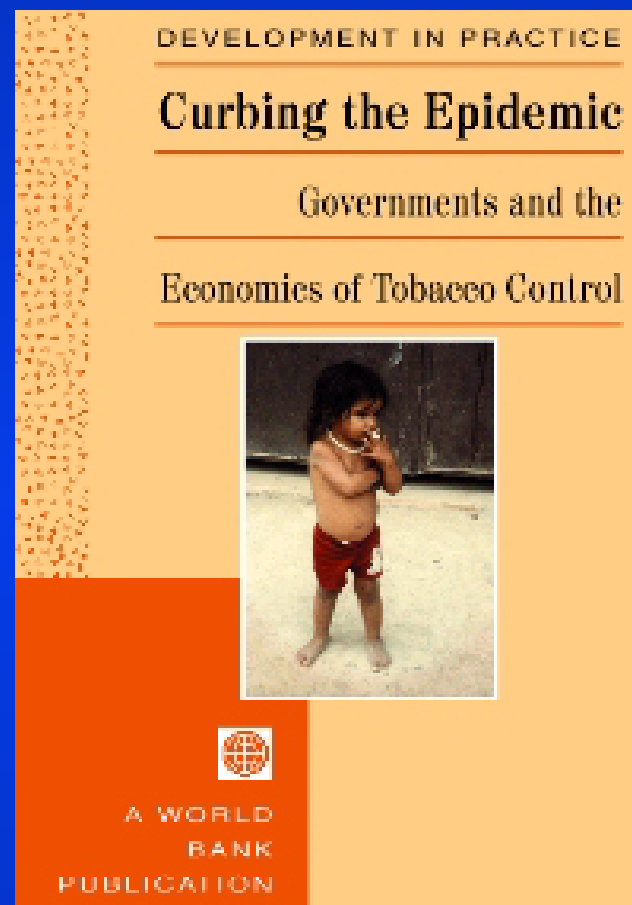


The Economics of Tobacco Control



**P Jha and FJ Chaloupka on behalf of the
report team and the
International Tobacco Evidence Network
papers at www.tobaccoevidence.net**



The World Bank



Why this work?

Economic arguments around tobacco control are unclear and often debated

- In 1996, an Asian Health Minister stated “cigarette producers are making large contributions to our economy... we have to think about workers and tobacco farmers”
- In 1997, *The Economist* commented “most smokers (two-thirds or more) do not die of smoking-related disease. They gamble and win. Moreover, the years lost to smoking come from the end of life, when people are most likely to die of something else anyway”

Methodology

- **Consultation workshops:** Washington D.C. 1996, Beijing 1997, Cape Town 1998
 - ◆ Cape Town Proceedings published in 1998
- **19 Background papers**
 - ◆ 40 economists, epidemiologists, and control experts from 13 countries.
 - ◆ Reviews of literature
 - ◆ New analyses
 - ◆ 2 rounds of peer review
- **Synthesized in World Bank Report “Curbing the Epidemic”**

Outline of Book

- Tobacco use and its consequences
- Analytics of tobacco use
- Demand for tobacco
- Supply of tobacco
- Policy directions

Most smokers live in developing countries

Current smokers in 1995 (in millions)

<u>Region</u>	<u>Number</u>
<i>Low/Middle income</i>	933
<i>High Income</i>	209
<i>World</i>	1,142

Quit rates low in low income countries

- ◆ *5-10% in China, India*
- ◆ *30-40% in UK*

Large and growing number of deaths from smoking

Past and future tobacco deaths (in millions)

<u>Time</u>	<u>Millions of deaths</u>
1901-2000	100 (mostly in developed countries)
2001-2100	1,000 (mostly in developing countries)

- ◆ **500 M among people alive today**
- ◆ *1 in 2 of long-term smokers killed by their addiction*
- ◆ *1/2 of deaths in middle age (35-69)*

ALL DEVELOPED COUNTRIES, 1990s: Annual Tobacco Deaths (in millions)

Age Range	<u>Tobacco Deaths</u>		Years
	million	% of all	lost per
	per year	deaths	death
35 to 69	1.1	30%	22
70+	0.9	13%	8
Total	2.0	17%	16

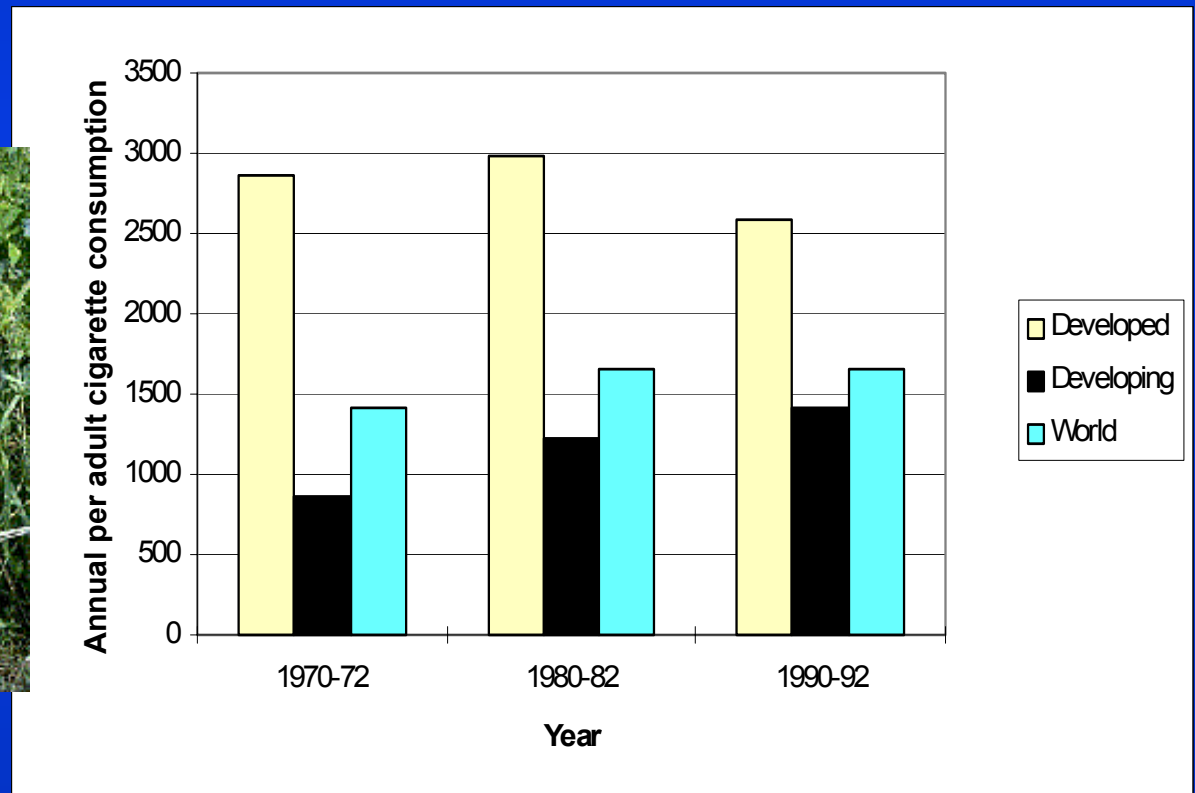
DEVELOPED COUNTRIES: Key Messages for the Individual Smoker

- **The risk is BIG: About HALF of persistent smokers are killed by their habit**
- **Half of deaths occur in MIDDLE-AGE (age 35-69), losing 20-25 years of life**
- **QUITTING WORKS: those who quit before major disease avoid most of the risks**

UNITED KINGDOM: Current Risks

- On average, among 1000 20-year olds who smoke cigarettes regularly:
 - ◆ about 1 will die from homicide
 - ◆ about 6 will die from motor vehicles
 - ◆ about 250 will be killed by smoking in **MIDDLE AGE** alone (plus 250 more in old age)

Per capita cigarette consumption has increased in developing countries



Source: WHO 1997

WORLD: Annual Tobacco Deaths (in millions)

	1990	2030
Developed	2	~3
Developing	~1	~7
World Total	3	~10

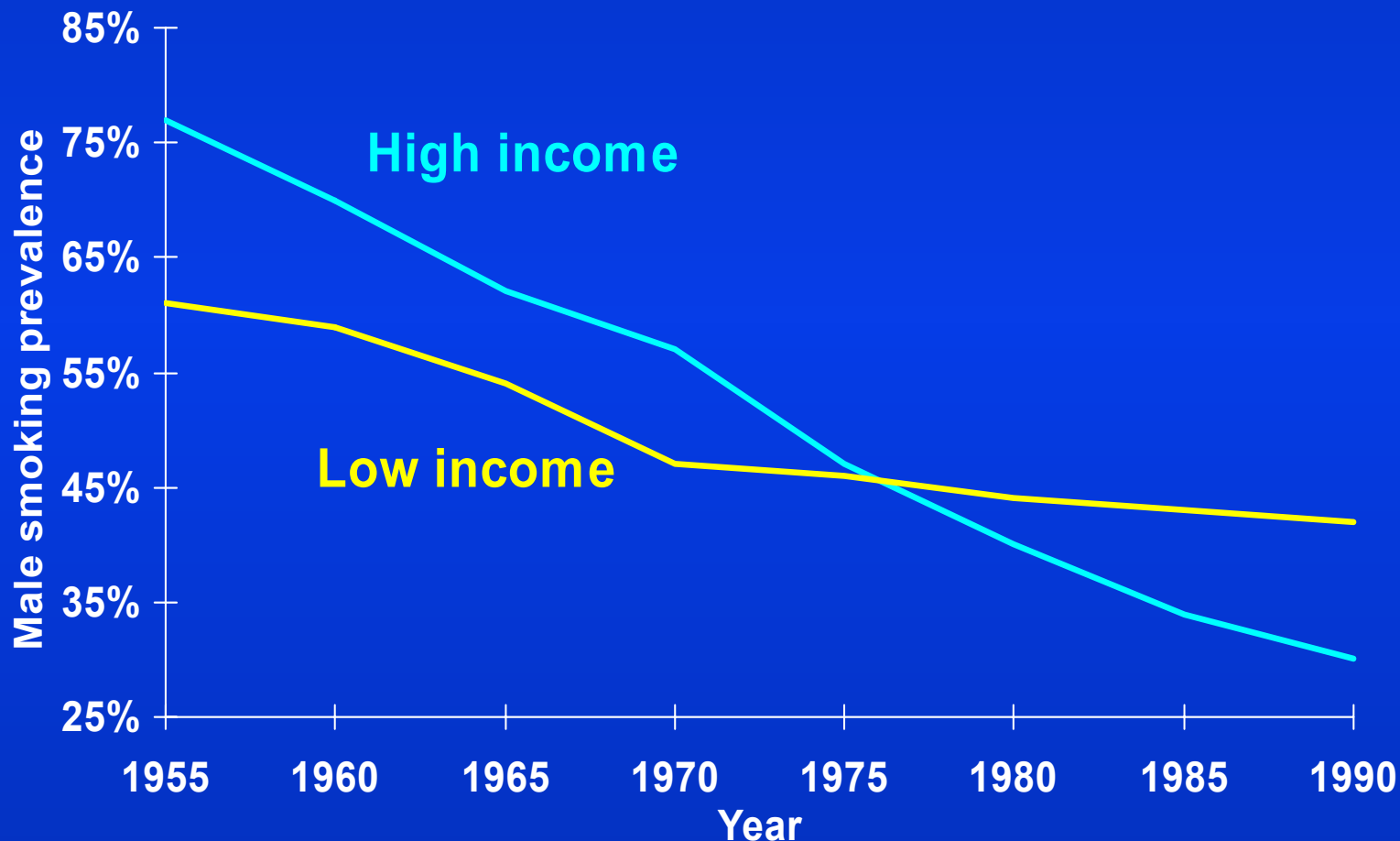


Past smokers, mainly adults



Current smokers, mainly teenagers and young adults

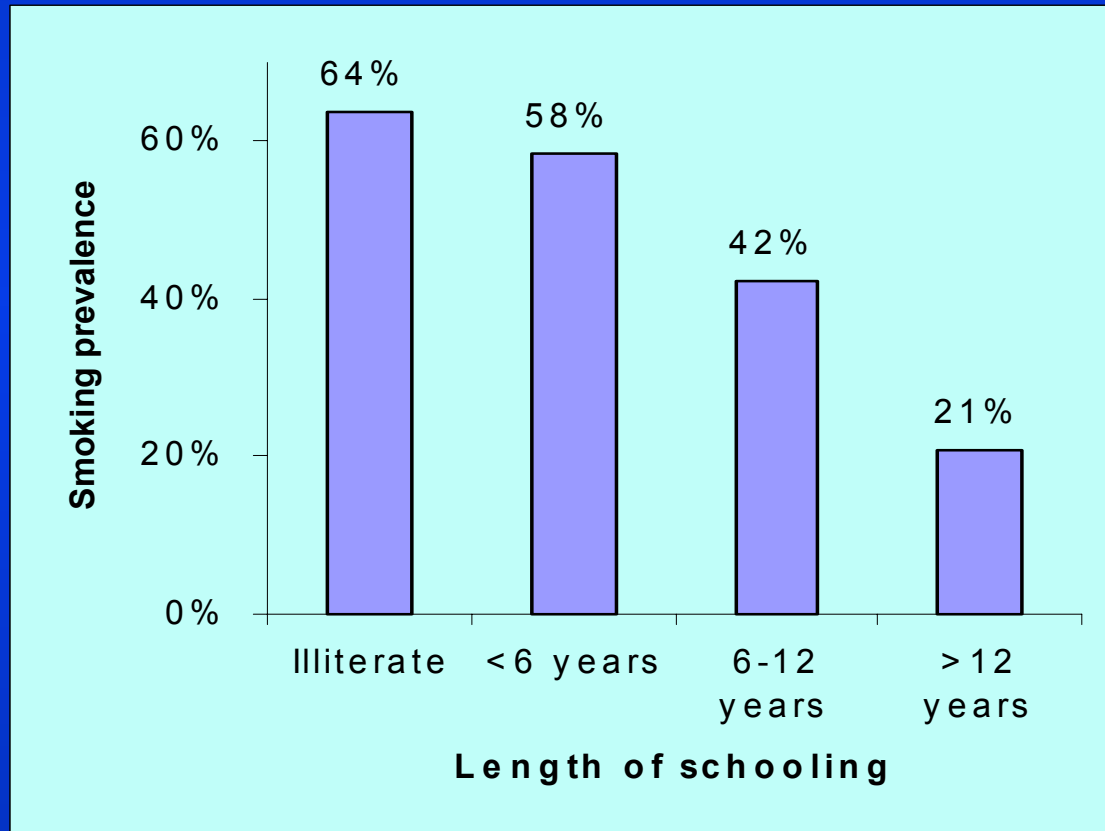
Trends in Smoking in Norwegian Males by Income Group



Source: Lund *et al.*, 1995

Smoking is more common among the less educated

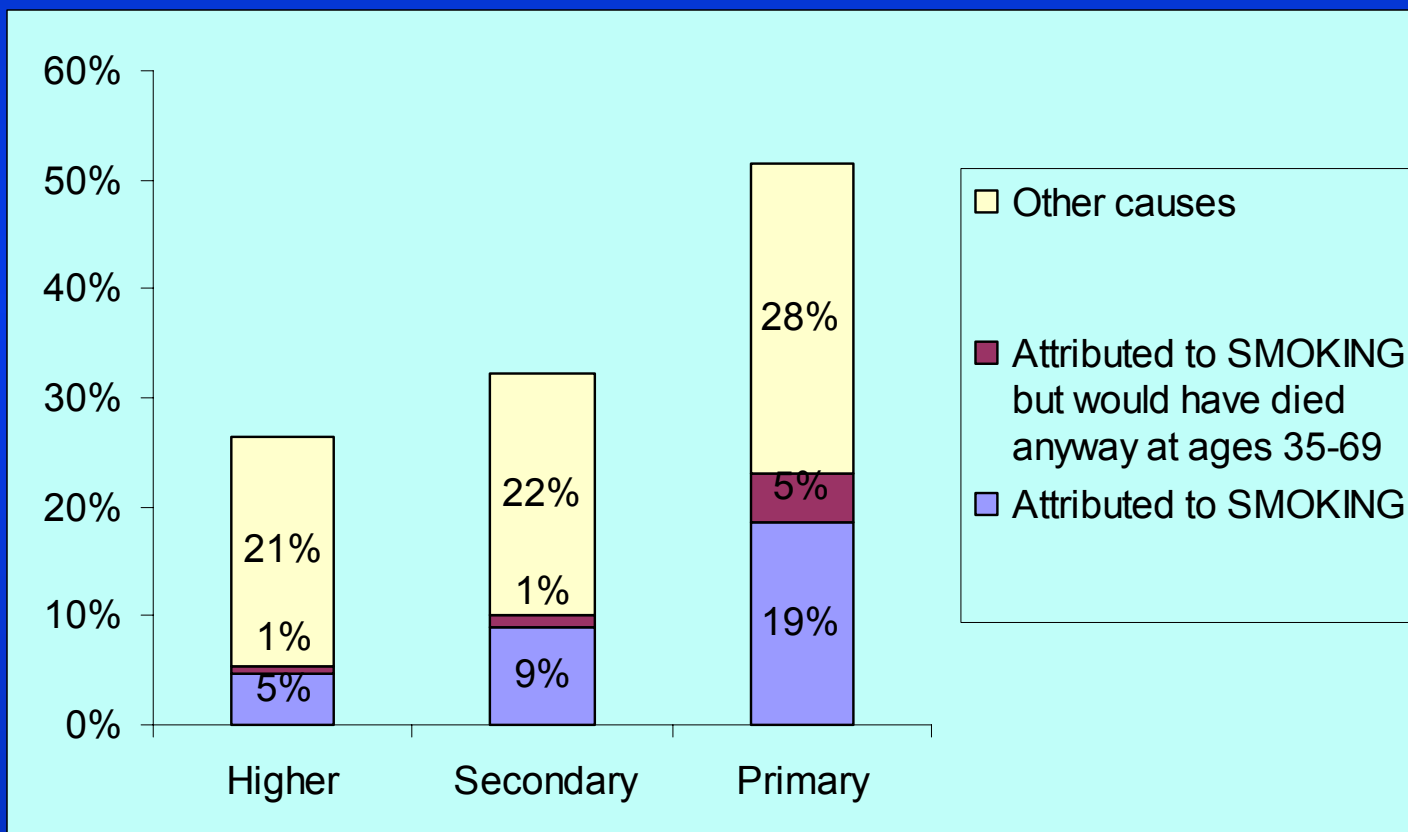
Smoking prevalence among men in Chennai, India, by education levels



Source: Gajalakshmi and Peto 1997

Smoking accounts for much of the mortality gap between rich and poor

Risk of death of a 35 year old male before age 70, by education levels in Poland, 1996



Source: Bobak *et al.*, 2000

Why should governments intervene?

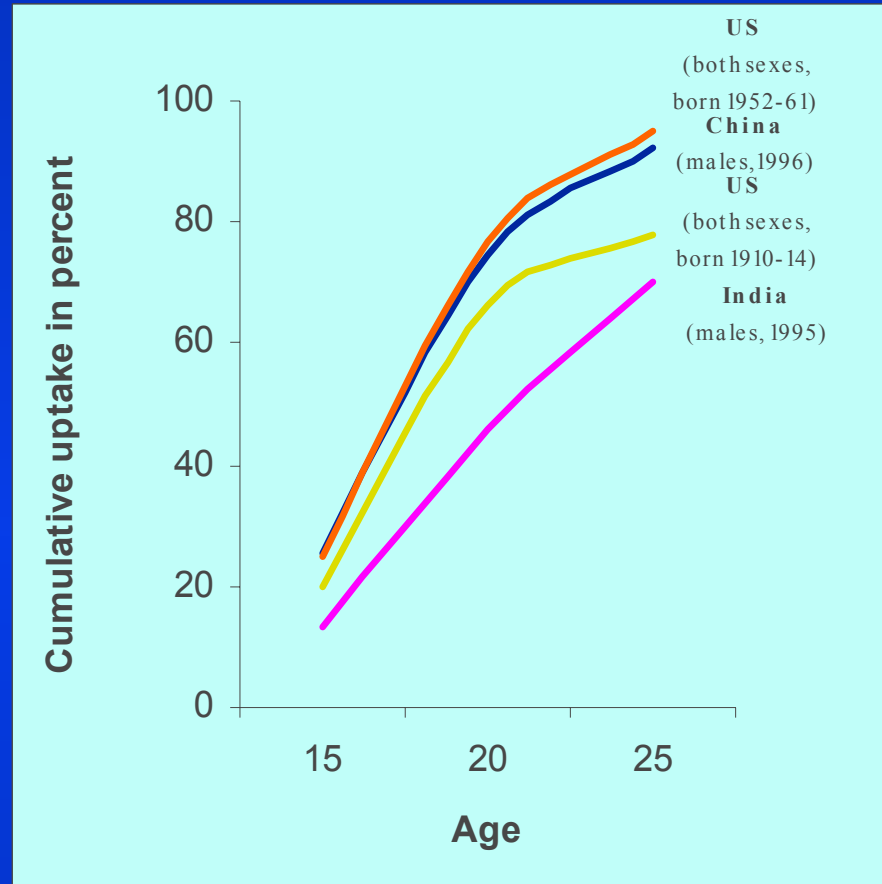
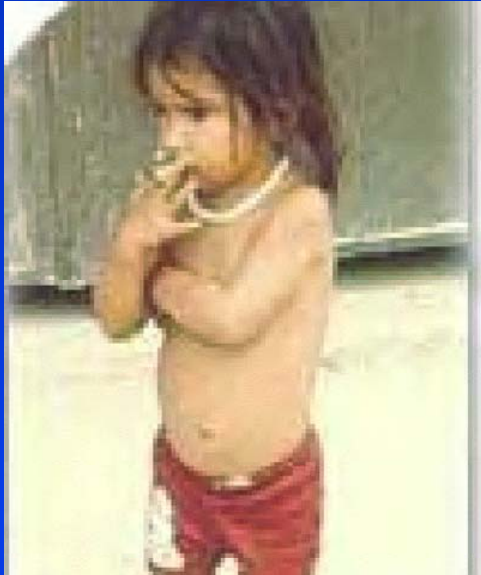
Economic rationale or “market failures”

- **Smokers do not know their risks**
- **Addiction and youth onset of smoking**
 - ◆ Lack of information and unwillingness to act on information
 - ◆ Regret habit later, but many addicted
- **Costs imposed on others**
 - ◆ Costs of environmental tobacco smoke and health costs

Underestimated risks of smoking

- ◆ 7 in 10 of Chinese smokers thought smoking does them “little or no harm”
- ◆ Risks not internalized: personal risks perceived lower than average risks
- ◆ Risks of addiction downplayed: only 2 in 5 of US adolescents intending to quit actually do
 - ◆ in high-income countries, 7 in 10 smokers wish they had not started

Tobacco addiction starts early in life



- **Every day 80,000 to 100,000 youths become regular smokers**

Source: Chinese Academy of Preventive Medicine 1997, Gupta 1996, US Surgeon General Reports, 1989

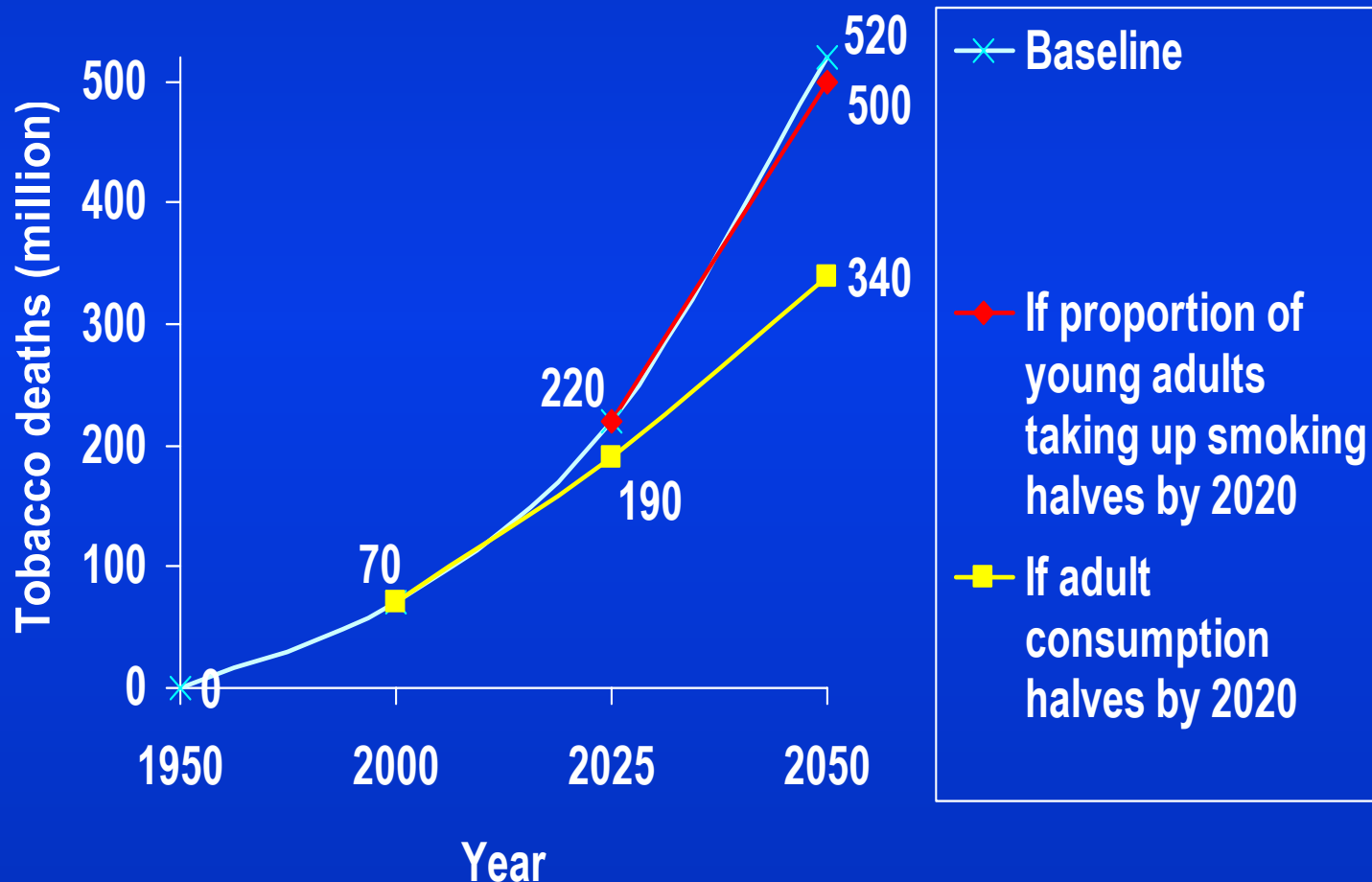
Healthcare costs from smoking

- Annual (gross) healthcare costs:
 - ◆ 0.1-1.1% of GDP, or 6 -15% of total health costs in high-income countries
 - ◆ proportionally similar in lower-income countries
- Net (lifetime) healthcare costs:
 - ◆ Differences in lifetime costs are smaller than annual costs
 - ◆ Best studies do suggest there are net lifetime costs
 - ◆ Pension or “smokers pay their way” arguments are complex

Government roles in intervening

- To deter children from smoking
 - To protect non-smokers from others' smoke
 - To provide adults with necessary information to make an informed choice
-
- ◆ *First-best instrument, such as youth restrictions, are usually ineffective. Thus, tax increases are justified, and are effective.*
 - ◆ *Tax increases are blunt instruments.*

Unless current smokers quit, smoking deaths will rise dramatically over the next 50 years



Source: Peto and Lopez, 2000

Which interventions are effective?

Measures to reduce demand

- Higher cigarette taxes
- Non-price measures: consumer information, research, cigarette advertising and promotion bans, warning labels and restrictions on public smoking
- Increased access to nicotine replacement (NRT) and other cessation therapies

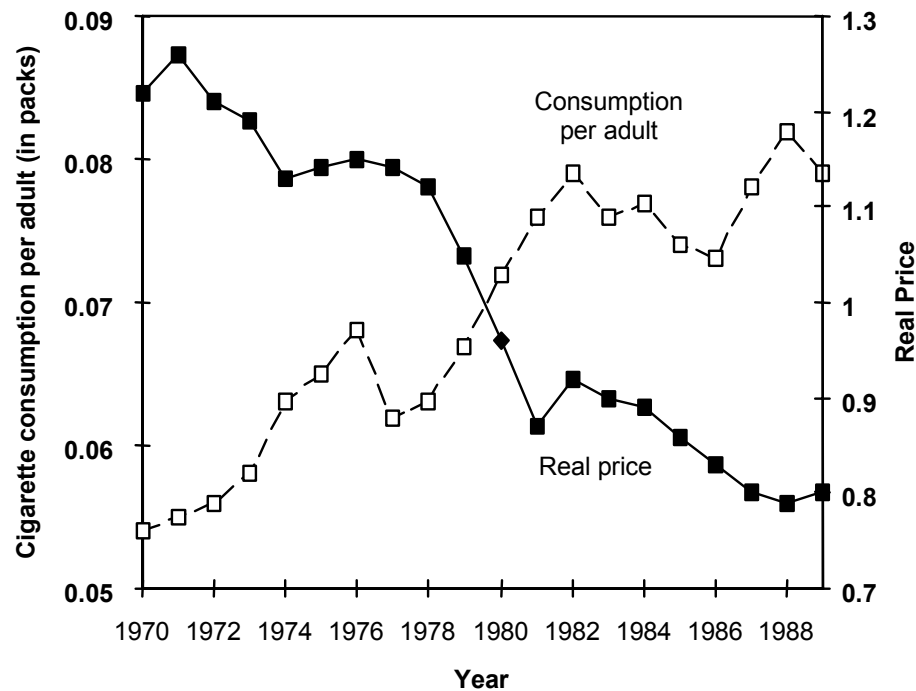
Taxation is the most effective measure

- Higher taxes induce quitting, reduce consumption and prevent starting
- A 10% price increase reduces demand by:
 - ◆ 4% in high-income countries
 - ◆ 8% in low or middle-income countries
- Young people and the poor are the most price responsive

Source: Chaloupka *et al.*, 2000

Cigarette price and consumption show opposite trends (1)

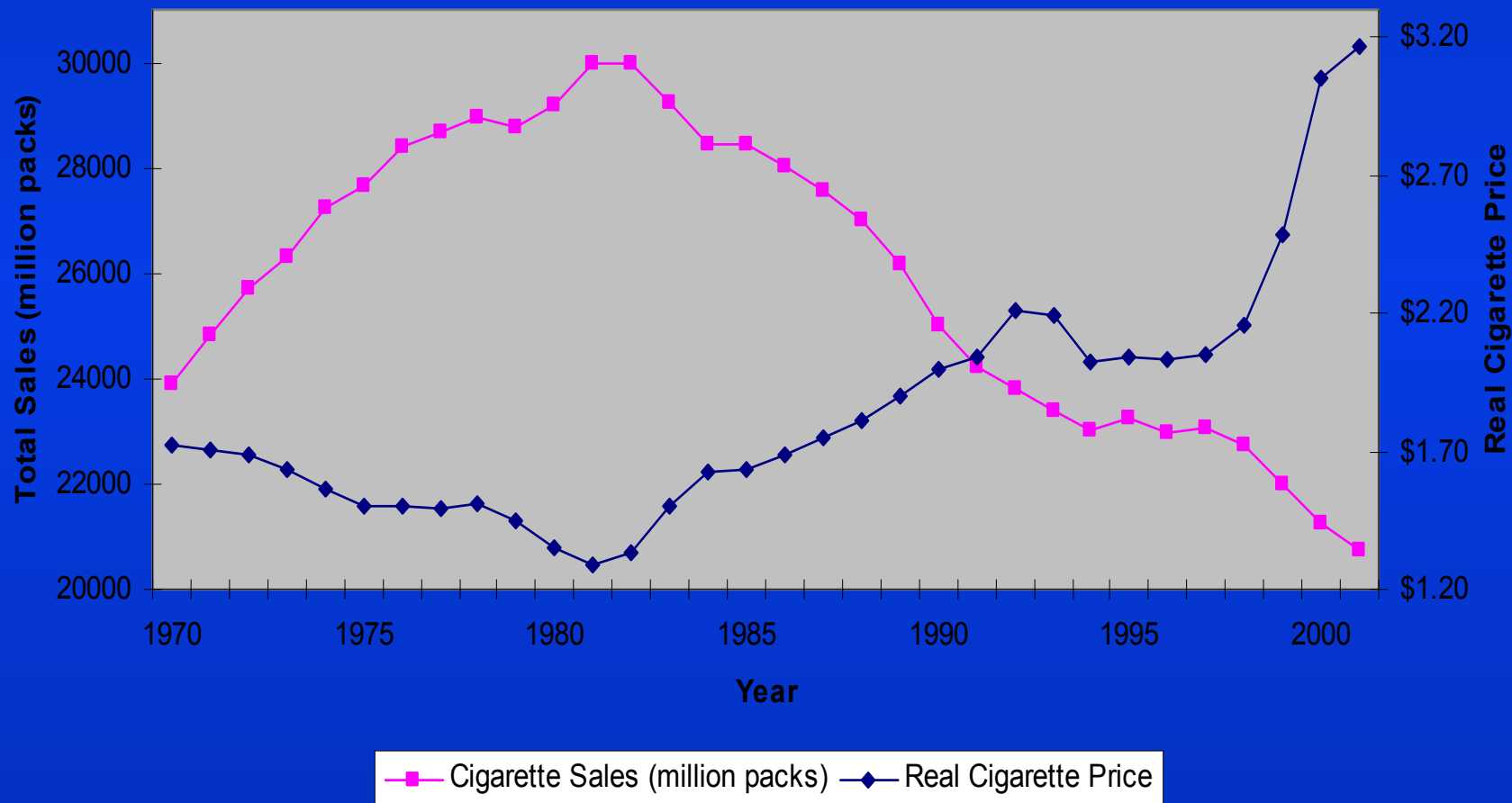
Real price of cigarettes and annual per adult cigarette consumption in South Africa 1970-1989



Source: Saloojee 1995

Cigarette price and consumption show opposite trends (2)

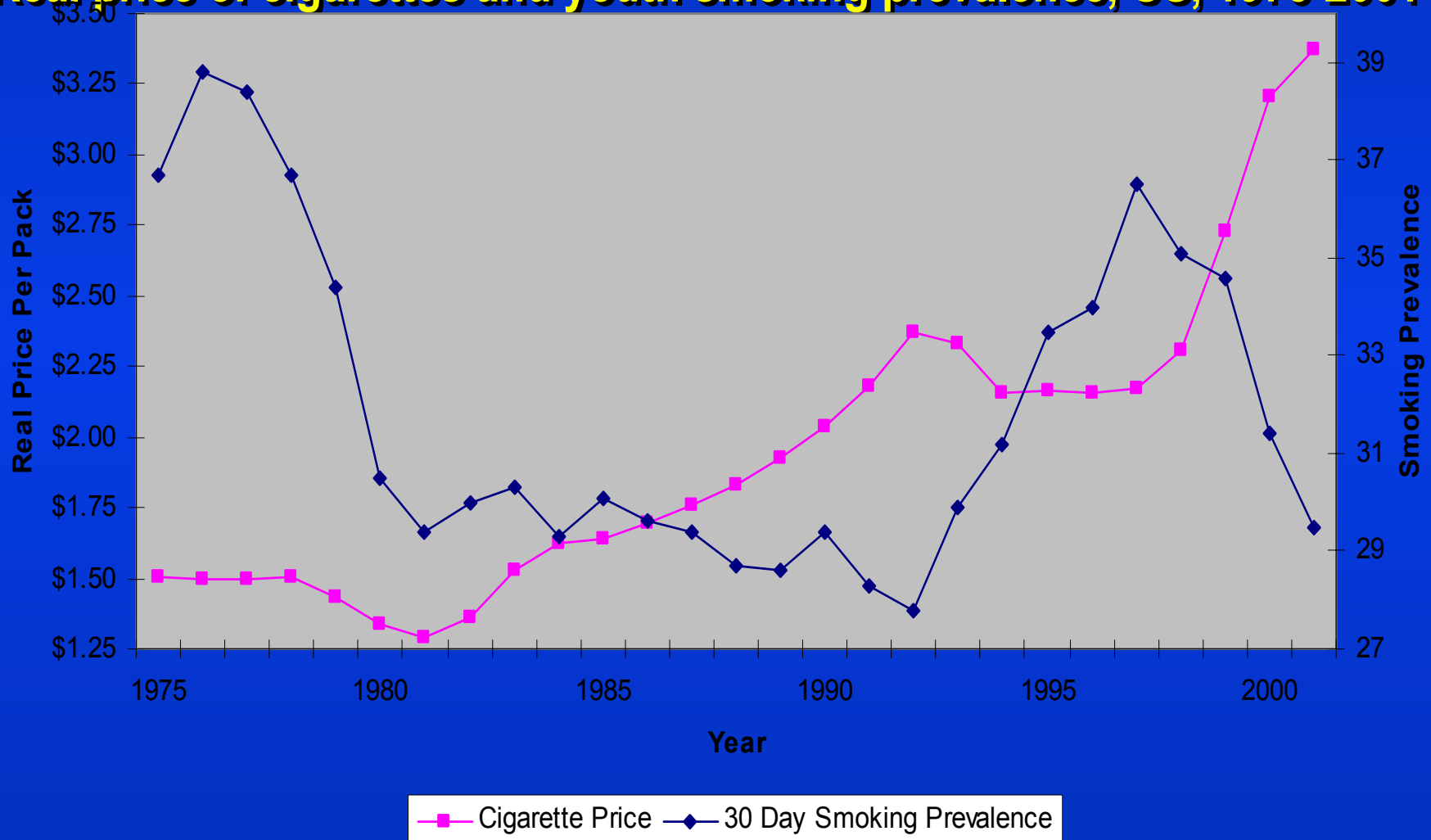
Total Cigarette Sales and Cigarette Prices, 1970-2001



Source: ImpactTeen, 2002

Cigarette price and youth smoking show opposite trends

Real price of cigarettes and youth smoking prevalence, US, 1975-2001



Source: ImpacTeen, 2002

What is the “right” level of tax?

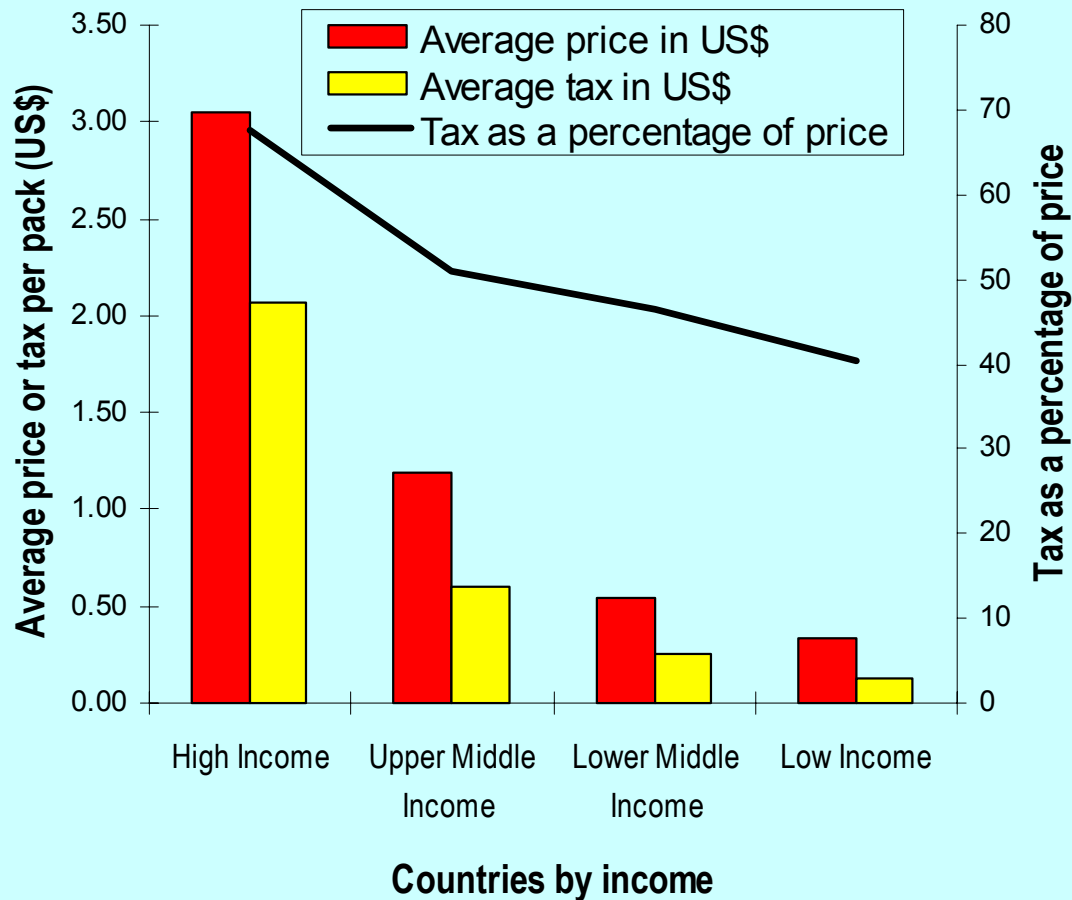
- **Complex question**

- ◆ Depends on various factors, such as degree to which society wishes to protect children, revenue considerations, etc.

- **Useful yardstick: where comprehensive programs used, tax is at least 2/3 to 4/5 of retail price.**

Source: Chaloupka *et al.*, 2000

There is still ample room, especially in lower-income countries, to raise cigarette taxes



Source: Chaloupka *et al.*, 2000

Non-price measures to reduce demand

- Increase consumer information:
dissemination of research findings, warning labels, counter-advertising
- Comprehensive ban on advertising and promotion
- Restrictions on smoking in public and work places
- Increase access to nicotine-replacement therapies (NRT)

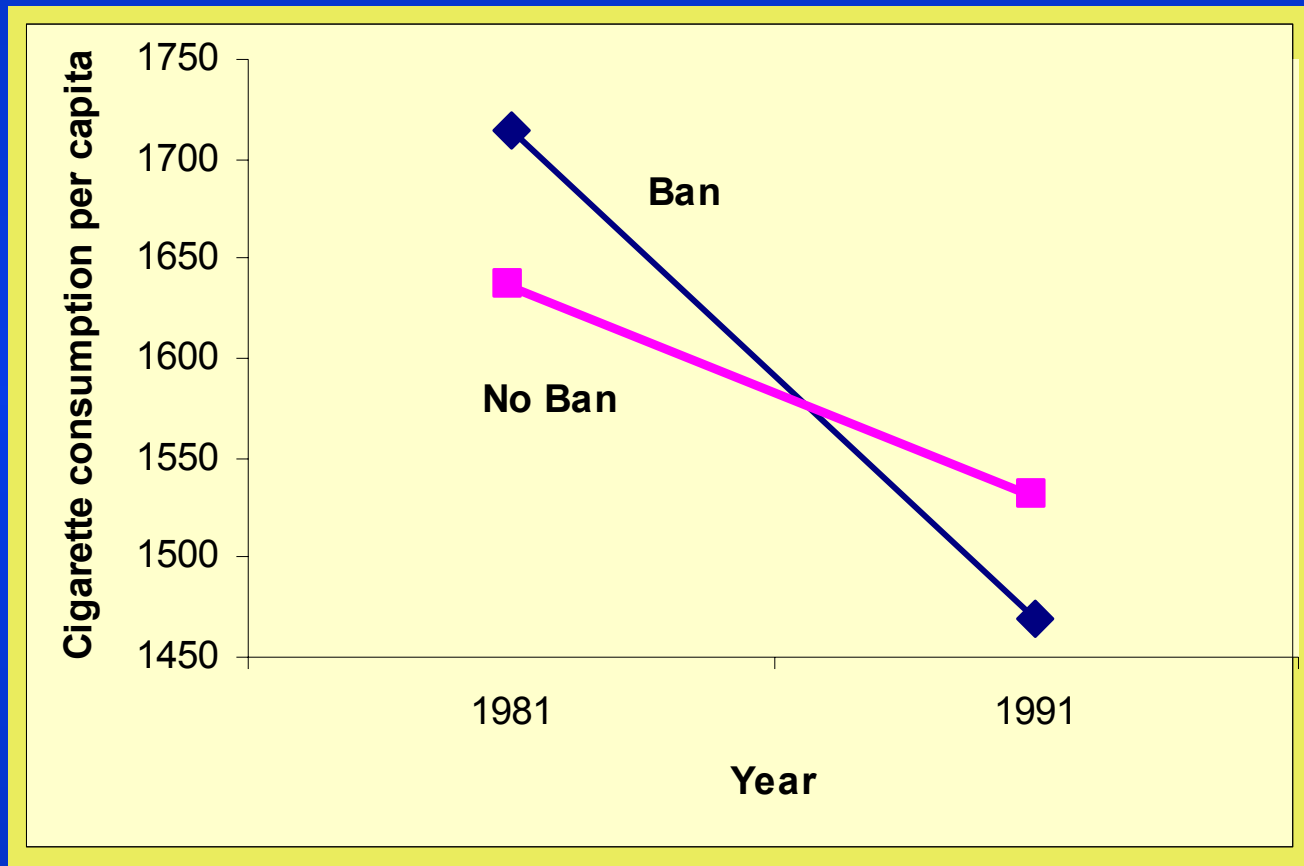
Health information reduces the demand for cigarettes

Country	Time	Event	Immediate reduction in cigarette consumption
The US	1964	Surgeon General Report	1-2%
UK	1962	1 st report of the Royal College of Physicians	5%
Switzerland	1966	An anti-smoking campaign	11%
Turkey	1982	Implementation of health warning labels	8%

Source: Kenkel and Chen, 2000

Comprehensive advertising bans reduce cigarette consumption

Consumption trends in countries with such bans vs. those with no bans
(n=102 countries)



Source: Saffer, 2000

Effect of advertising bans and counter-advertising

- A comprehensive set of tobacco advertising bans can reduce consumption by 6.3%
- Counter-advertising messages (set at 15% of the total number of advertising messages) can reduce smoking by about 2% a year

Source: Saffer and Chaloupka, 2000

Clean indoor-air laws and youth access restrictions

■ Clean indoor-air laws:

- ◆ can reduce cigarette consumption
- ◆ can be self-enforcing
- ◆ work best with social consensus against smoking

■ Youth access restrictions:

- ◆ mixed evidence of effectiveness
- ◆ require aggressive reinforcement

NRT and cessation therapies

- **NRTs double the effectiveness of cessation efforts and reduce individuals' withdrawal costs**
- **Governments may widen access to NRT and other cessation therapies by:**
 - ◆ **Reducing regulation**
 - ◆ **Conducting more studies on cost-effectiveness (especially in low/middle income countries)**
 - ◆ **Considering NRT subsidies for poorest smokers**

Source: Novotny *et al.*, 2000

Potential impact of a price increase of 10% and a package of non-price measures

Region	Change in number of smokers (millions)		Change in number of deaths (millions)	
	Price increases	Non-price measures	Price increases	Non-price measures
Low/Middle Income	-38	-19	-9	-4
High Income	-4	-4	-1	-1
World	-42	-23	-10	-5

Source: Ranson *et al.*, 2000

Comprehensive Programs and Tobacco Use

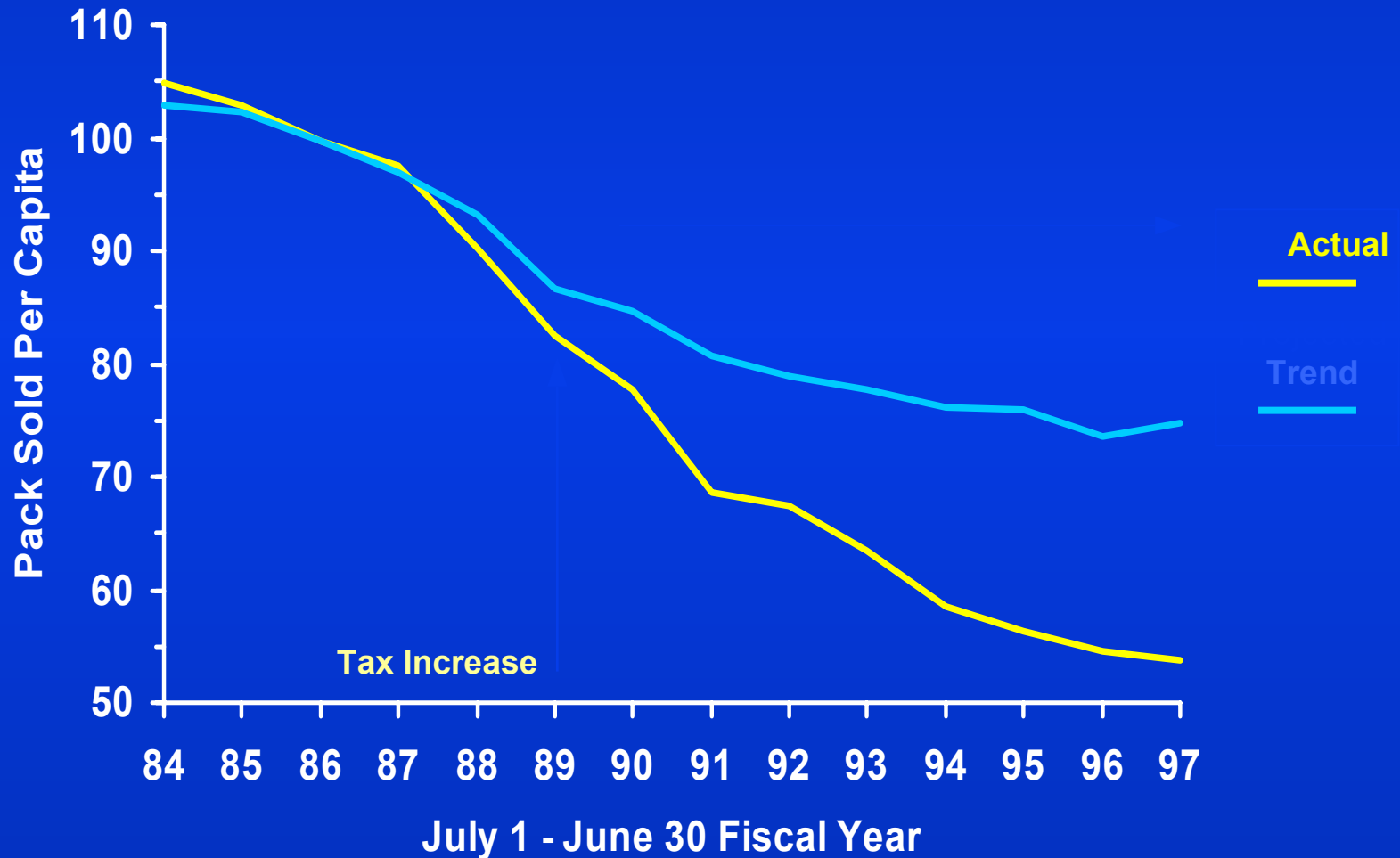
- **Comprehensive programs include several components:**
 - ◆ Mass-media information/counteradvertising campaigns
 - ◆ support for cessation
 - ◆ school and community-based efforts
 - ◆ policy interventions
 - ◆ Surveillance and evaluation
- **Often funded by dedicating some tobacco tax revenues to program**
 - ◆ Several US states, Thailand, Australia, many others

Comprehensive Programs and Tobacco Use

- **Well-funded comprehensive programs:**
 - ◆ Increase cessation, prevent initiation, and reduce tobacco consumption
 - ◆ Significantly reduce disease, disability and death caused by tobacco use

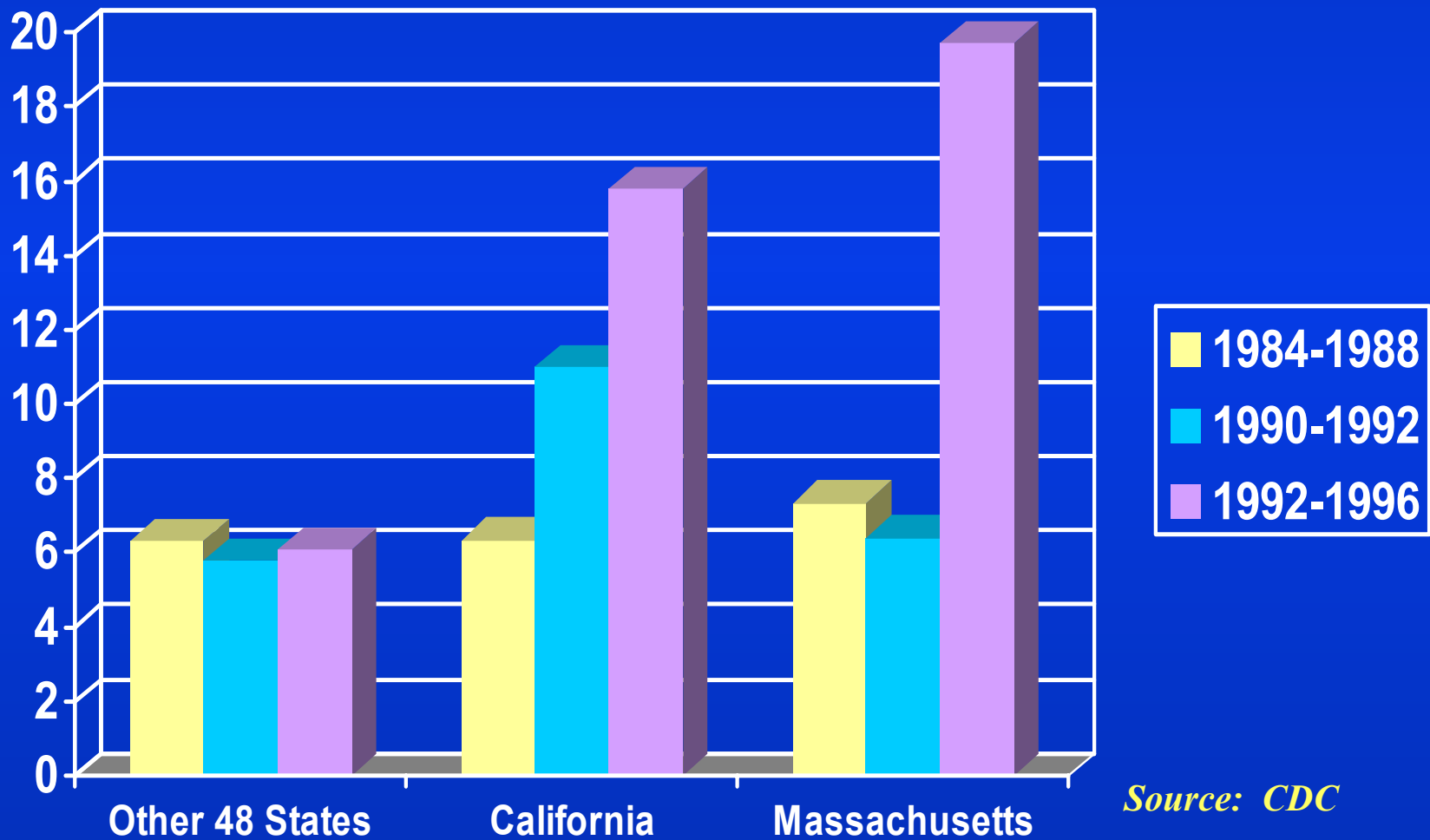
Source: U.S. Centers for Disease Control and Prevention, 2001;
U.S. Department of Health and Human Services, 2000

Per Capita Consumption Trends California versus Projected Trend, 1984-1997



Source: CDC

Change in Per Capita Cigarette Consumption Before and After an Excise Tax Increase and an Antismoking Campaign California & Massachusetts versus Other 48 States, 1986 to 1996



Source: CDC

Which interventions are ineffective at reducing consumption?

Most measures to reduce supply

- Prohibition
- Youth access restrictions
- Crop substitution
- Trade restrictions
- *Control of smuggling is the only exception and it is the key supply-side measure*

Source: Jacobs *et al.*, 2000; Woolery *et al.*, 2000; Taylor *et al.*, 2000

Trade and tobacco consumption

- Trade liberalisation increases cigarette consumption, especially in low and middle-income countries
- Trade restrictions are unrealistic
- Governments should apply other effective control measures without discrimination against domestic or imported cigarettes.

Source: Taylor *et al.*, 2000

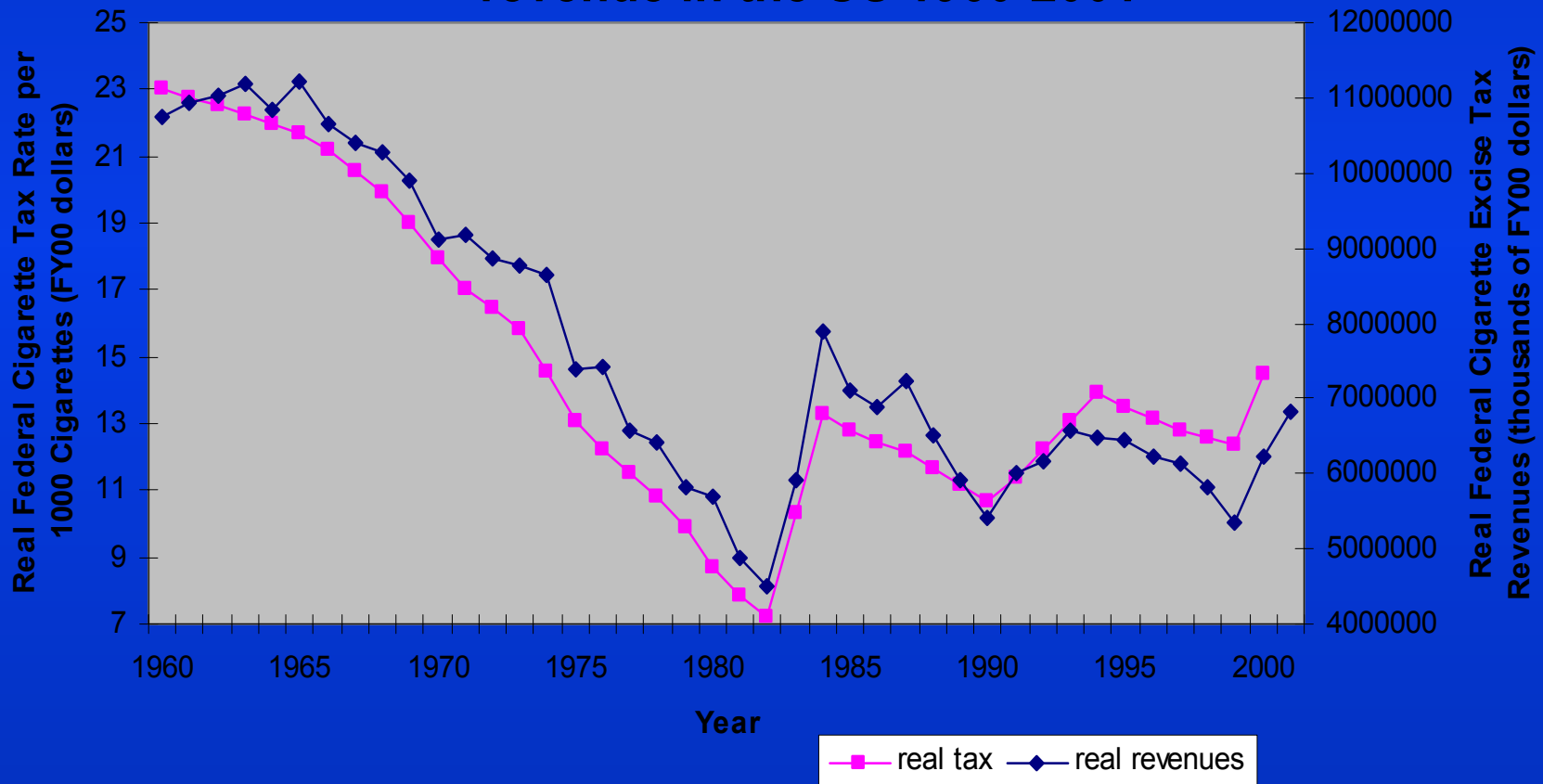
What are the costs of tobacco control?

- **Revenue loss**: likely to have revenue gains
 - ◆ a 10% tax increase would raise revenue by 7%
- **Job loss**: temporary, minimal, and gradual
- **Possible smuggling**: crack down on criminal activity, not lower taxes
- **Cost to individuals, especially the poor**: partially offset by lower consumption

Cigarette tax increases result in higher tax revenues (1)

Real Federal cigarette tax rate and real cigarette tax

revenue in the US 1960-2001

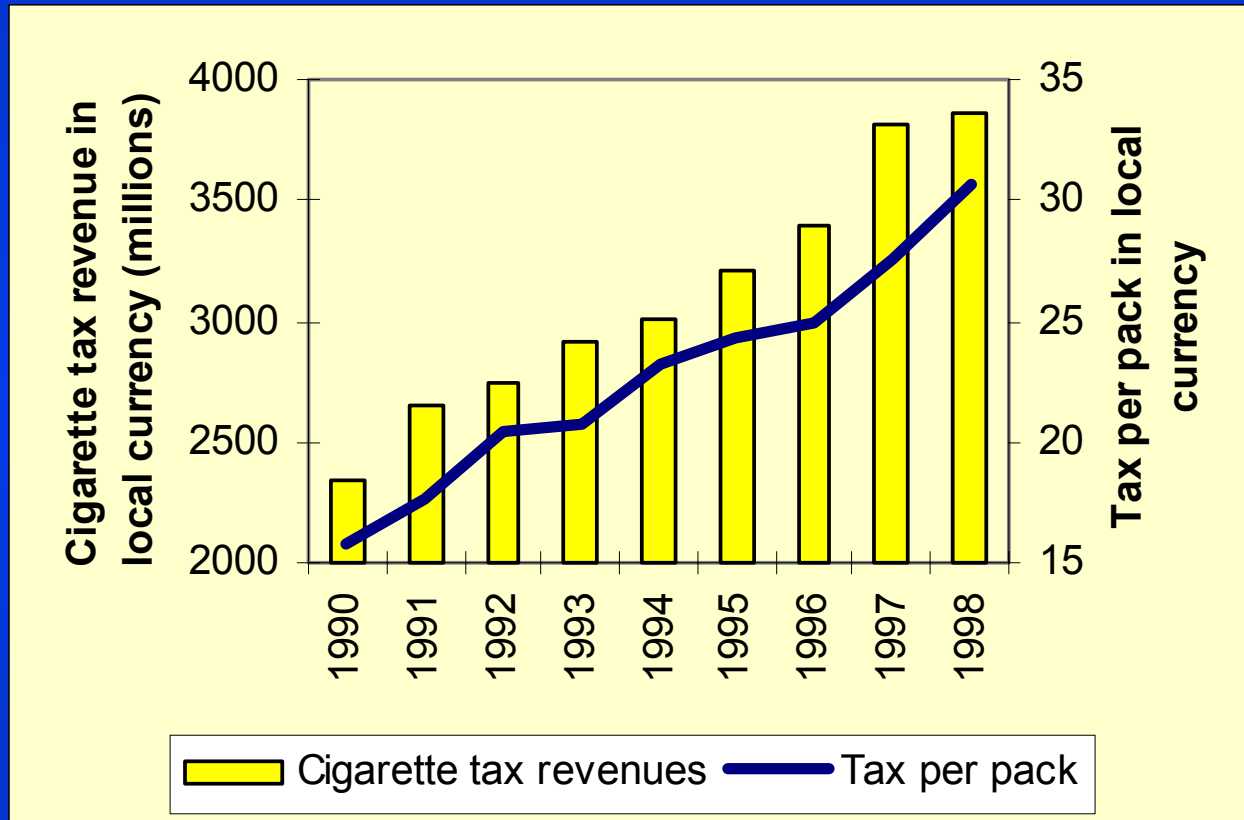


Source: ImpacTeen, 2002

As cigarette tax rises, revenues increase (2)

Tax per pack and cigarette tax revenues in Norway, 1990-

1998

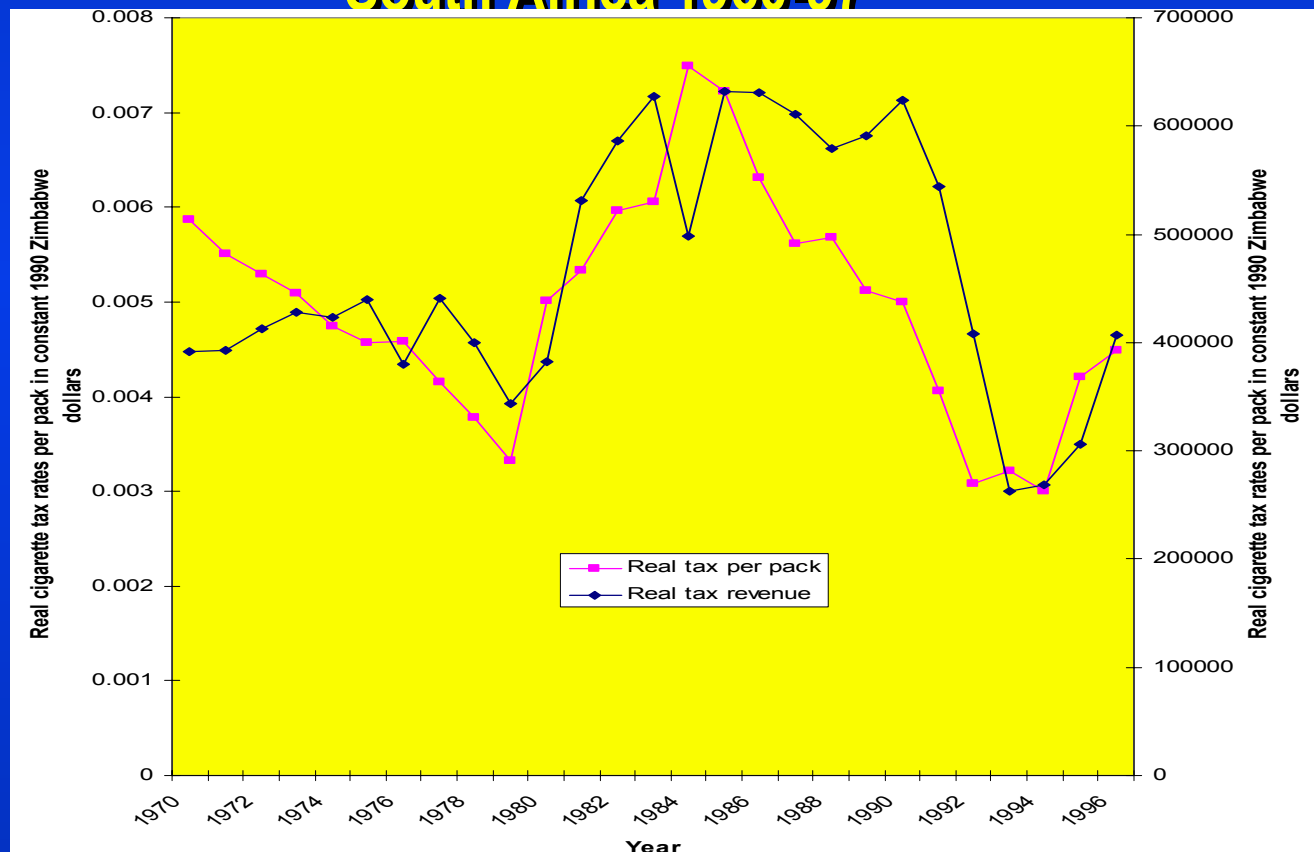


Source: World bank 1999

Cigarette tax increases result in higher tax revenues (3)

Real cigarette tax rate and real cigarette tax revenue in

South Africa 1960-97



Source: Sunley *et al.*, 2000

Studies on the employment effects of dramatically reduced or eliminated tobacco consumption

<i>Type of country</i>	<i>Name and year</i>	<i>Net change as % of economy in base year given</i>
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: Buck and others, 1995; Irvine and Sims, 1997; McNicoll and Boyle 1992, van der Merwe and others, background paper; Warner and others 1996

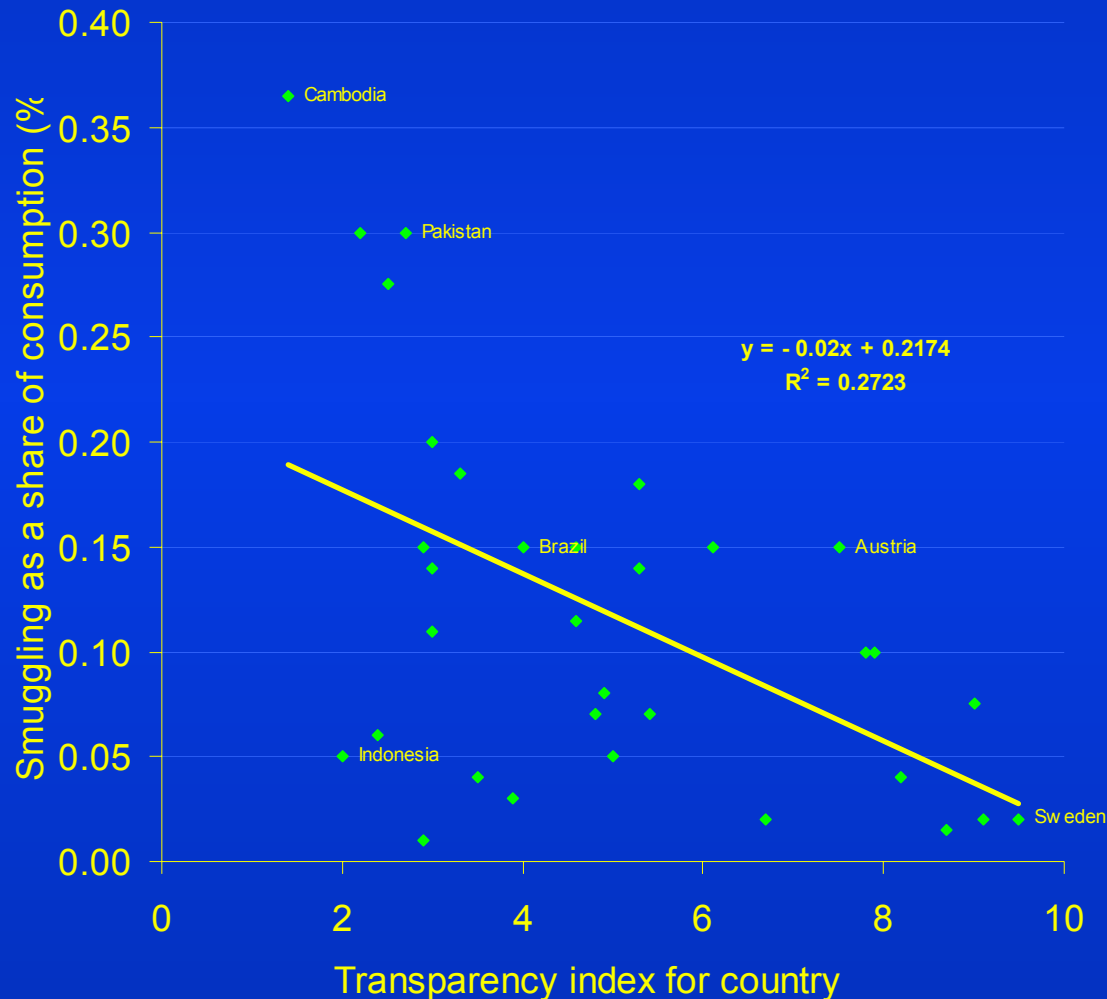
Smuggling of Cigarettes

- **Industry has economic incentive to smuggle**
 - ◆ Increase market share and decrease tax rates
- **Best estimate: 6 to 8.5% of total consumption**
- **Non-price variables important**
 - ◆ Perceived level of corruption more important than cigarette prices
- **Tax increase will lead to revenue increase, even in the event of increased smuggling**

Source: Merriman *et al.* 2000; Joosens, 2000; BAT, 1998

Tobacco smuggling tends to rise in line with the degree of corruption

Smuggling as a function of transparency index



Source: Merriman *et al.*, 2000

Control of Smuggling

- **Countries need not make a choice between higher cigarette tax revenues and lower cigarette consumption**
 - ◆ Higher tax rates can achieve both
- **Effective control measures of smuggling exist**
 - ◆ Focus on large container smuggling
 - ◆ Prominent local language warnings and tax stamps
 - ◆ Increase penalties
 - ◆ Licensing and tracking of containers
 - ◆ Increase export duties or bonds
- **Multilateral tax increases help combat smuggling**

Smuggling and Tax Revenue (1)

SOUTH AFRICA, 1990s

- Increased excise tax from 38 to 50% of retail price
 - ◆ Smuggling rose from 0 to 6%
 - ◆ Sales fell 20%
 - ◆ Revenue went up 2 fold

CANADA, 1993-94

- Lowered tax in response to organized smuggling
 - ◆ Retail price fell by half
 - ◆ Total consumption rose 48%, more so in young
 - ◆ Average revenue per capita fell by 35%

How cost-effective are tobacco control measures?

US dollars per healthy year life gained

<i>Region</i>	<i>Price increases of 10%</i>	<i>Non-price measures with effectiveness of 5%</i>	<i>NRT (publicly provided) with 25% coverage</i>
Low / middle income	4 to 34	68 to 272	276 to 297
High Income	165 to 1,370	1,347 to 5,388	746 to 1,160

Note: 3% discount rate, costs for non-price measures and all benefits projected over 30 years

Source: *Ranson et al.*, 2000

Summary

- Tobacco deaths worldwide are large and growing, and have higher burdens among the poor
- Specific market failures support government intervention
- Demand measures, chiefly tax increases, information, and regulation are most effective to reduce consumption
- Control of smuggling is the major supply-side intervention
- Tobacco control is cost-effective

Key recommendations

- **Governments:** adopt multi-pronged strategy, tailored to each country
 - ◆ cigarette tax increases: 2/3 to 4/5 of retail price
 - ◆ consumer information, research, advertising and promotion bans, warning labels and restrictions on public smoking
 - ◆ widen access to NRT and other cessation therapies
- **International agencies:** review policies, sponsor research, address cross-border issues and support the FCTC