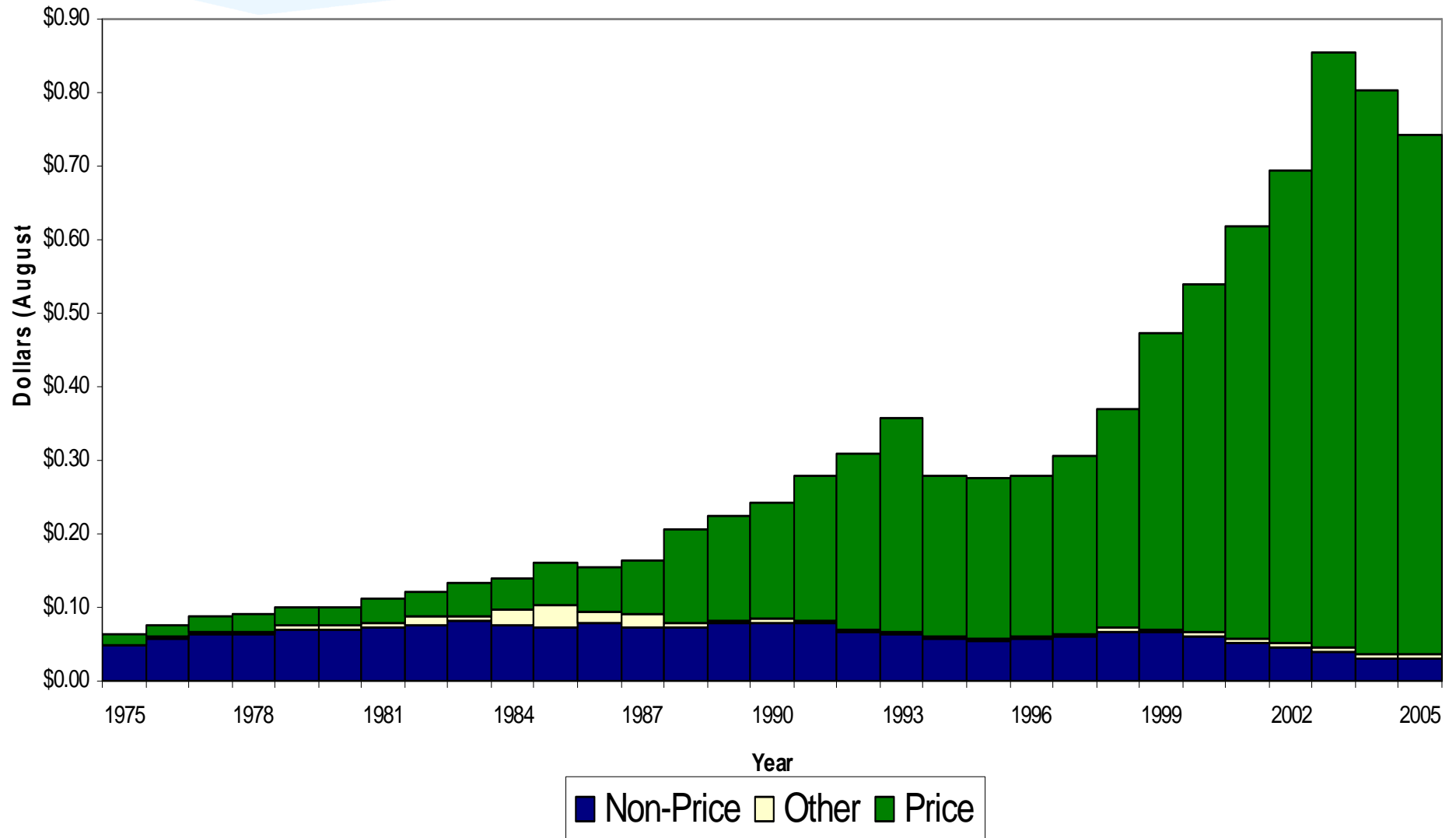
Taxes and Tobacco Product Prices

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

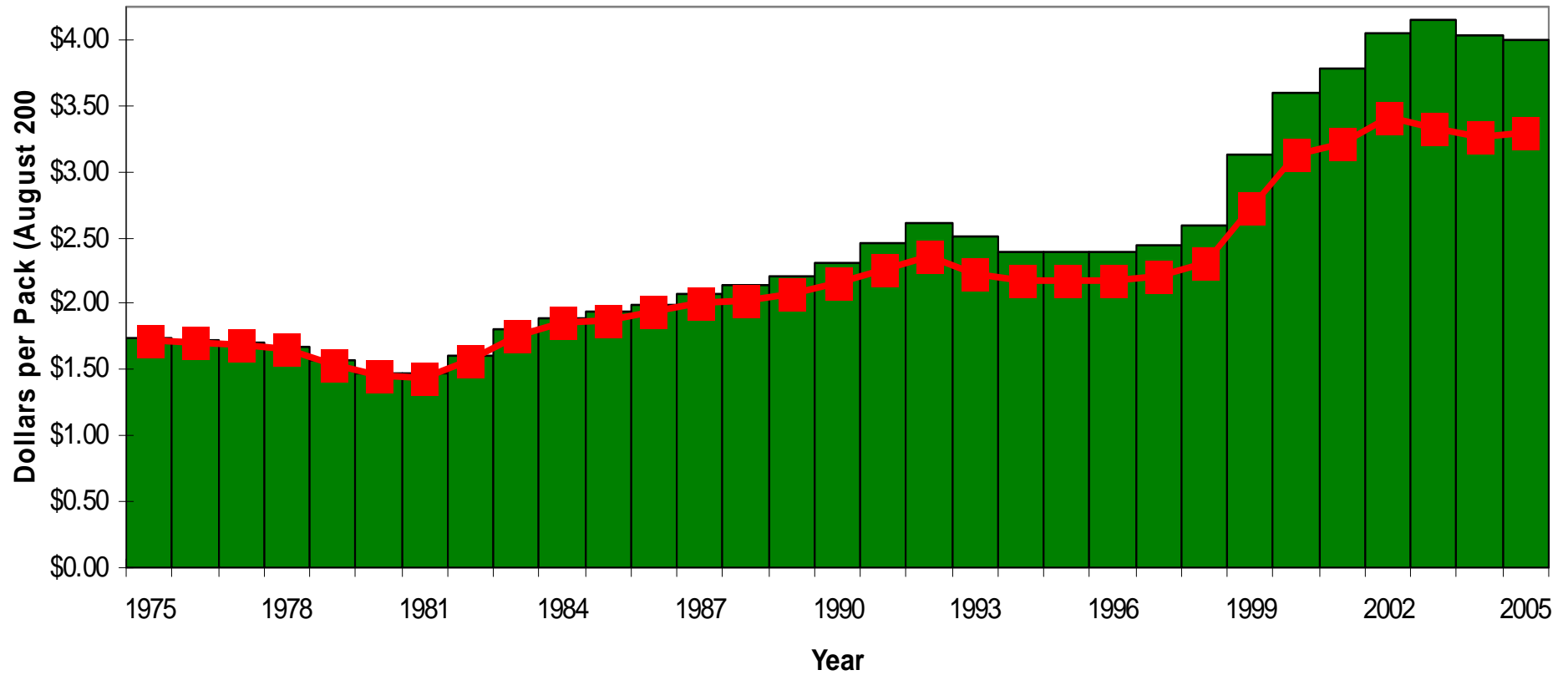


Source: Van Walbeek, 2003

Cigarette Marketing Expenditures per Pack Inflation Adjusted, 1975-2005

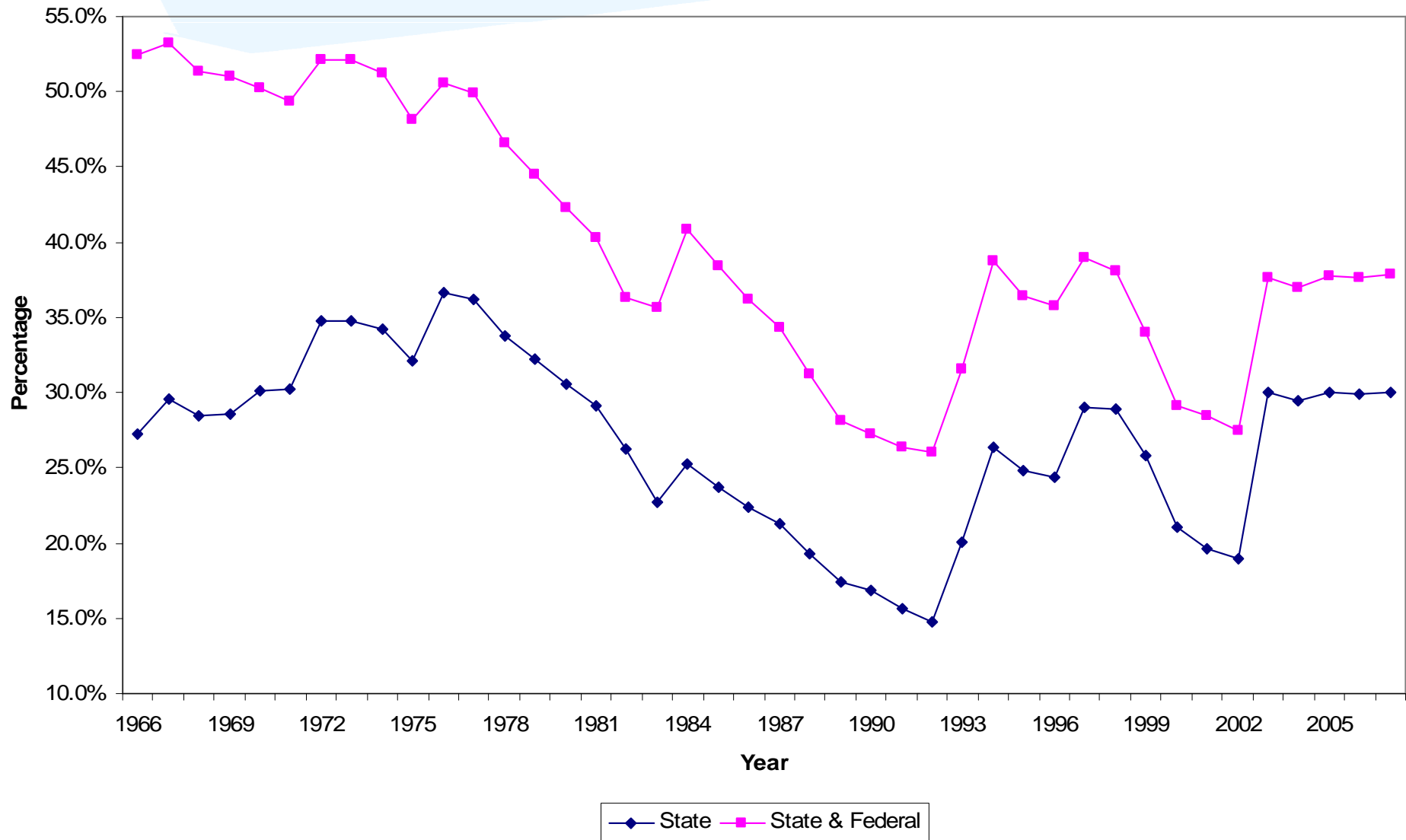


Average Cigarette Prices, 1975-2005 Inflation Adjusted



Price Price-Price Related Marketing

Cigarette Taxes as Percent of Price in Massachusetts FY1966-2007

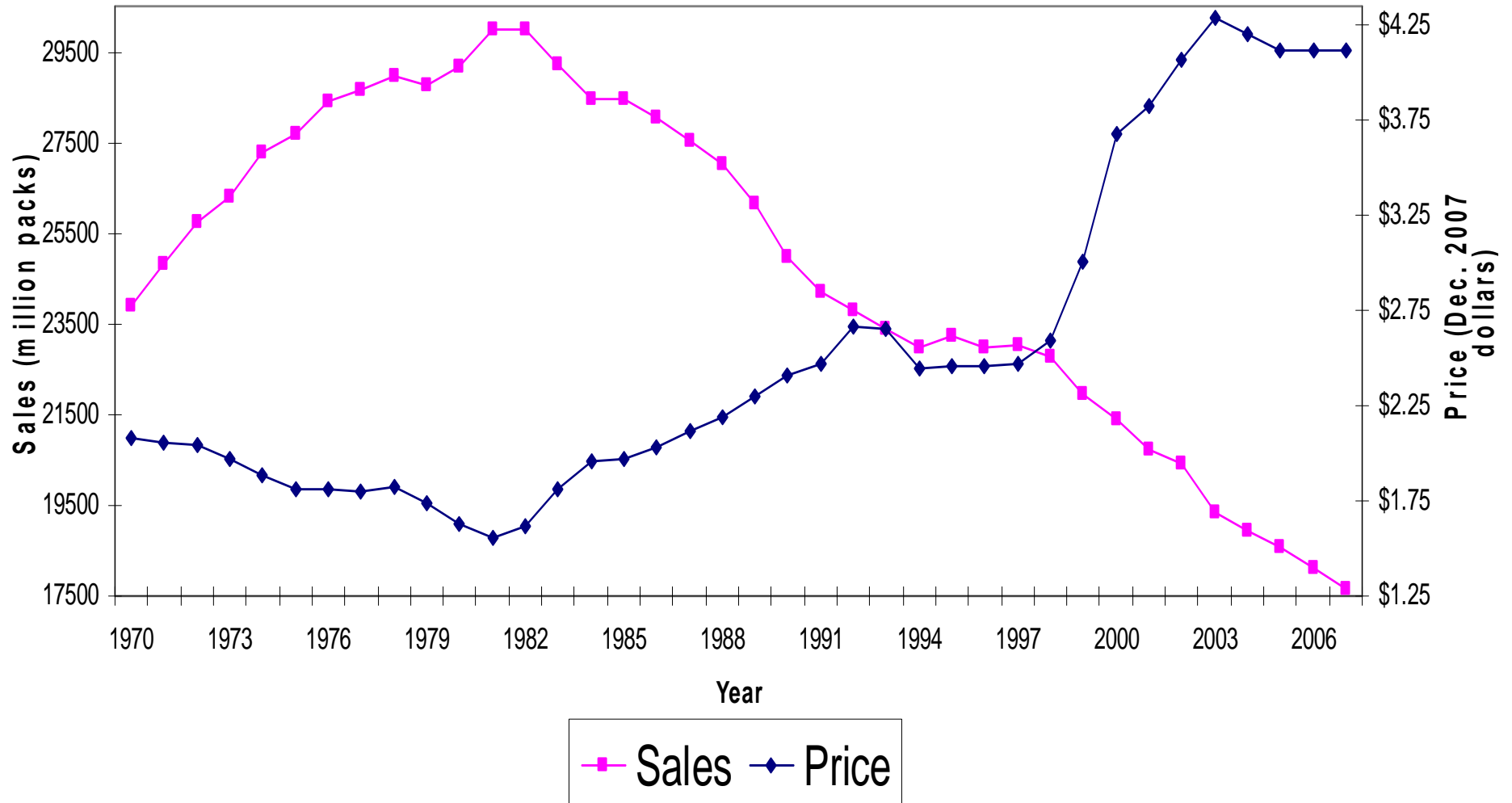


Tobacco Taxes and Tobacco Use

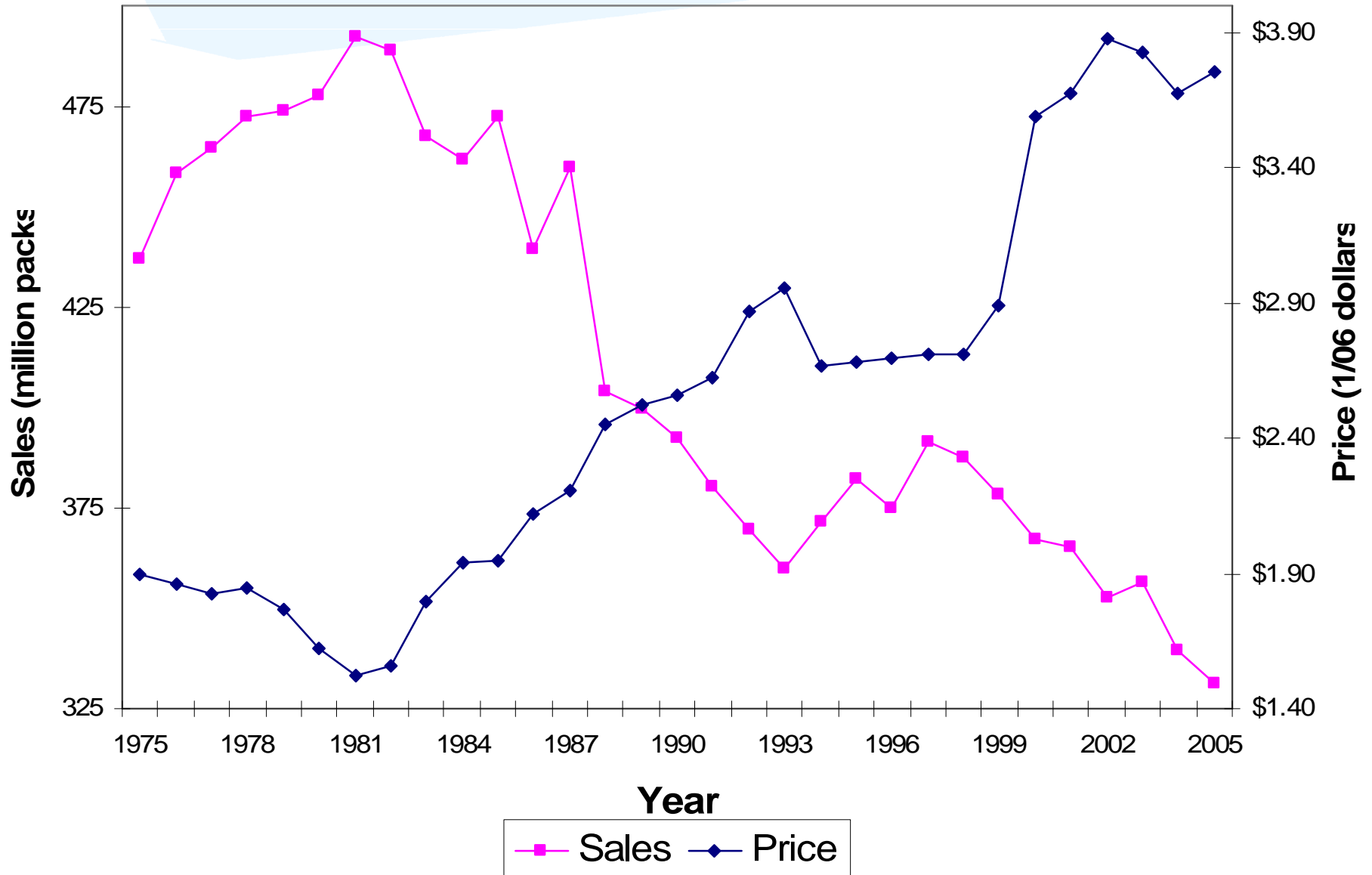
- Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
 - price elasticity of demand: percentage reduction in consumption resulting from one percent increase in price
 - Most elasticity estimates in range from -0.25 to -0.5, clustered around -0.4

Cigarette Prices and Cigarette Sales

United States, 1970-2007

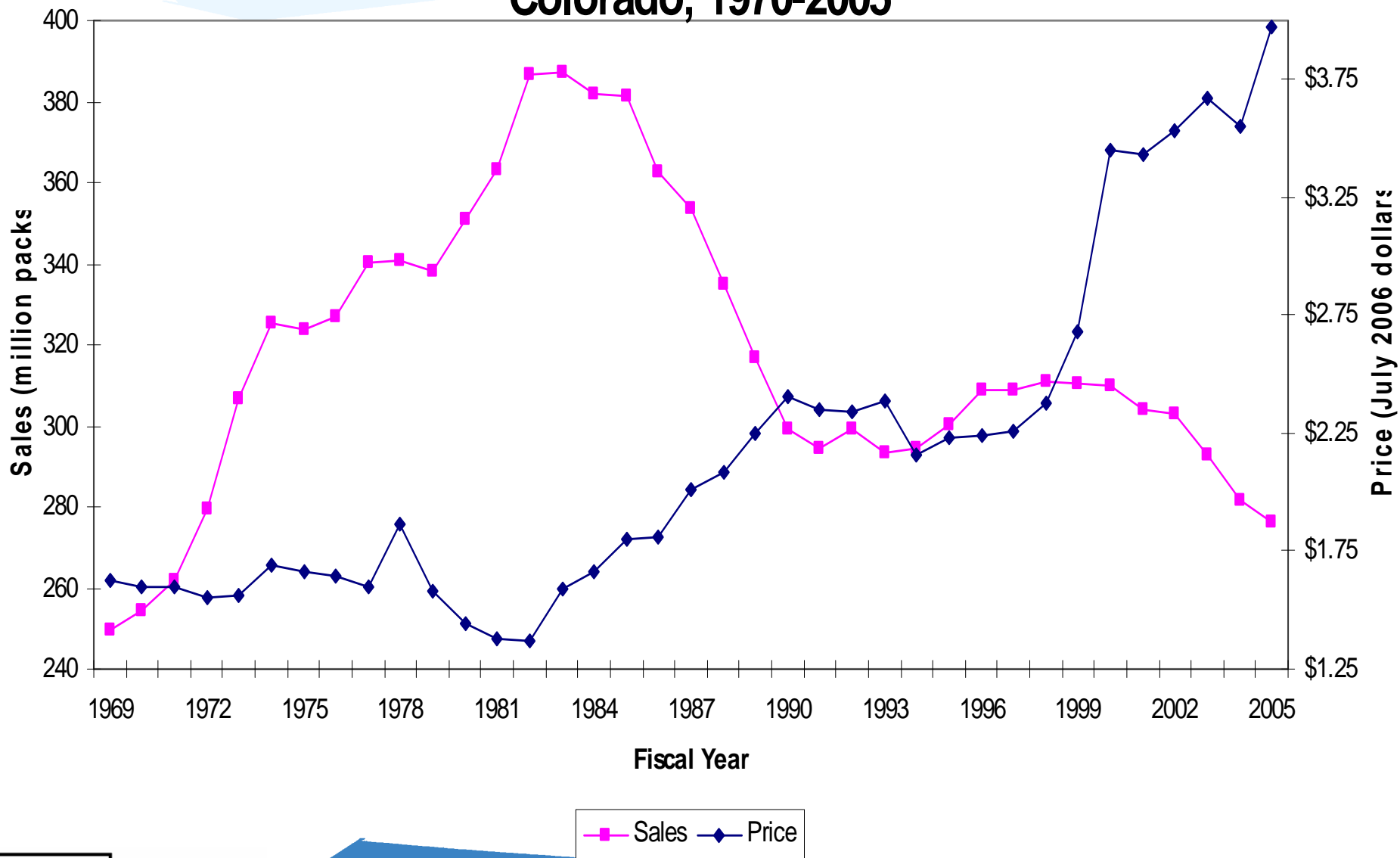


Cigarette Sales and Cigarette Prices, Minnesota, 1975-2005



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

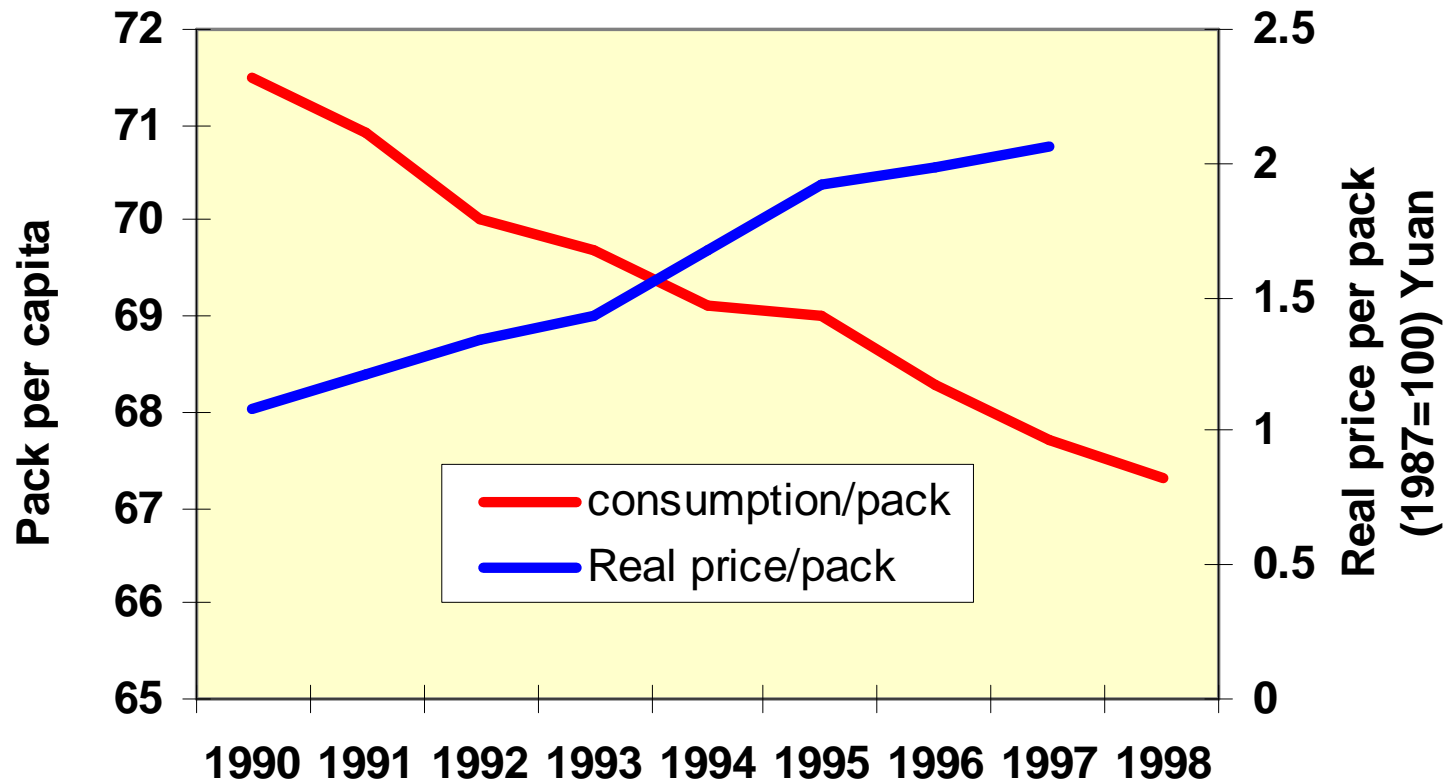
Cigarette Prices and Sales Colorado, 1970-2005



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

Taxes, Prices and Tobacco Use

**Trends in Consumption and Price per pack
of Cigarettes in China,
1990-1999**

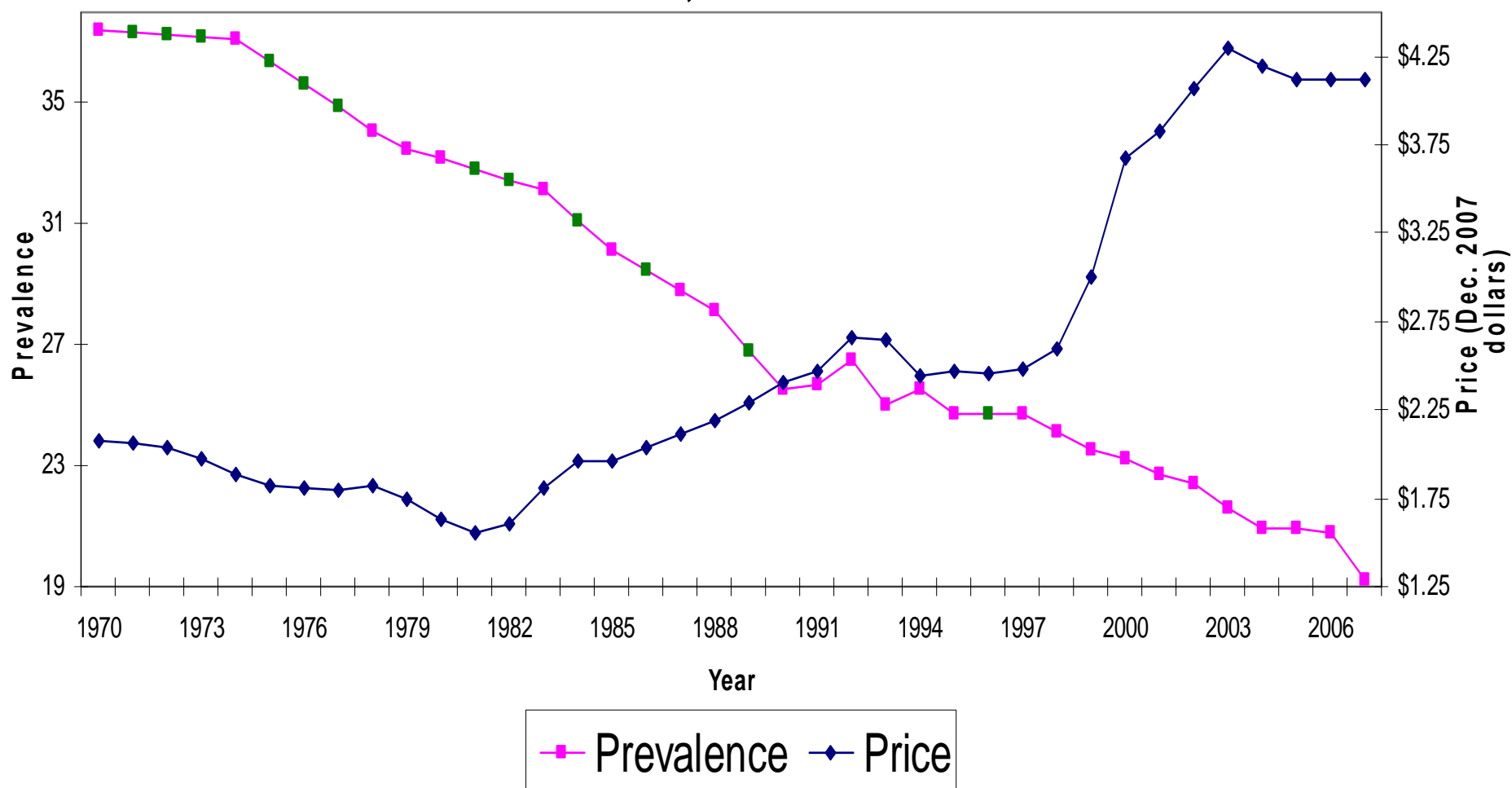


Source: USDA and Teh-Wei Hu Study for China

Tobacco Taxes and Tobacco Use

- Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
- **About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers**
 - **10% rise in price reduces prevalence by about 2%**

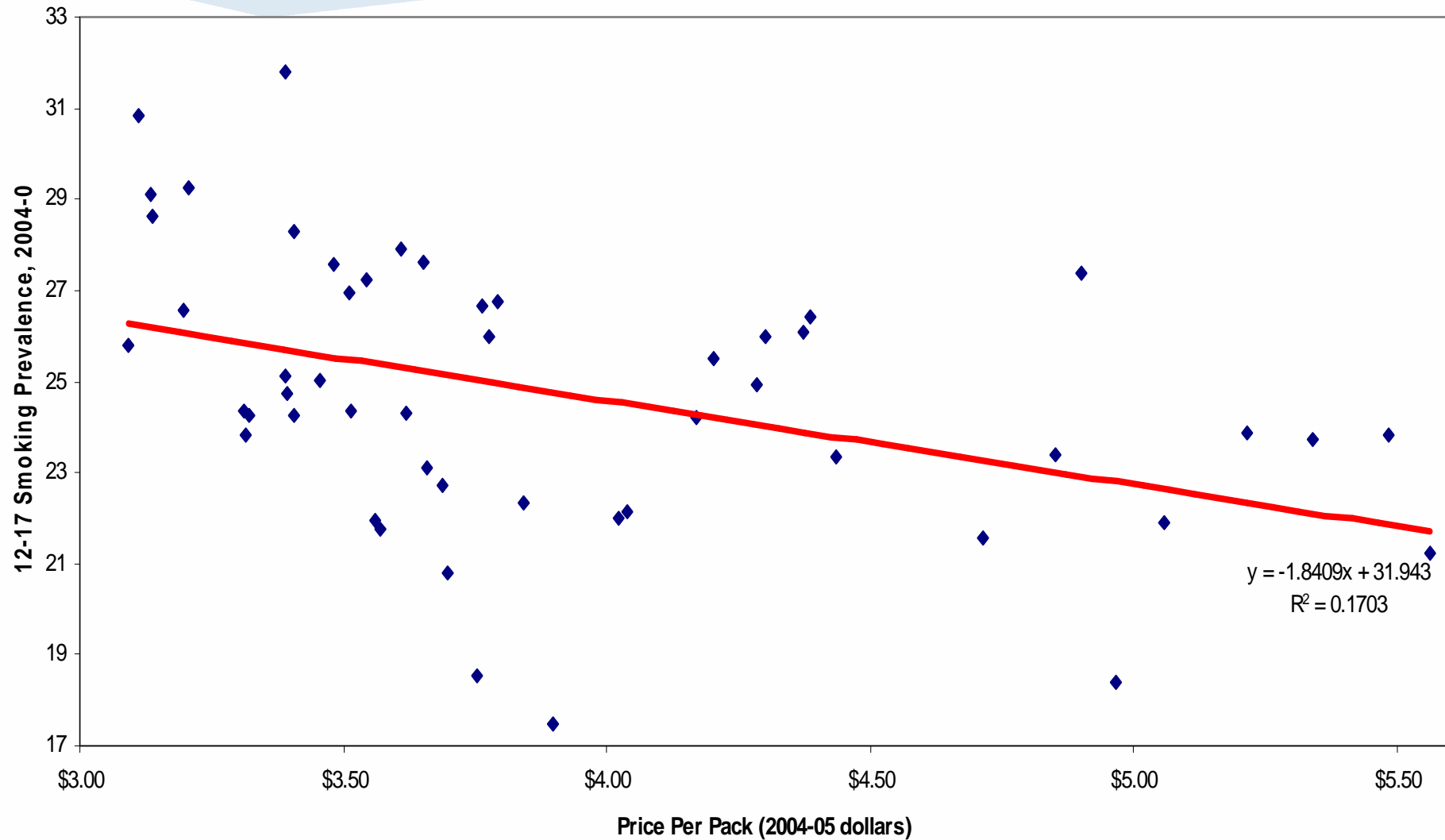
Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2007



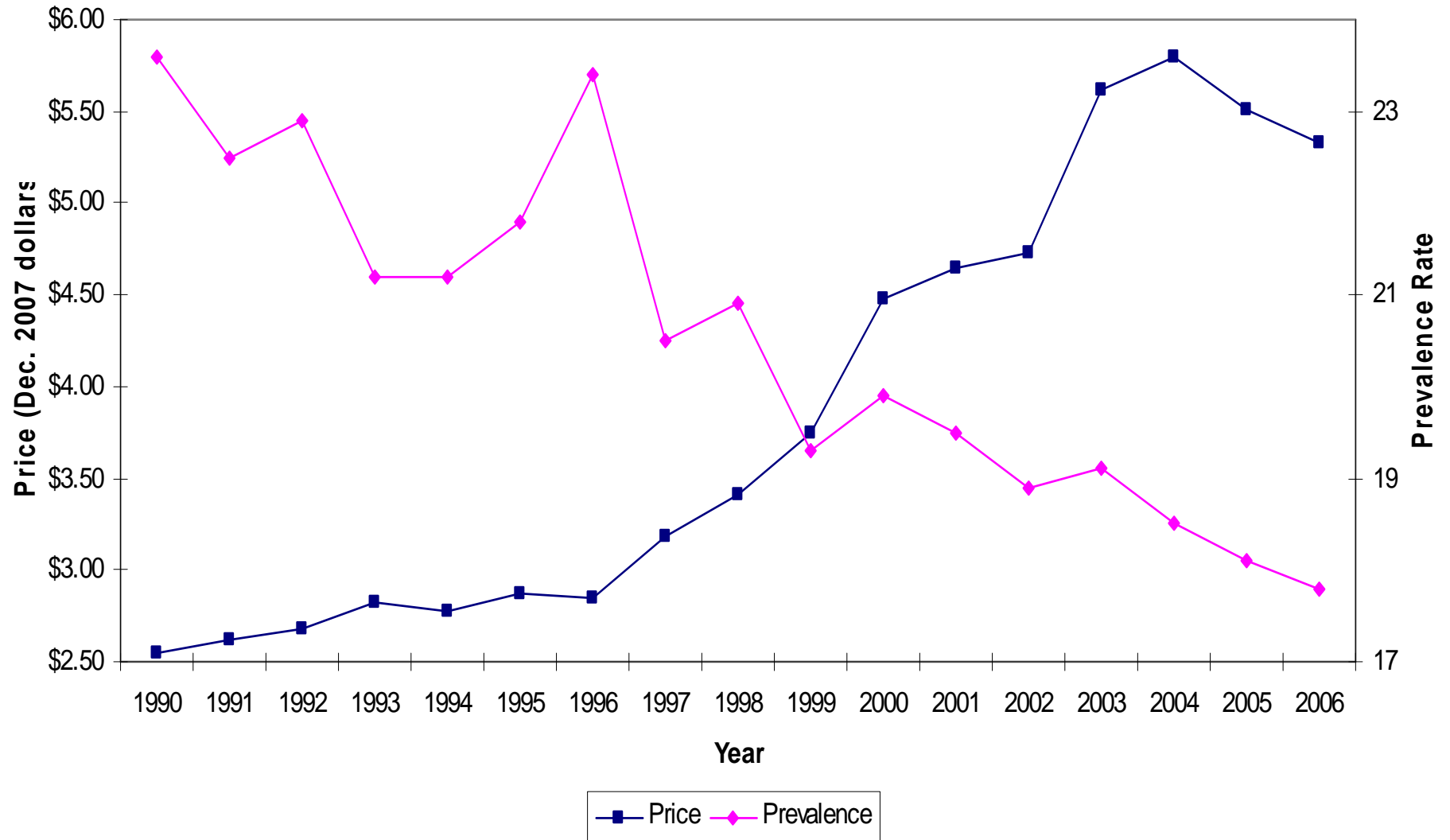
Source: NHIS, *Tax Burden on Tobacco, 2007*, and author's calculations

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

Cigarette Prices and Adult (26+) Smoking Prevalence US State-Level Data, 2004-05



Cigarette Price and Adult Smoking Prevalence in Massachusetts, 1990-2006



Tobacco Taxes and Tobacco Use

- Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
- About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers
- **Some evidence of substitution among tobacco products in response to relative price changes**

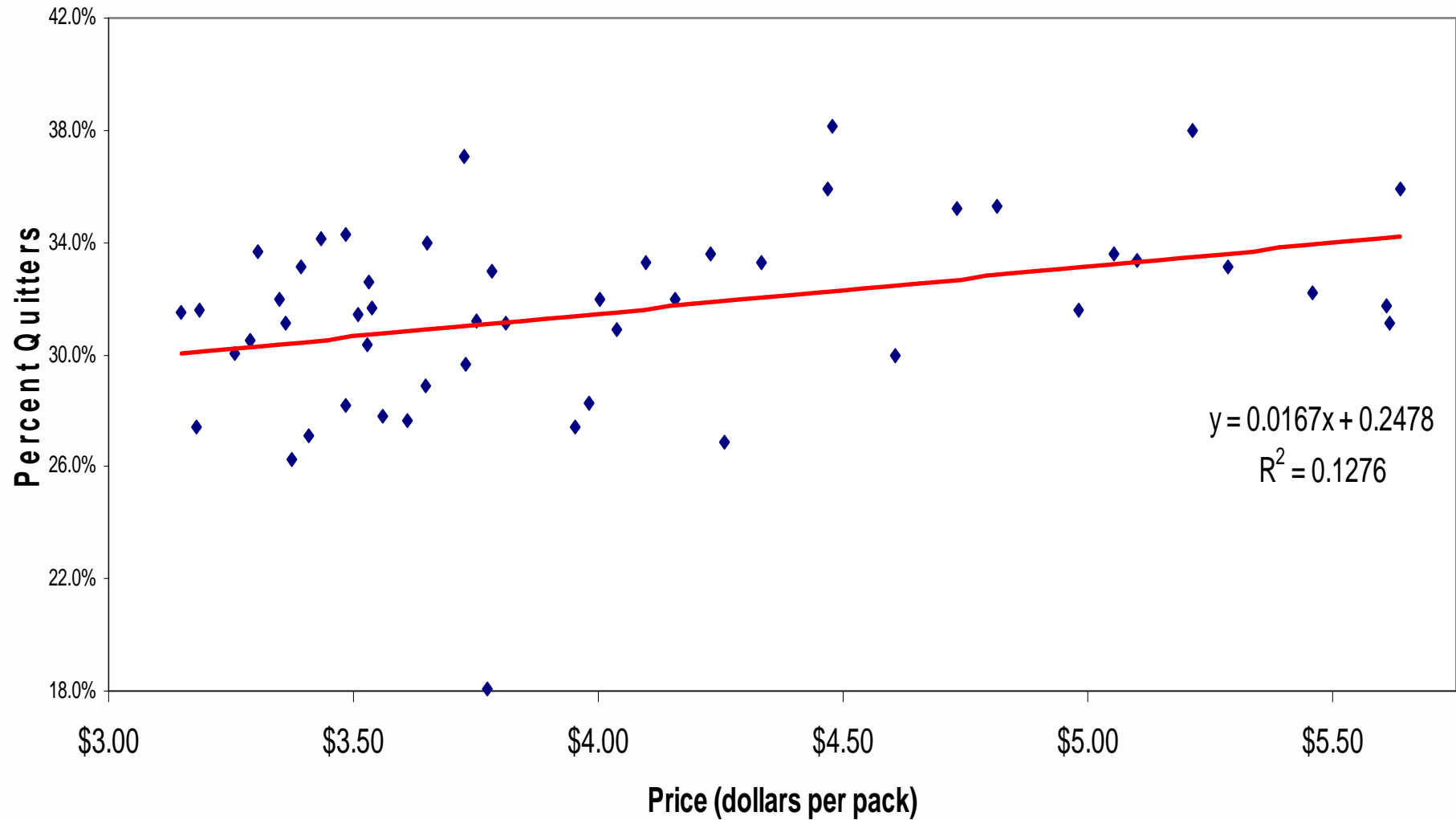
Tobacco Taxes and Tobacco Use

- Estimates from analyses that apply economic models of addiction to cigarette demand generally find that the long run effect of price is about double that of the short run effect
 - 10% rise in price reduces overall cigarette consumption by about 8%
- Some evidence that smokers behave “rationally”
- Some evidence of time-inconsistent preferences

Cigarette Prices and Smoking Cessation

- Growing evidence that higher cigarette prices induce smoking cessation
 - 10% price increase reduces duration of smoking by about 10%
 - 10% price increase raises probability of cessation attempt by 10-12%
 - 10% price increase raises probability of successful cessation by 1-2%

Cigarette Prices and Percentage of Ever Smokers Who Have Quit Smoking



Demand for Cessation Services and Products

Few economic or other studies examine demand for cessation products

- Over-the-counter availability

- Hyland et al. (2005) – COMMIT data; OTC availability raised use of patch and gum by about 60% among smokers
- Hu et al. (2000) – OTC availability had negative but insignificant impact on cigarette sales
- Keeler et al. (2002) – OTC availability significantly raised sales of patch (78-92%) and gum (180%)
- Chaloupka and Tauras (2004) – OTC availability significantly reduces cigarette sales

Demand for Cessation Products

NRT Prices

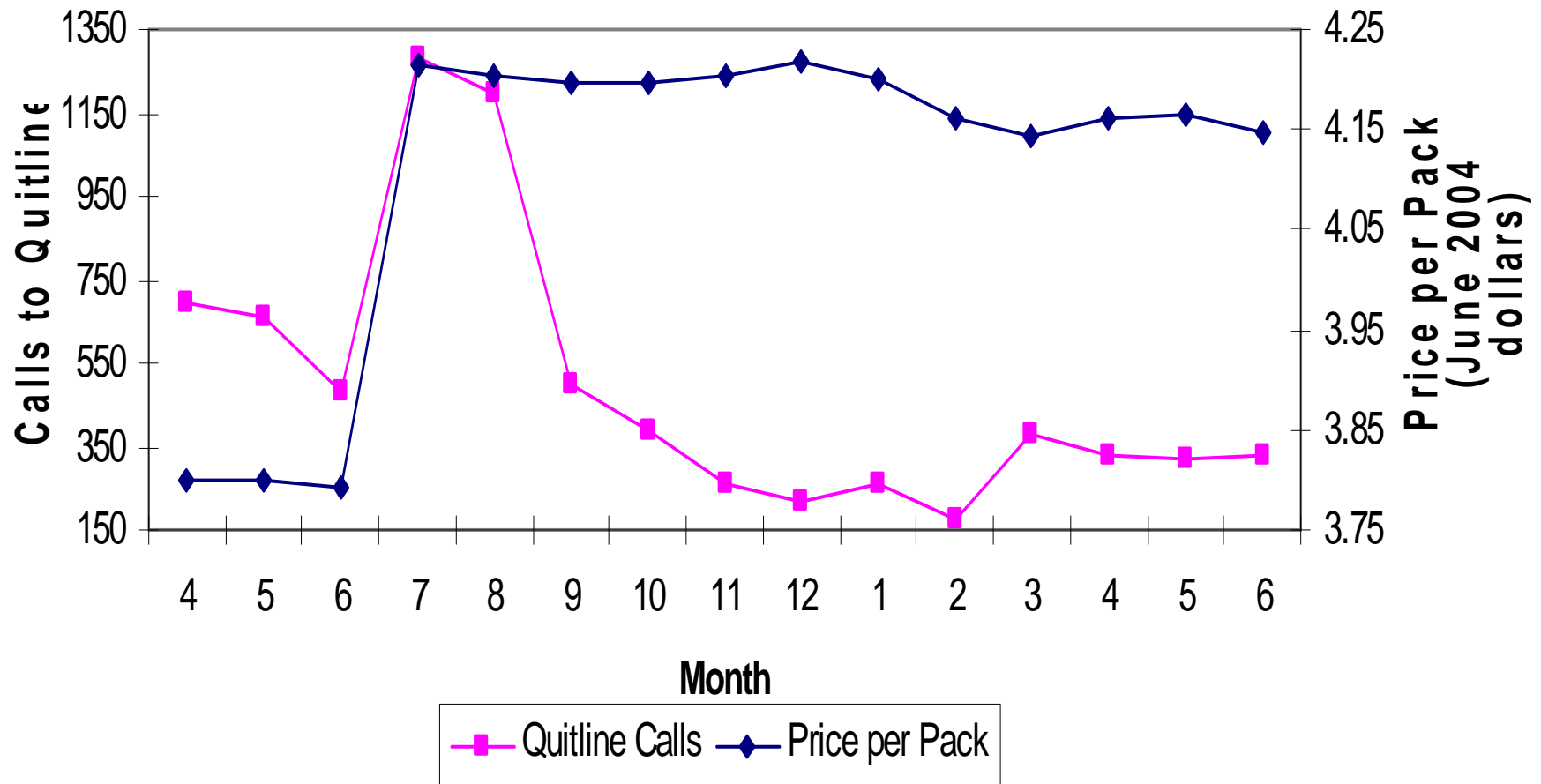
- Series of studies by Tauras and colleagues (2003, 2004, 2005a, 2005b)
 - Scanner-based sales data for 50 US markets
 - Negative and significant own-price effects
 - Very responsive to product-specific prices (elasticities centered on -2.00)
 - Overall demand relatively responsive to average NRT prices (elasticity around -0.8)
 - Cross-price effects suggest complementarity between patch and gum
 - Negative impact on cigarette demand

Demand for Cessation

Cigarette taxes/prices

- Tauras et al. (2003, 2005a,b)
 - Generally find that higher cigarette prices raise demand for NRT
 - 10% cigarette price increase raises NRT demand by 4-8%
- Chaloupka et al. (2004)
 - July 2002 increase in Illinois cigarette excise tax significantly increased volume of calls to state quitline (2-3 fold increase in call volume)
 - Very short-lived

Cigarette Price and Quitline Calls - Illinois, 2002-2003



Demand for Cessation

NRT Prices and Tobacco Control Policies

- Hyland, Cumming and colleagues (2005a, b, c; 2006)
 - Distribution of free patches to New York state and New York city smokers
 - Vouchers and direct product provision
 - 1 week, 2 week and 6 week supply
 - Funded by state tobacco control program
 - Followed implementation of cigarette tax increases and comprehensive smoke-free air policies
 - Smokers calling New York State Smokers' Quitline eligible to participate
 - Various advertising/promotional strategies coupled with extensive news coverage

Demand for Cessation

NRT Prices and Tobacco Control Policies

- Hyland, Cumming and colleagues (2005a, b, c; 2006)
 - Significant increase (20 fold) in calls to state Quitline
 - brief follow-up counseling call attempted
 - 6-month quit rates significantly higher for those receiving free NRT
 - 33% vs. 6% for NYC (6 week supply)
 - Higher quit rates among NRT recipients who received follow up counseling call
 - 38% vs. 27% for NYC

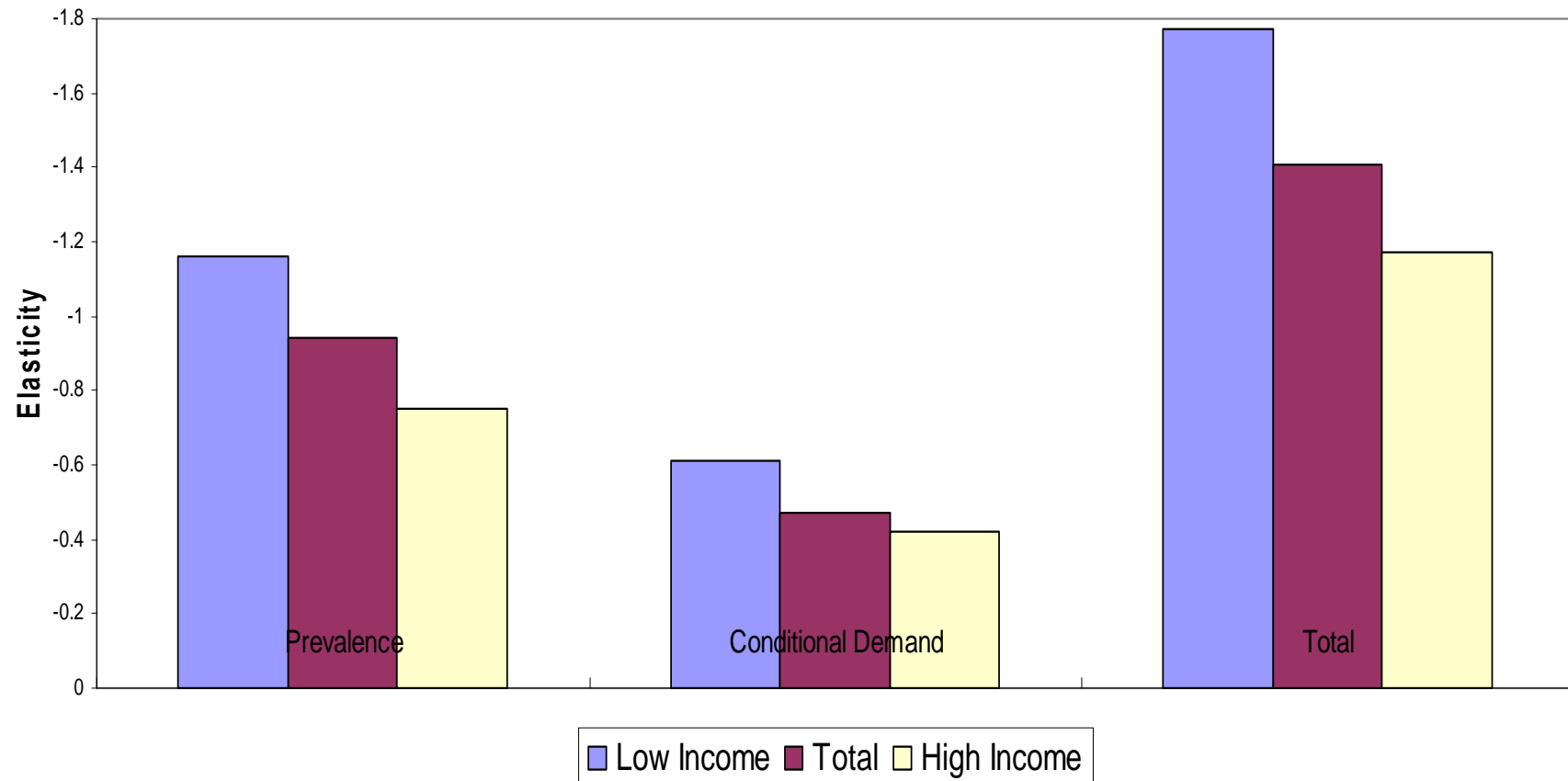
Lower SES populations are more price responsive

- Economic theory implies greater response to price by lower income persons
- Growing international evidence shows that smoking is most price responsive in lowest income countries
- Evidence from U.S. and U.K. shows that cigarette price increases have greatest impact on smoking among lowest income and least educated populations
- In U.S., for example, estimates indicate that smoking in households below median income level about four times more responsive to price than those above median income level

Implies tax increases may be progressive

Taxes, Prices & Tobacco Use

Price Elasticities of Demand by Income, Males, Vietnam



Source: Kinh, et al., 2006

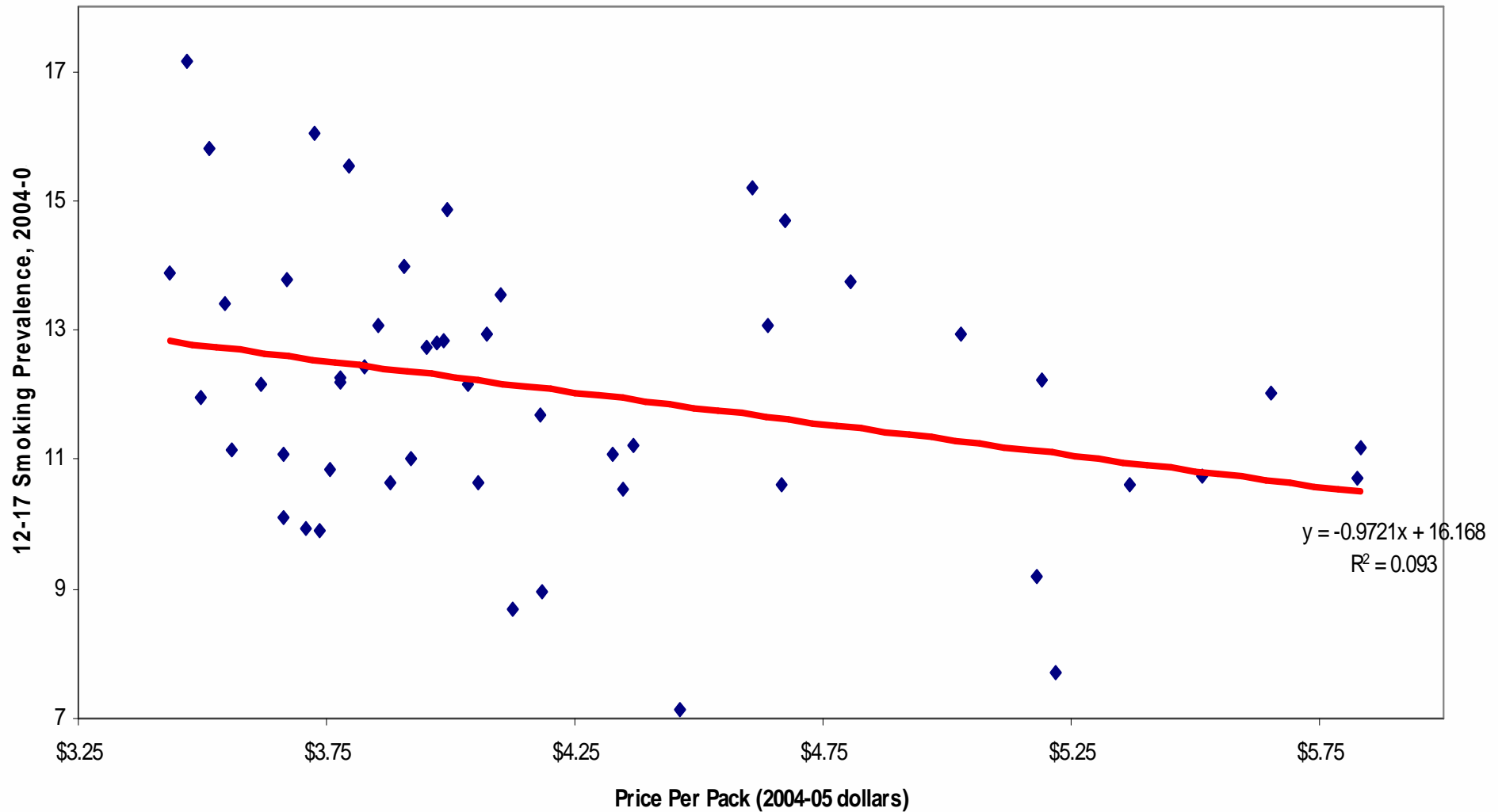
Young People More Responsive to Price Increases

- Proportion of disposable income youth spends on cigarettes likely to exceed that for adults
- Peer influences much more important for young smokers than for adult smokers
 - recent estimates indicate about 1/3 of overall impact of price on youth accounted for by indirect impact through peers
- Young smokers less addicted than adult smokers
- Young people tend to discount the future more heavily than adults
- Other spillover effects
 - for example, through parental smoking

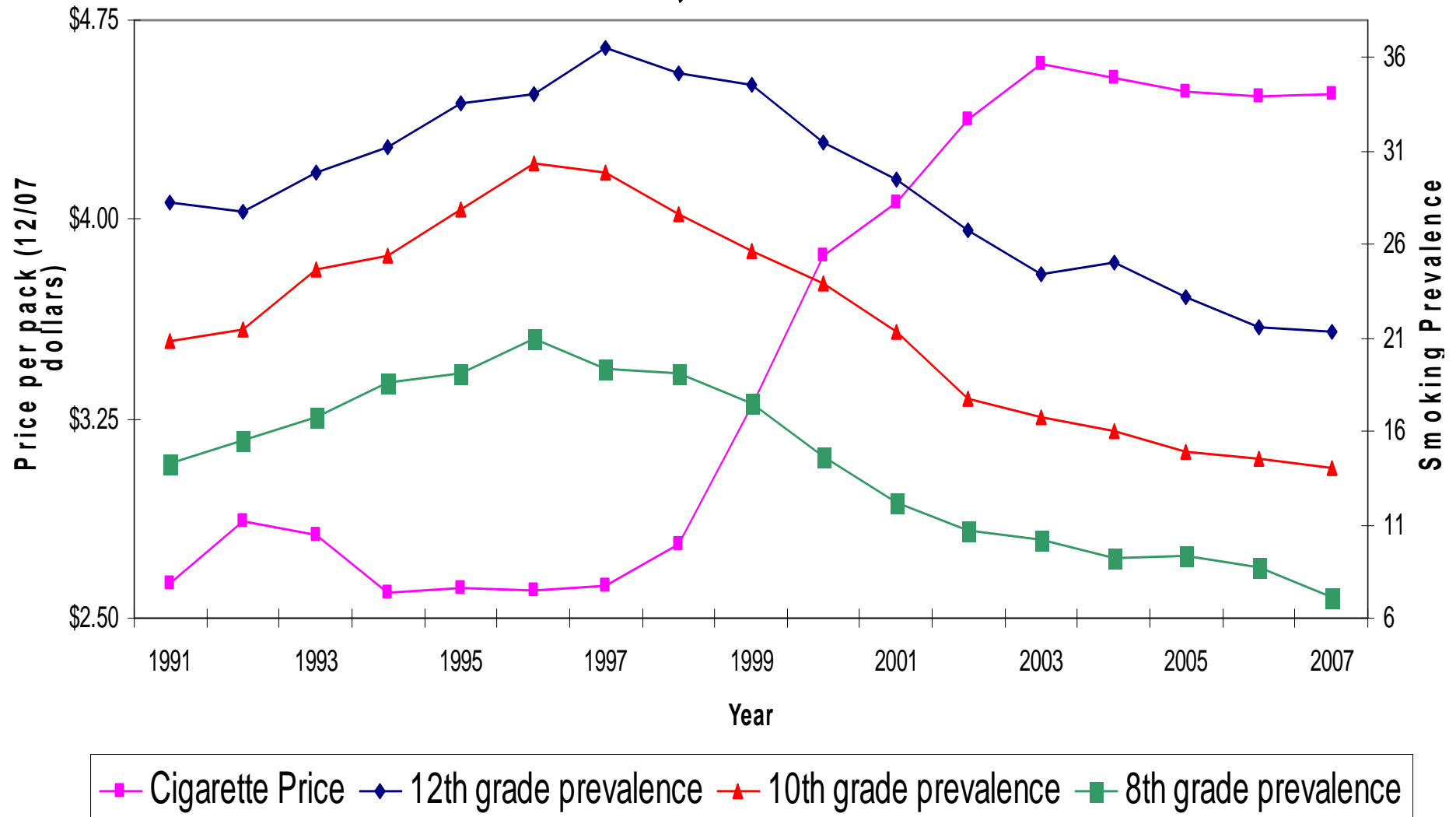
Cigarette Prices And Youth

- A 10% increase in price reduces smoking prevalence among youth by nearly 7%
- A 10% increase in price reduces average cigarette consumption among young smokers by over 6%
- Higher cigarette prices significantly reduce teens' probability of becoming daily, addicted smokers; prevent moving to later stages of uptake.
 - 10% price increase reduces probability of any initiation by about 3%, but reduces probability of daily smoking by nearly 9% and reduces probability of heavy daily smoking by over 10%

Cigarette Prices and Smoking Prevalence Ages 12-17, State-Level Data, 2004-05

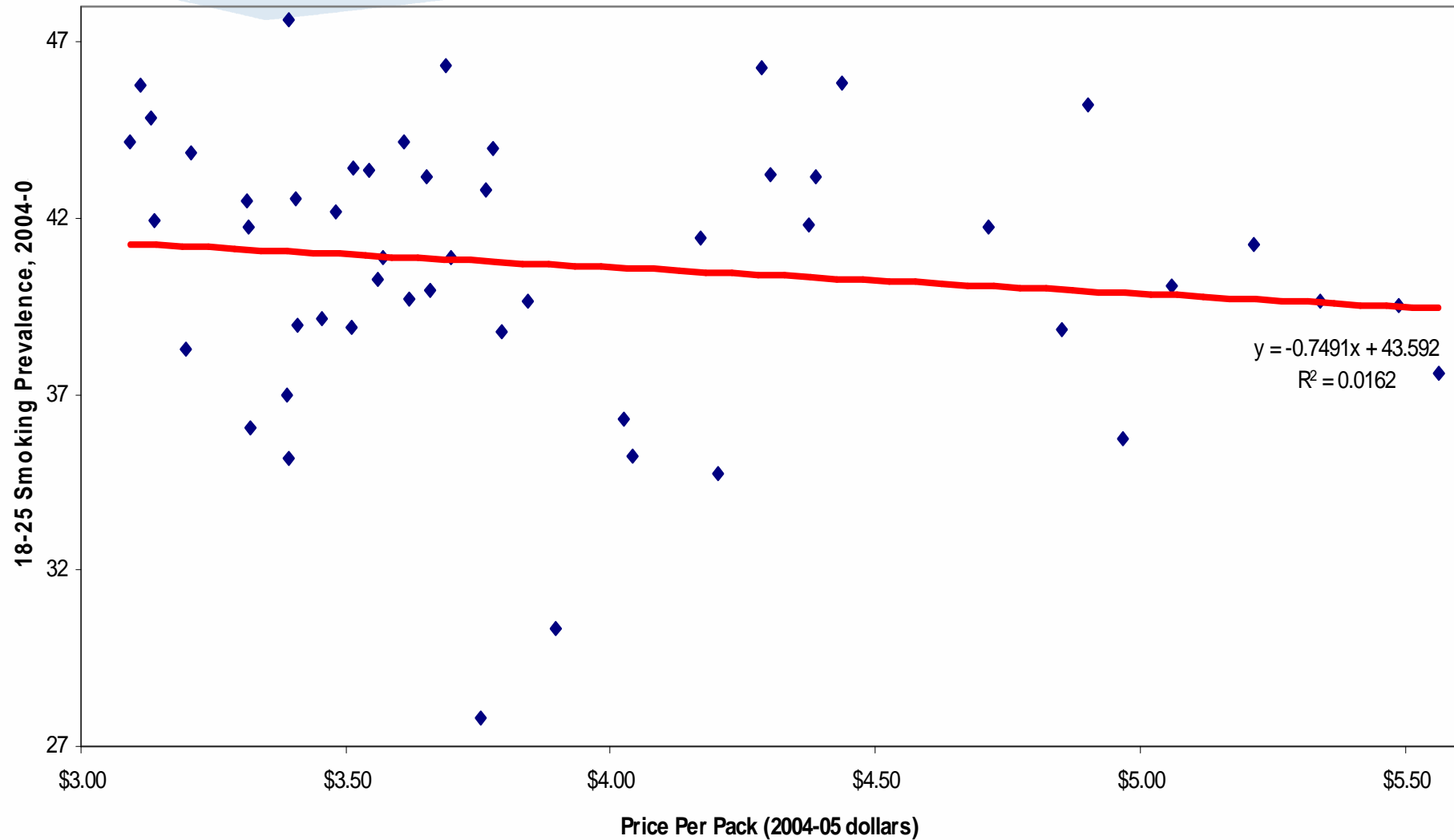


Cigarette Price and Youth Smoking Prevalence, United States, 1991-2007



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

Cigarette Prices and Young Adult Smoking Prevalence Ages 18-25, US State-Level Data, 2004-05



Tax, Price and Cigarette Demand among the Mentally Ill

- Almost no economic research examines impact of cigarette prices on smoking among the mentally ill
- Saffer and Dave (2005) is the one exception
 - Suggest that marginal utility of consumption of addictive substance may differ for those with mental illnesses vs. those without given impact of addictive substance on flow of dopamine
 - If marginal utility is higher, then mentally ill may be less responsive to price and vice-versa

Tax, Price and Cigarette Demand among the Mentally Ill

- Safer and Dave (2005):
 - Data on mental illness and tobacco use from the 1991 National Comorbidity Survey
 - Non-institutionalized population 15-54 years
 - 2,897 respondents with information on tobacco use, mental illness, and other key variables
 - DSM3R definitions for mental illnesses; collected with the Composite International Diagnostic Interview (CIDI)
 - 12 disorders identified for use in analyses, including: anxiety disorder, social phobia, simple phobia, panic attack, panic disorder, agoraphobia, post-traumatic stress disorder, major depression, dysthymia, bipolar disorder, mania, and non-affective psychosis

Tax, Price and Cigarette Demand among the Mentally Ill

- Saffer and Dave (2005):
 - use measures of lifetime and past year mental illness
 - also assess differential response to price of alcohol and illicit drug use
 - instrumental variables methods to account for the potential endogeneity of tobacco and other substance use and mental illness
 - descriptive analyses show that those with mental illness significantly more likely to smoke:
 - Prevalence of smoking for those with/without:
 - Past year mental illness: 42.4% vs. 27.5%
 - Lifetime mental illness: 39.6% vs. 24.7%

Tax, Price and Cigarette Demand among the Mentally Ill

- Safer and Dave (2005):
 - Find that higher cigarette prices significantly reduce smoking prevalence among those with past year or lifetime mental illnesses
 - estimated price elasticities for those with any lifetime mental illness:
 - Yes: -0.66; No: -0.48
 - estimated price elasticities among those with past year mental illness:
 - Yes: -0.55; No: -0.74
 - Similar evidence for alcohol and drug use
 - Conclude that tax and price increases are an effective policy tool for reducing smoking and other substance use among the mentally ill

Support for Tobacco Tax Increases

Generally consistent support among voters for tobacco tax increases

- Greater support when revenues dedicated to tobacco control efforts or other health-related activities
- Often supported by large share of smokers, particularly when tied to efforts to prevent youth smoking initiation
- Support tends to be bipartisan
- Greater support for tobacco tax increases than for other revenue generating measures
- Support tends to be consistent across demographic and socioeconomic groups

Impact of a Federal Cigarette Tax Increase

Based on these estimate, a \$0.61 per pack increase in the Federal cigarette tax (to \$1.00 per pack) would:

- Reduce cigarette sales by over 1.1 billion packs
- Generate over \$10 billion in new revenues
- Lead over 1.4 million current smokers to quit
- Prevent almost 1.9 million youth from taking up smoking
- Prevent over 900,000 premature deaths caused by smoking
- Generate significant reductions in spending on health care to treat diseases caused by smoking
- Reduce most state tobacco-related revenues

Source: Chaloupka and Tauras, 2006

Earmarked Tobacco Taxes

- Many states earmark tobacco tax revenues for comprehensive tobacco control programs
 - CA – 1989 and 1999 ballot initiatives
 - MA – 1993 ballot initiative
 - Several others since
- Others devote portion of MSA or other settlement revenues to comprehensive programs
- Comprehensive programs support a variety of activities:
 - Anti-smoking advertising
 - Quitlines and other cessation support
 - School based prevention programs
 - Community-based cessation and prevention efforts
 - Much more
- These activities can add to the impact of tax increases in promoting cessation and preventing initiation

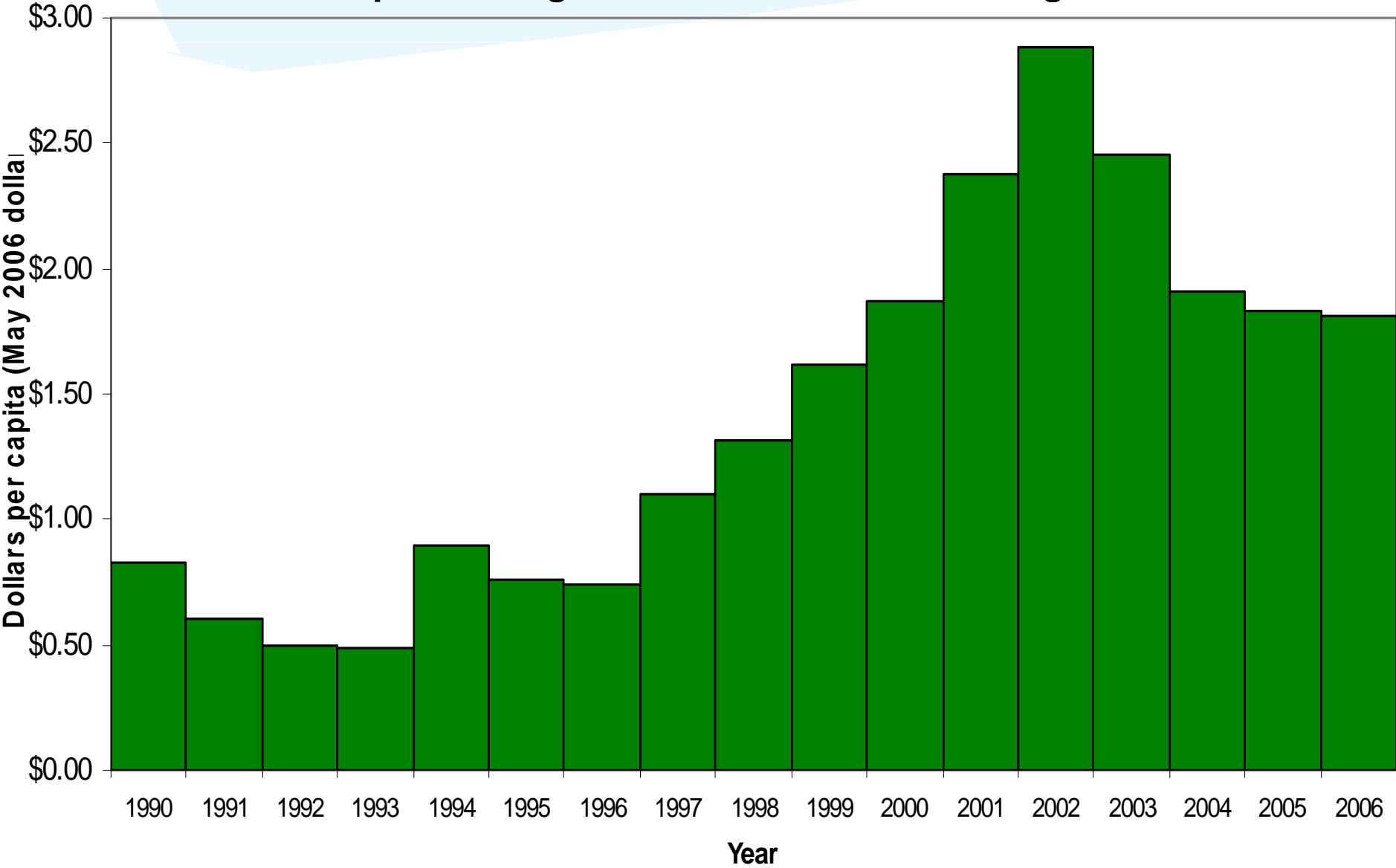
Funding for Tobacco Prevention, FY2008



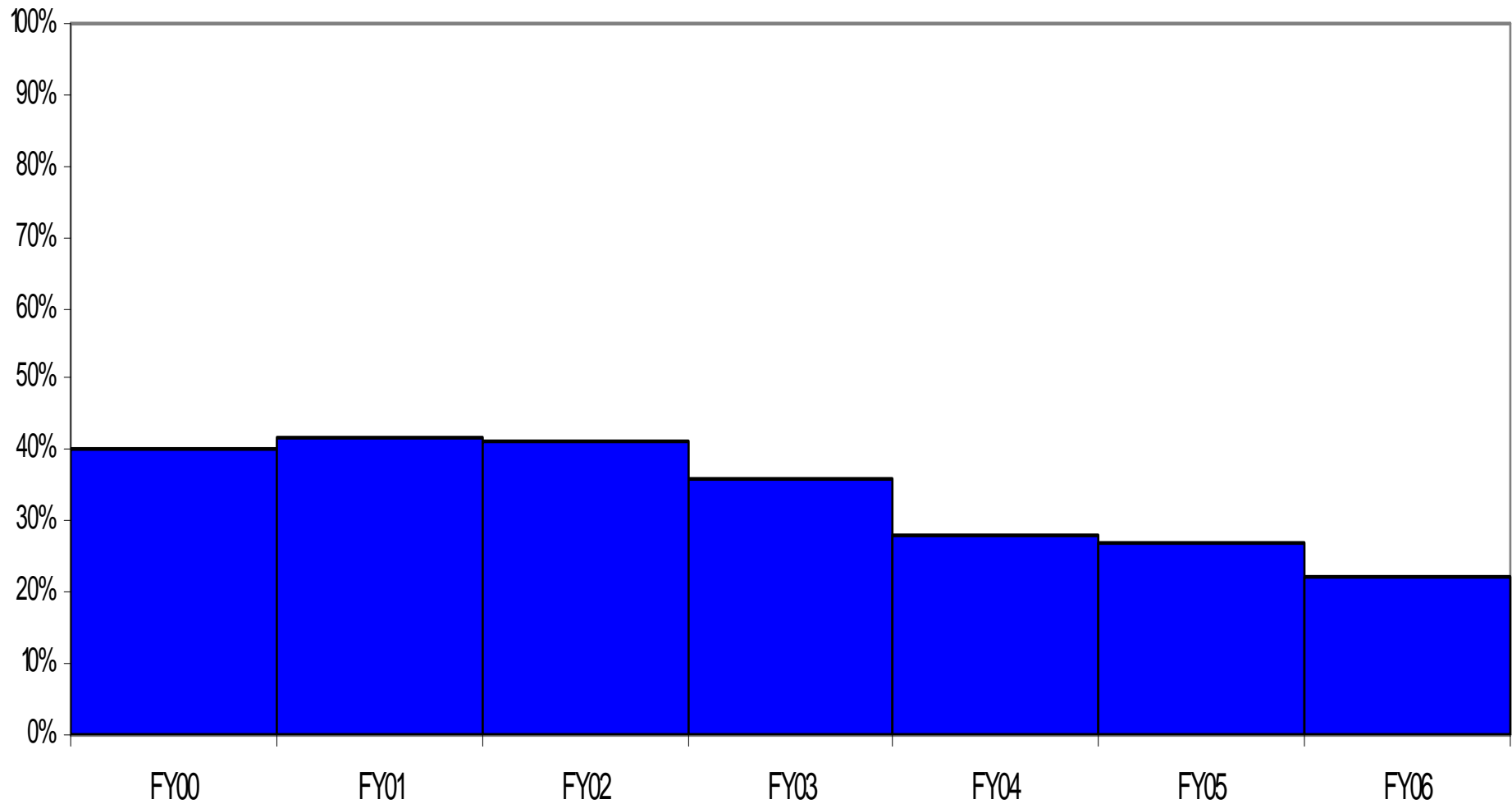
■ ≥ 100% of CDC min.; ■ >50% of CDC min.; ■ 25-50% of CDC min.; ■ <25% of CDC min.; ■ no state funding

Source: American Heart Association, et al. (2007)

Per Capita Funding for State Tobacco Control Programs



State Tobacco Control Funding as Percentage of CDC Recommended Minimum, FY00-FY06



Research Findings – Comprehensive Programs and State Cigarette Sales

- Higher spending on tobacco control efforts significantly reduces cigarette consumption
- Marginal impact of tobacco control spending greater in states with higher levels of cigarette sales per capita; average impact significantly higher in states with larger programs
- Disaggregated program spending suggests that impact of programs focusing on policy change is greater than spending on other programs

Research Findings – Comprehensive Programs and Youth Smoking

- Higher spending on tobacco control efforts significantly reduces youth smoking prevalence and cigarette consumption among young smokers
 - estimated effects about 3 times those for adults
- Estimated impact of spending at CDC recommended levels: minimum: 8-9% reduction in youth smoking prevalence; maximum: over 20% reduction
- Estimates suggest that greatest impact is on earlier stages of youth smoking uptake

Sources: *Farrelly, et al. 2001; Chaloupka et. al 2001*

Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Impact on Revenues?
- Impact on Jobs?
- Impact on Tax Evasion/Avoidance?
- Impact on the poor?

Reality is that tobacco control is one of the “best buys” among health and public health interventions

Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Impact on Revenues?

Myth: Government revenues will fall as cigarette taxes rise, since people buy fewer cigarettes

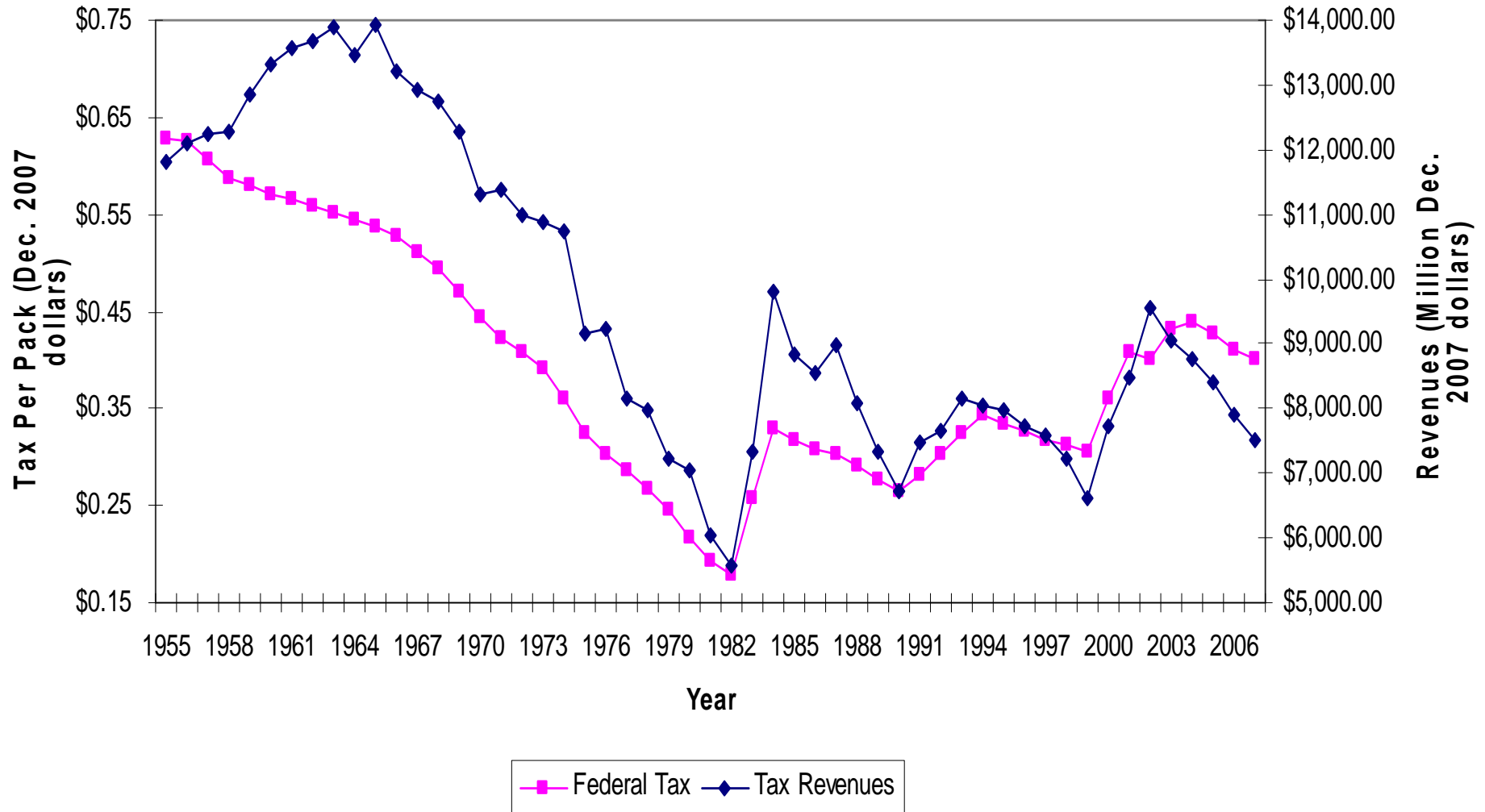
Truth: Cigarette tax revenues rise with cigarette tax rates, even as consumption declines

- Every significant increase in federal and state cigarette taxes has resulted in a significant increase in cigarette tax revenues

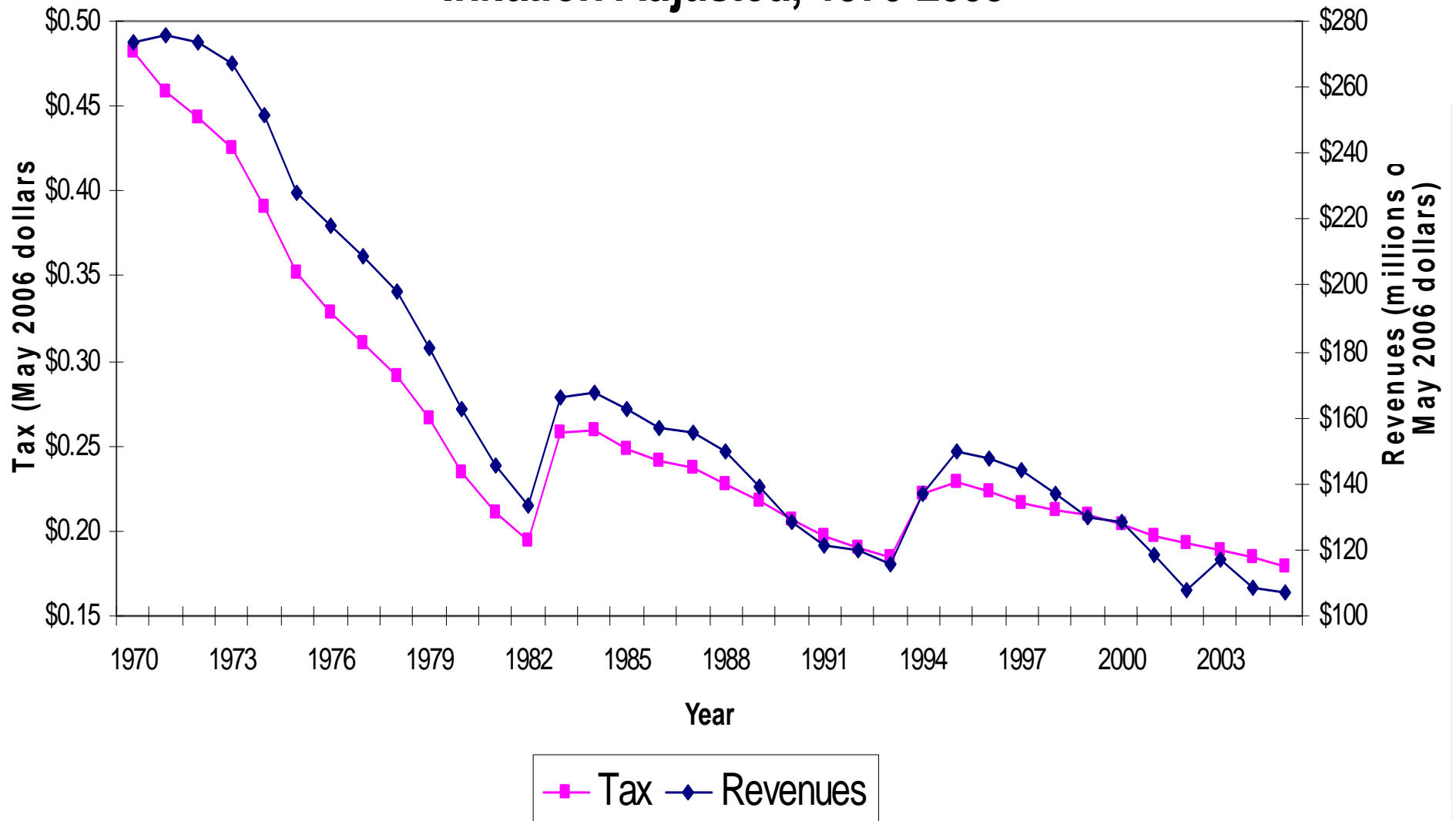
Sources: Sunley, et al., 2000; World Bank, 1999; Farrelly et al., 2003

Federal Cigarette Tax and Tax Revenues

Inflation Adjusted (Dec. 2007 dollars), 1955-2007

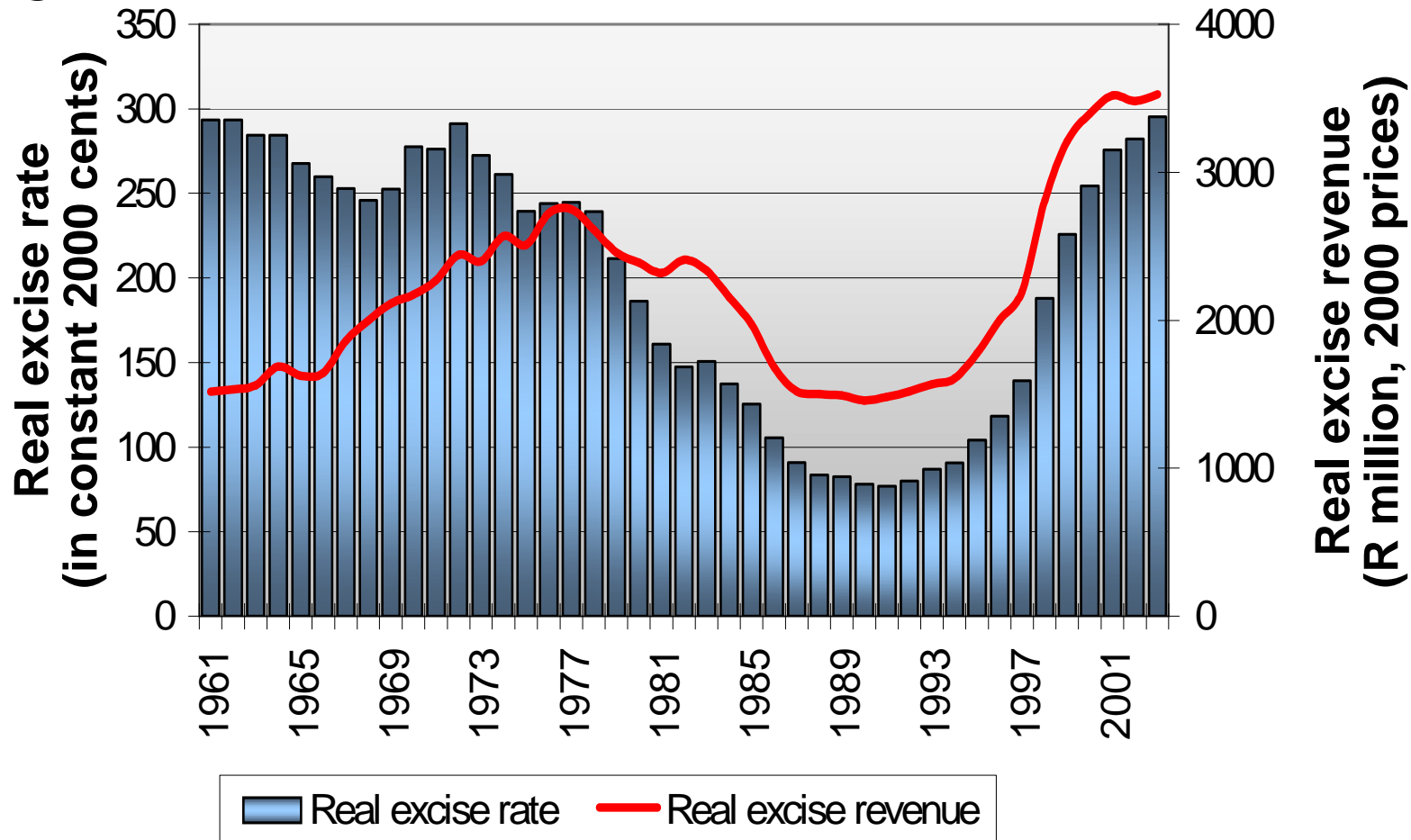


Missouri Cigarette Tax and Tax Revenues, Inflation Adjusted, 1970-2005



Tobacco Taxes and Revenues

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



Source: Van Walbeek, 2003

Positive Effect of Tax Increases on Revenues Results from:

Low share of tax in price:

- state taxes account for less than 20% of price
- total taxes account for just over 25% of price
- *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 \$5.00, State tax \$1.00
- Doubling of tax raises price to \$6.00 – 20% increase
- 20% price increase reduces sales by 8%
 - *92% of original sales at double the tax increases revenues by more than 80%*

Myths About Economic Impact of Tobacco Taxation and Tobacco Control

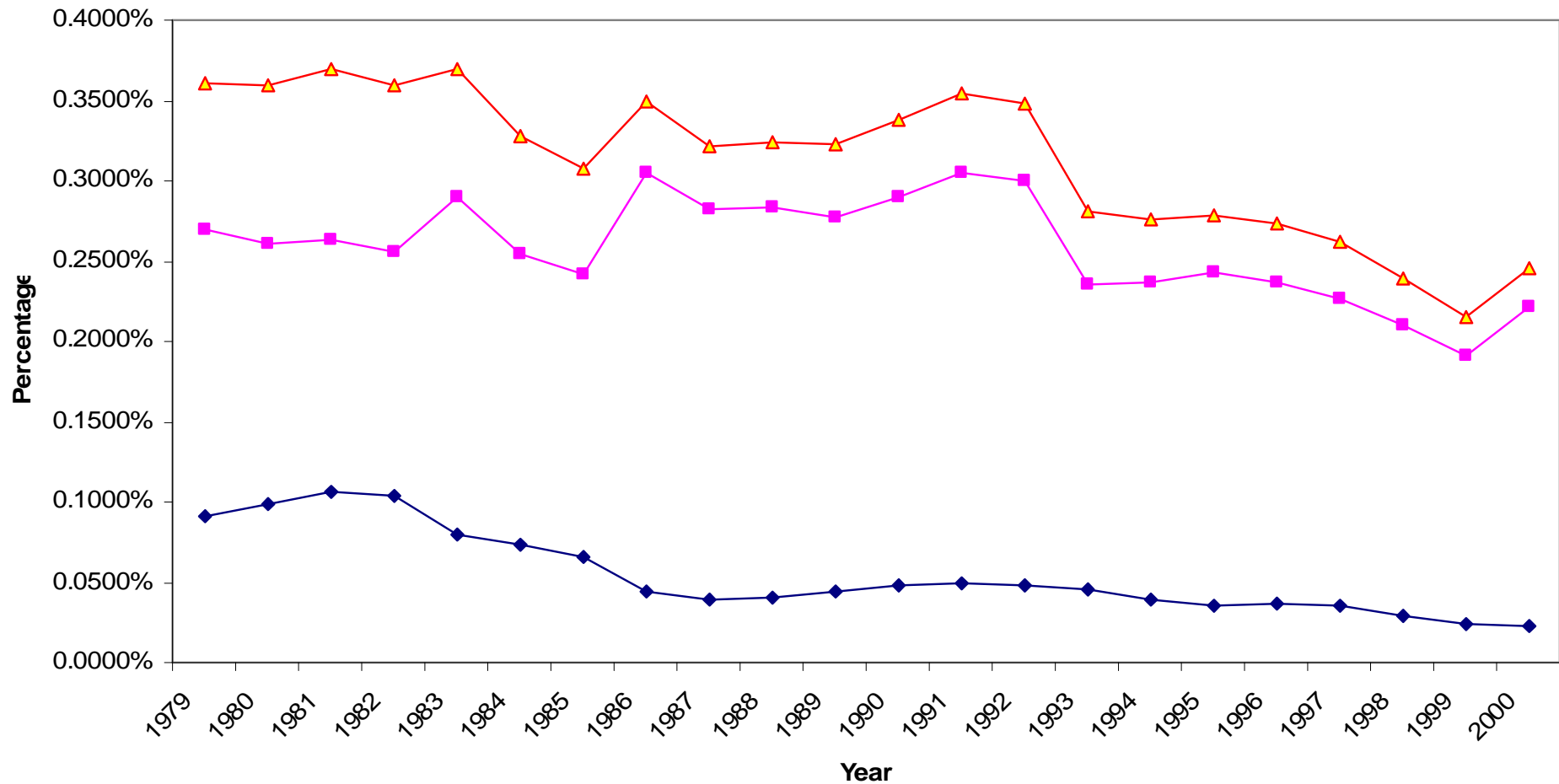
- Impact on Jobs?

Myth: Higher tobacco taxes and tobacco control generally will result in substantial job losses

Truth: Money not spent on tobacco will be spent on other goods and services, creating alternative employment

- Presence does not imply dependence
- Many countries/states will see net gains in employment as tobacco consumption falls

Tobacco Farming and Manufacturing as Share of Gross Domestic Product, United States

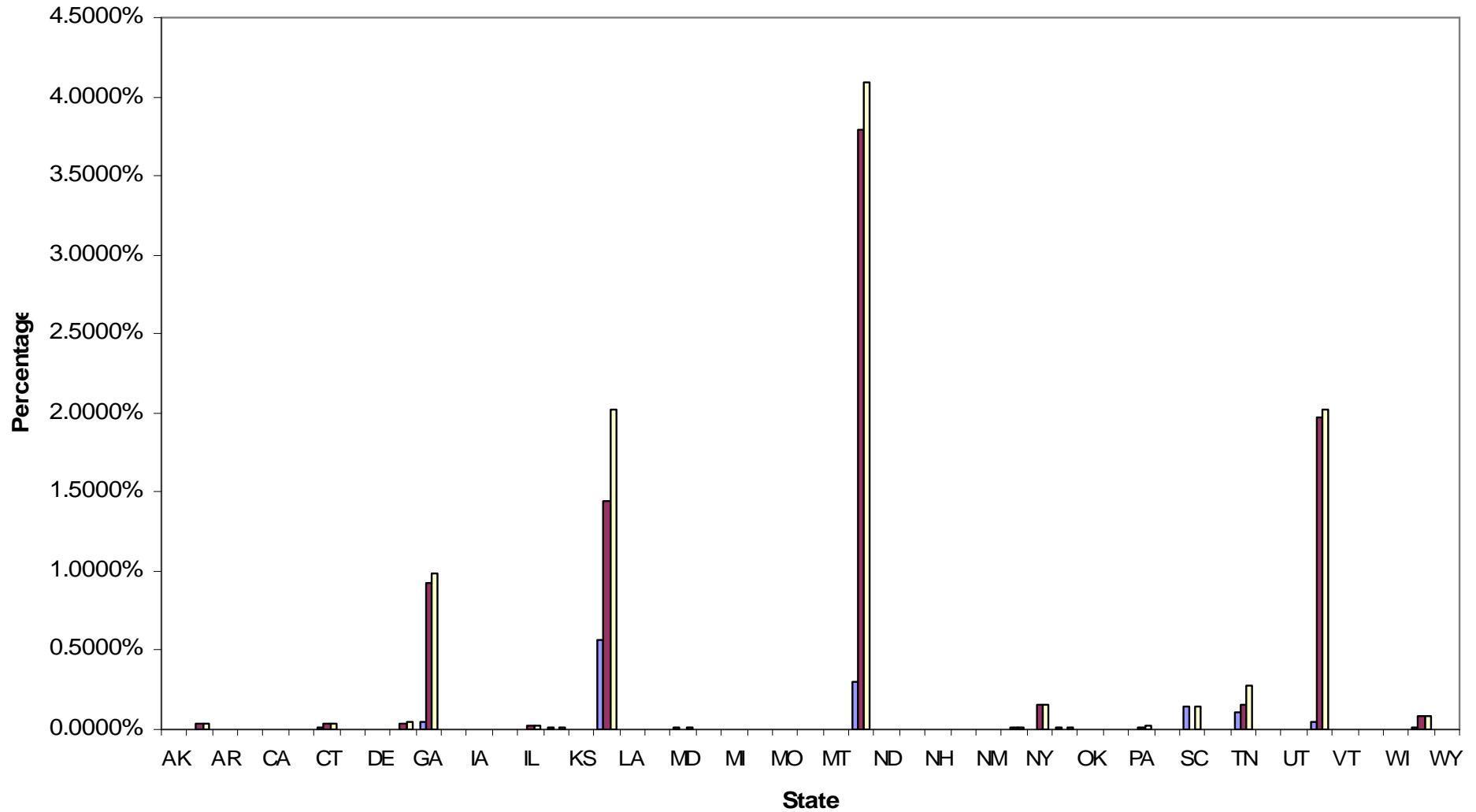


◆ Tobacco Farming
 ■ Tobacco Manufacturing
 ▲ Tobacco Farming and Manufacturing



Source: Chaloupka et al., 2007

Tobacco Farming and Manufacturing as Share of Gross State Product, 2000



Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Impact on Jobs?

Warner et al., *JAMA*, 1996; Warner and Fulton, *JAMA*, 1994

- For Michigan (1994 study), overall employment rises as tobacco consumption falls
- For US (1996 study):
 - 8 non-tobacco regions: employment rises as tobacco consumption falls
 - “Tiny” decline in employment in tobacco region as tobacco consumption falls nationally
- Several state specific studies (including NH, VA, MD) find no negative impact on employment from tobacco tax increases or other tobacco control efforts
 - Similar evidence from several other countries

Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Impact on Tax Evasion?

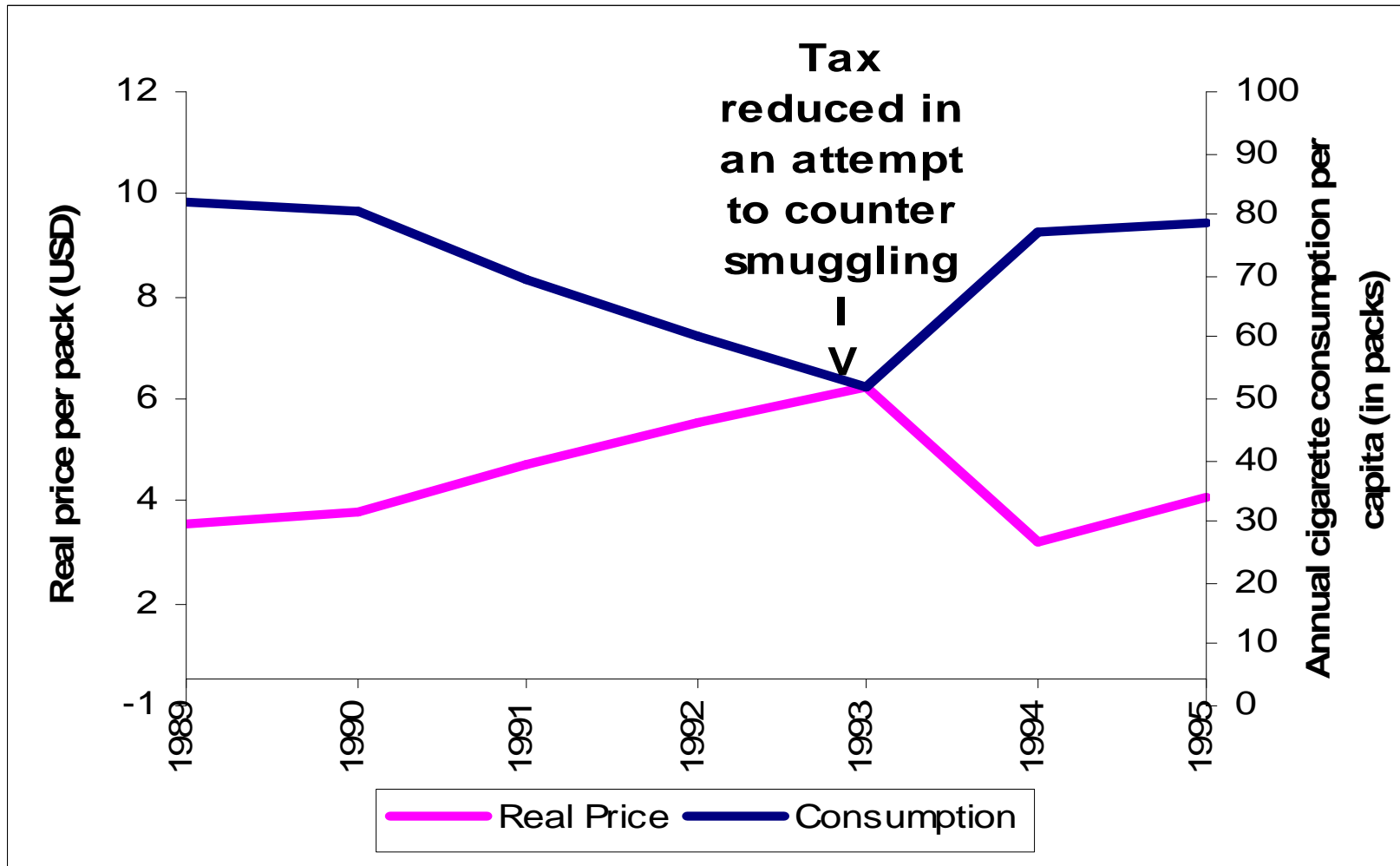
Myth: Tax evasion negates the effects of increases in tobacco taxes

Truth: Even in the presence of tax evasion, tax increases reduce consumption and raise revenues

- Extent of tax evasion often overstated
- Other factors important in explaining level of tax evasion
- Effective policies exist to deter tax evasion

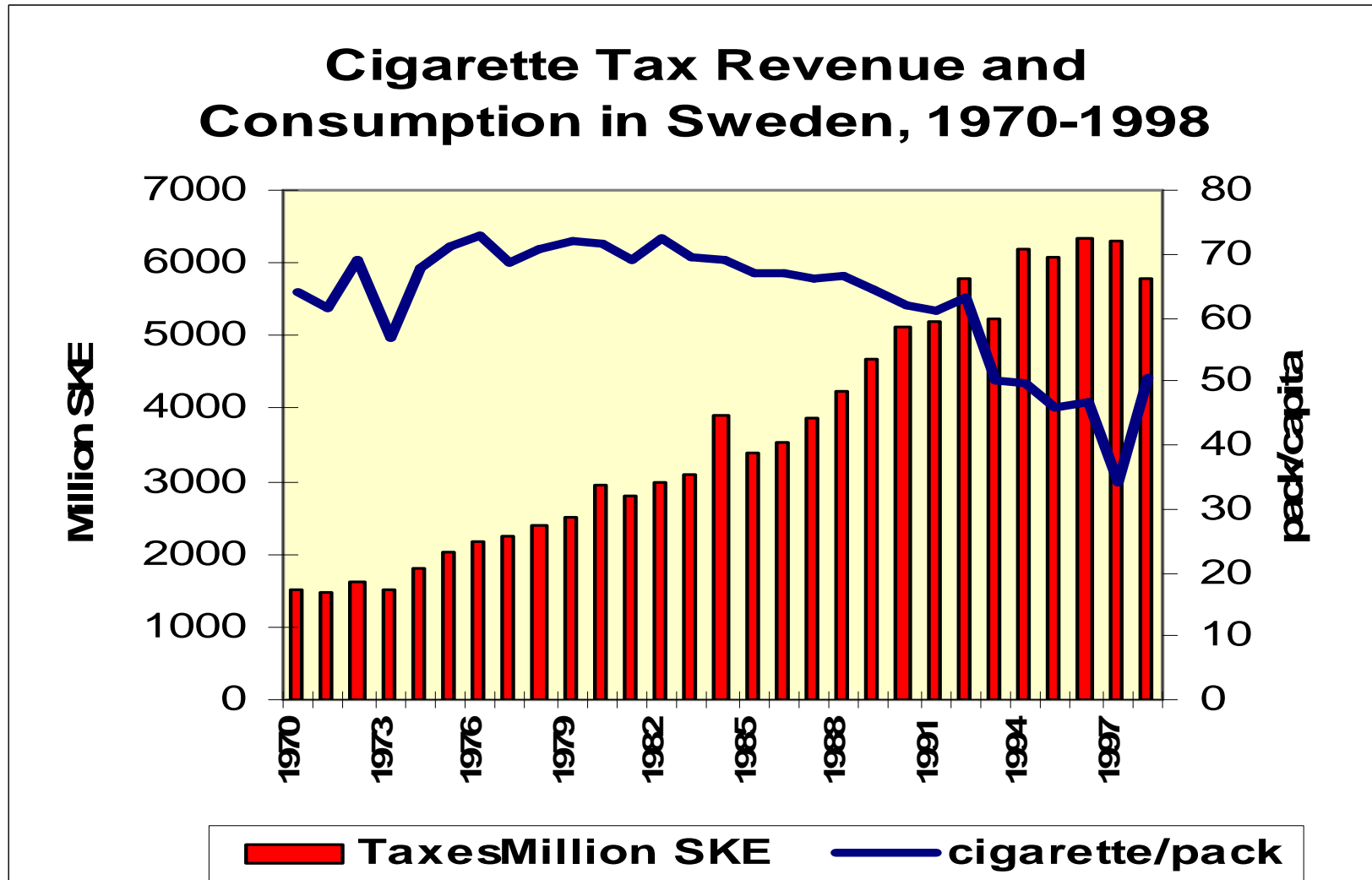
Sources: Joossens, *et al.*, 2000; Merriman, *et al.*, 2000

Canada Sharply Reduced Taxes in 1993



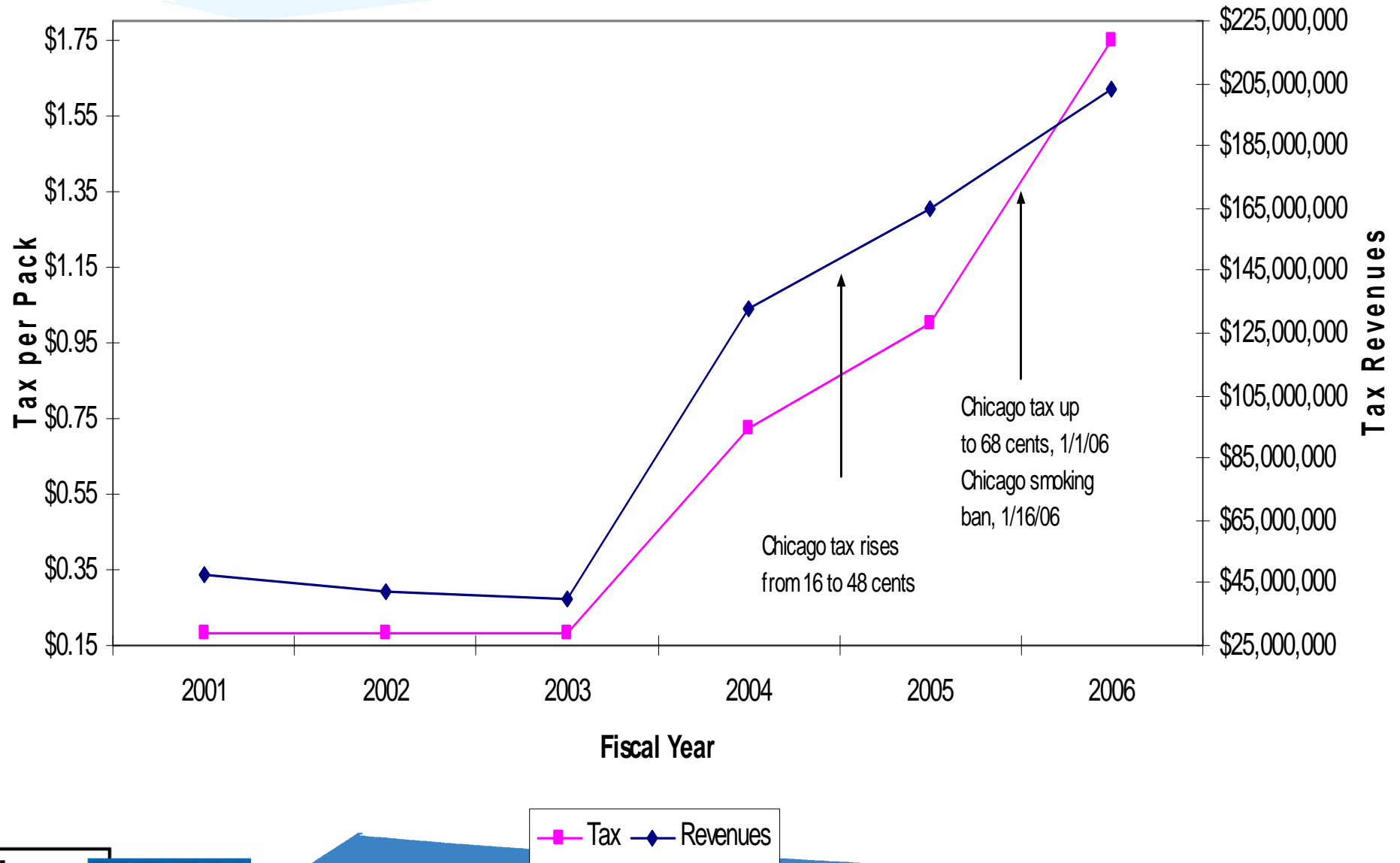
Source: World Bank, 2003

Sweden Reduced Cigarette Taxes by 17% in 1998



Source: World Bank, 2003

Cook County Cigarette Tax and Tax Revenues - FY01-FY06



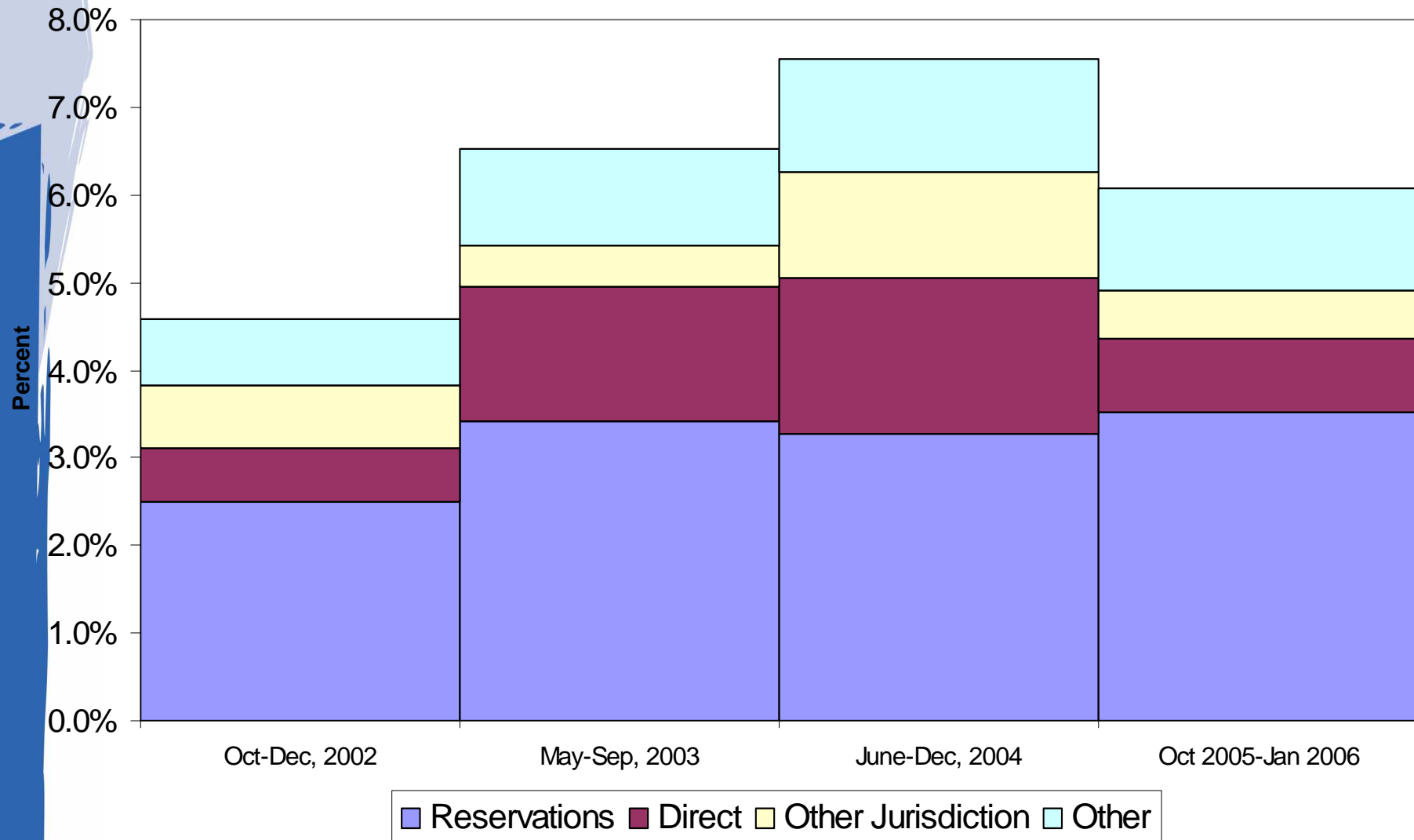
Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Extent of Tax Evasion?

International Tobacco Control Policy Evaluation Study

- Longitudinal cohort study of smokers in many countries
 - Original 4-country study focused on US, UK, Canada and Australia
 - Added Ireland, Malaysia, Thailand, China, Korea; others in preparation/planning
- Approximately 2,000 smokers surveyed in each country in each wave
 - Detailed information collected on smoking behavior and variety of related issues
 - Cigarette purchase patterns/sources

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



Source: International Tobacco Control Policy Evaluation Study, US Survey, Waves 1-4

Efforts to Curb Tax Evasion

- Many focused on Internet, phone and mail order sales:
 - Outright ban on direct sales (e.g. New York state policy)
 - Major shipping companies (e.g. UPS, Federal Express) agree not to ship cigarettes to consumers
 - USPS hasn't established similar policy
 - Major credit card companies agree to ban use of credit cards for direct cigarette purchases
 - States apply Jenkins Act to identify direct purchasers and to collect taxes due
 - Promising approach based on early data from several states
 - MA collected over \$4.6 million in FY07

Efforts to Curb Tax Evasion

- Reservation sales similar focus in some states
 - Some states (e.g. MN) impose tax on reservation sales with refund to reservation residents
 - Other states (e.g. WA) enter into “compacts” with tribes that result in comparable taxes imposed on reservation sales with most/all of revenues kept by tribe
 - Others apply different tax stamps for cigarettes sold to residents and non-residents of reservations
 - Quota for expected resident consumption

Efforts to Curb Tax Evasion

- High-Tech Efforts
 - Adoption of sophisticated tax stamps
 - Harder to counterfeit
 - Contain information allowing better tracking of cigarettes through distribution channels
 - Easier to implement enforcement actions
 - California:
 - Adopted 2002; fully implemented 2005
 - Coupled with better licensing standards
 - Can be examined with hand-held scanners
 - Thousands of compliance checks, hundreds of citations
 - Generated over \$124 million in revenues during 20 month period (mid-2004 through late 2005)

Myths About Economic Impact of Tobacco Taxation and Tobacco Control

- Regressivity?

Myth: Cigarette tax increases will negatively impact on the lowest income populations

Truth: Poor smokers bear disproportionate share of health consequences from smoking and are more responsive to price increases

- Should consider progressivity or regressivity of overall fiscal system
- Negative impact can be offset by use of new revenues to support programs targeting population or protect funding for current programs

Conclusions

- Substantial increases in tobacco excise taxes lead to large reductions in tobacco use and, in the long run, reduce the public health toll caused by tobacco use.
 - True for those with psychiatric disorders also
- Additional reductions in overall smoking and in the prevalence of youth smoking result when tax increases are coupled with comprehensive tobacco control efforts.
- Arguments about economic consequences of tobacco control and tax increases often misleading, overstated, or false

<http://www.impactteen.org>

<http://www.tobaccoevidence.net>