

# The Economics Of Tobacco Regulation

Only the costs that smokers impose on others justify a mandate for government action.

by Jonathan Gruber

**ABSTRACT:** The past five years have seen a dramatic turn of events against the tobacco industry, raising the question of the appropriate future path for U.S. smoking policy. This paper discusses the theory and evidence on regulation of smoking. I begin by reviewing the background on this industry. I then turn to a discussion of the motivations for regulating smoking, both external and internal to the smoker. I conclude with a discussion of future policy directions.

**I**N THE MID-1990S THE U.S. TOBACCO INDUSTRY appeared to be in its best shape in decades. Cigarette consumption per capita, after a decline of almost 40 percent over the previous fifteen years, actually rose from 1994 to 1995, before declining only slightly in 1996. Smoking among high school-age youth, the traditional pipeline to lifetime consumption of cigarettes, had been rising sharply since the early 1990s. After a price war in the early 1990s, the major industry players appeared to have consolidated their oligopoly, and real prices were steadily rising. Despite decades of lawsuits brought by smokers suffering from smoking-related illnesses or by the relatives of deceased smokers, the industry had yet to pay out a penny of damages to any plaintiff. Moreover, despite continual haranguing against the evils of smoking and calls for sin taxes on cigarettes at both the state and federal levels, this powerful industry had managed to keep real federal and state excise taxes on cigarettes one-third lower, in real terms, than their peak level of the mid-1960s.

The subsequent years, however, have seen a parade of adverse events for the industry. In May 1994 the State of Mississippi filed a lawsuit against the industry to recover the lost medical costs to the state from smoking-related illness, and a number of other states soon did likewise. After an aborted attempt to negotiate a comprehensive settlement of all of its legal woes, the industry agreed to pay

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the states \$246 billion over twenty-five years just to settle the state lawsuits. Shortly after this settlement, the U.S. Department of Justice (DOJ) filed an enormous new lawsuit against the industry to recover the federal government’s medical costs from smoking. More recently, a jury in Florida awarded a class of plaintiffs a record settlement of \$145 billion in their suit against the industry. In addition, the average state and federal excise tax on cigarettes has risen by a third in real terms since 1995, to seventy-six cents per pack. Cigarette consumption has begun to decline rapidly again, falling more than 10 percent from 1996 through 1999.

The rapid evolution of public and private actions against the tobacco industry suggests that the time is ripe for a review and reevaluation of U.S. public policy toward smoking. This paper begins with a brief review of the background on the tobacco industry and smoking in the United States, and of public regulatory and private legal developments over the past decade. I then discuss the economic theory of tobacco regulation, highlighting both traditional conclusions and some reasons to question their validity. Smoking remains the leading preventable cause of death in the United States, and the typical smoker shortens his or her life by about six years.<sup>1</sup> Yet, at the same time, existing taxes vastly exceed traditional estimates of the costs to society imposed by smoking, the common benchmark for setting taxes on addictive substances. Are these taxes really too high? Finally, I offer some discussion of future policy choices. The Florida lawsuit suggests the potential of a wave of private actions that could use enormous legal resources, greatly raise the price of tobacco products, and even bankrupt an industry whose products are used regularly by more than 20 percent of American adults. Even ardent opponents of tobacco use must wonder from time to time if there isn’t a better way to proceed.

## **Background**

Cigarette consumption, as measured by annual per capita sales, grew steadily until the early 1950s (continuing a trend that began back in the mid-1860s), reaching a high of 2,535 cigarettes per capita in 1953 before declining. Growth occurred more slowly until 1981, when per capita consumption reached a high of 2,796 cigarettes. The decline that followed leveled out briefly in the mid-1990s, at around 1,800 and then continued over the past several years. In 1999 ciga-

rette consumption totaled only 1,621 per capita.<sup>2</sup>

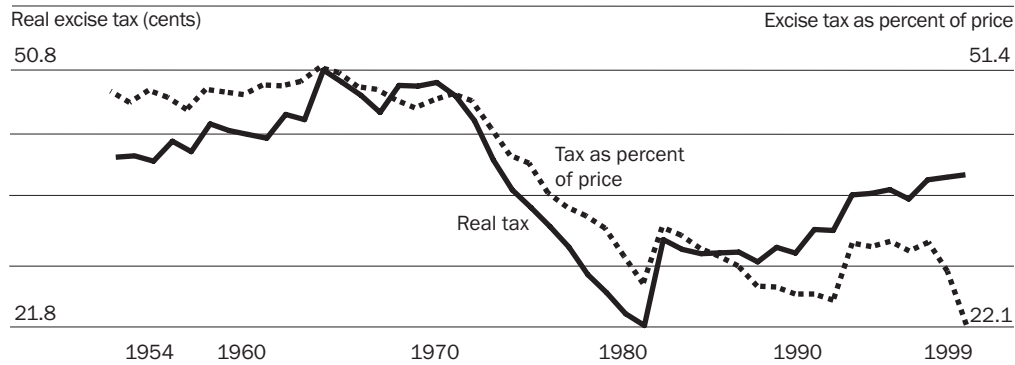
The latest available data show that roughly one-quarter of U.S. adults smoked in 1997.<sup>3</sup> The percentage of men who smoked, 27.6 percent, exceeded the 22.1 percent for women. The percentage of blacks who smoked, 26.7 percent, exceeded the 25.3 percent for whites. In general, these trends mirror the time series of cigarette consumption, although the gaps in smoking between men and women and between blacks and whites have closed over time.

■ **Traditional public regulation.** *Excise taxation.* The public sector has traditionally regulated smoking in one of three ways. The first, and most important, is excise taxation, at both the state and federal levels (some localities tax cigarettes as well). Exhibit 1 shows the evolution of real state and federal excise taxes over time, and the share of those taxes as a percentage of the retail price of cigarettes. Real taxes rose roughly 10 percent from 1955 through the early 1970s, then declined steadily for a decade before the 1983 federal excise tax increase. Taxes were then roughly constant in real terms until federal excise taxes increased in 1991 and 1993 and since have risen in real terms, largely as a result of state actions.

As a share of price, taxes were roughly constant until the early 1970s, fell precipitously until the 1983 excise tax rise, and then fell again until the tax rises of the early 1990s. The tax share has fallen considerably in the past couple of years because of settlement-related price increases and now stands at less than one-quarter, about half the level of thirty-five years earlier. These settlement-related payments can themselves be viewed as a tax, although it is somewhat difficult to assess the price-per-pack cost of these payments, as the recent price increases appear to greatly exceed the

**EXHIBIT 1**

**Federal And State Cigarette Excise Taxation Over Time, 1954-1999**



SOURCE: W. Orzechowski and R. Walker, *The Tax Burden on Tobacco: Historical Compilation*, Vol. 34 (Arlington, Va.: Tobacco Institute, 1999).

settlement costs. Using an estimate of forty-five cents per pack in settlement "tax," the real tax in 1999 would be sixty-six cents (instead of thirty-nine cents), much higher than the postwar peak of real taxes; the tax share would be only 38 percent, well below the postwar peak.

*Smoking restrictions.* The second public regulation is restriction of smoking in public places. Both states and localities have placed a variety of restrictions on smoking in sites such as workplaces, restaurants, and public transportation. As of the end of 1997 all states except Alabama had some form of such regulation, with twenty-one states banning smoking in private workplaces. A number of additional ordinances are in place at the county and local levels, and many sites have voluntarily become smoke-free as well.<sup>4</sup>

*Restrictions on youths' access.* The third set of smoking regulations involves restrictions on youths' access to tobacco products. This was traditionally the purview of state governments, which passed a variety of restrictions on the purchase of tobacco products.<sup>5</sup> However, in July 1992 the Synar amendment was included in the federal Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act. This legislation required that all states have in place by fiscal year 1995 a law prohibiting any manufacturer, retailer, or distributor of tobacco from selling or distributing products to persons under age eighteen. States were expected to enforce these laws by various methods, including conducting random, unannounced inspections, and to develop a strategy and timetable for achieving an inspection failure rate of less than 20 percent.

■ **Tort actions and settlements.** The history of suing the tobacco industry for causing harm to health dates back to 1954. Before the mid-1990s the tobacco industry had won every legal case it faced, with the single exception of a \$400,000 judgment against the Liggett group, which was overturned on appeal.<sup>6</sup> But the tide began to turn in 1994, as the first class-action lawsuit was filed against the industry in *Castano v. American Tobacco Company*.<sup>7</sup> Sixty-five law firms pooled their resources to file this case, which alleged that the tobacco industry had failed to warn adequately about the addictive properties of cigarettes. This suit was ruled too unwieldy by the Fifth Circuit Court of Appeals in 1996, perhaps reflecting the difficulty of pursuing these types of class actions across state lines given very different state regulatory guidelines.<sup>8</sup> But it set the stage for more state lawsuits to follow.

*State suits for Medicaid cost recovery.* On 23 March 1994, the State of Mississippi filed a lawsuit against the industry to recover the state's costs of treating smoking-related illness under its Medicaid program. This lawsuit posed two problems for the industry.<sup>9</sup> First, it

relied on the argument that the industry was liable to the state for medical costs, even if smokers knowingly contributed to their illness; in these cases, the victim was an innocent one (the taxpayer). Second, it was filed shortly after passage of Florida's Medicaid Third-Party Liability Act of 1994 (and the consideration of similar legislation in other states), which allowed the state to sue a manufacturer of an allegedly harmful product for the medical expenses of a group, relying on statistical evidence instead of proving causation and damages in each case. This legislation may have ushered in an era of state legislative and judicial branches' working hand in hand to pursue aggressive actions against manufacturers, beginning with the tobacco industry.<sup>10</sup>

*Industry agreement and settlement.* In the wake of the Mississippi suit, most other states filed similar suits for Medicaid cost recovery. In addition, in early 1996 the largest "fringe" manufacturer, Liggett, broke ranks with the major industry participants to settle with five states, in the process providing a host of secret documents that detailed industry knowledge of the damages of smoking and marketing to youth—further ammunition for additional cases.

In the face of this enormous legal risk, the tobacco industry sat down early in 1997 with the attorneys general of the states filing lawsuits and the lawyers behind *Castano* to hammer out a comprehensive agreement to limit their legal liability. In April 1997 a proposed settlement was announced. The key components were that the industry would agree to pay \$368 billion over twenty-five years to the states, in return for (1) settling the state suits; (2) immunity from future punitive damages as part of individual suits; and (3) immunity from future class-action suits. In effect, this settlement was akin to the industry's buying legal insurance. The price it paid for this insurance was fairly modest, since a key component of the payments was a "volume adjustment" that would tie each company's payment to its volume of cigarette sales, essentially converting the settlement into a tax (with the exception of a \$10 billion up-front payment), which could be passed forward to prices.<sup>11</sup> Given the inelasticity of demand for cigarettes (discussed below), the industry could pass this tax on to prices and suffer only a \$1 billion per year reduction in profits while transferring \$13 billion per year to the states.<sup>12</sup> Thus, in essence, the states, the private attorneys, and the industry privately negotiated a tax increase in return for legal protections for the industry.<sup>13</sup>

*Legislative alternative.* While the attorneys general did have the right to settle their state lawsuits, an act of Congress was required to grant the other legal immunities to the industry. In September 1997 the Clinton administration announced that it was not satisfied

with this tobacco deal and would not endorse legislation to implement it. The key concern was that the “insurance premium” was not large enough; concerns also existed about limited Food and Drug Administration (FDA) jurisdiction over tobacco and other perceived weaknesses. These concerns were highlighted by the jump in tobacco stocks on the day the deal was announced.

In spring 1998 the Clinton administration worked with Sen. John McCain (R-AZ) and others to develop a legislative alternative to the settlement. This alternative differed in a number of key ways from the original settlement. First, there was a much larger payment, \$516 billion, over twenty-five years. Second, the FDA was given stronger regulatory authority over tobacco products, more similar to its authority over pharmaceuticals. Third, regulations on youth smoking were increased, including greater enforcement of youth access restrictions and a sizable “youth lookback penalty,” which imposed both industrywide and company-specific payments based on progress toward meeting stated goals in reducing youth smoking. Finally, the legal protections provided against private lawsuits were more limited, although the state suits were settled in full. The industry immediately announced its opposition to this tougher deal, and this opposition increased as the legal protections were stripped out during congressional debate. The legislation died in June 1998.

*Industry’s counteragreement.* The tobacco industry then went back to the negotiating table with the states and came up with a more limited settlement in November 1998. Under this Master Settlement Agreement (MSA), the industry would make \$206 billion in volume-adjusted payments to the states over twenty-five years, or roughly forty-five cents per pack.<sup>14</sup> The MSA also included voluntary advertising restrictions, such as the removal of billboard advertisements for cigarettes and a ban on using cartoon characters in ads.

One concern about these settlements is that they may not actually reduce industry profitability. The price rise over 1997 and 1998 exceeded the amount required to pay the costs of state settlements by roughly twenty to twenty-five cents per pack. A price increase this large, given the highly inelastic demand for cigarettes, implies that tobacco industry profits would actually rise, as the profit lost through declining sales is more than overcome by the excess profit earned on the remaining packs sold. This possibility raises a central tension in tobacco-control policy: Is the goal to punish the industry or to raise cigarette prices? If the former, then approaches such as settlements or excise taxes may not have the desired effect. If the latter, this excess price increase is a positive outcome.

*More legal woes.* Despite this settlement, however, the industry’s legal woes are far from over. In 1997 Lorillard paid more than \$1.5

million to the family of Morton Horowitz, the first time a U.S. cigarette maker had ever paid a smoking-related personal injury claim, and the industry paid out \$350 million in the Broin case brought by airline attendants who had illness claims related to secondhand smoke exposure. The tobacco industry has also lost several other high-profile cases in recent years, culminating in the Engle case in Florida in July 2000, in which a jury awarded a class of 500,000 smokers \$145 billion in damages. While all of these recent decisions remain subject to appeal, the past invulnerability of the tobacco industry to private lawsuits is clearly being penetrated.

Moreover, in September 1999 the DOJ filed suit against the industry to recover the costs to the federal government of smoking-related illnesses. According to the complaint, these costs to Medicare, the Department of Veterans Affairs, and the Federal Employees Health Benefits Program amount to more than \$20 billion per year. The complaint also seeks additional damages under a racketeering charge against the industry, alleging a conspiracy since the early 1950s to defraud the public about the dangers of smoking. The medical cost recovery part of this complaint was rejected by the courts, but the racketeering portion remains a risk to the industry.

## Optimal Tobacco Regulation

■ **Optimal tax levels.** The standard economics framework for modeling addiction is best represented by the “rational addiction” model of Gary Becker and Kevin Murphy.<sup>15</sup> In this model, individuals recognize the addictive nature of choices they make but may still make them because the gains from the activity exceed any costs through future addiction. Rational addiction has subsequently become the standard approach to modeling consumption of goods such as cigarettes.

The key normative implication of the Becker-Murphy model is that the optimal regulatory role for government related to smoking is solely a function of the societal costs induced by smoking.<sup>16</sup> Since smoking, like all other consumption decisions, is governed by rational choice in this model, the fact that smokers impose enormous costs on themselves is irrelevant; only the costs they impose on others provide the rationale for a mandate for government action.

*Measuring the costs to others.* A large literature is devoted to measuring the societal costs associated with smoking.<sup>17</sup> Willard Manning and colleagues suggest that these net costs were only about sixteen cents per pack in 1986. This low-sounding estimate reflects the fact that the increased health costs imposed by smokers on others in group insurance and public programs are offset by smokers’ premature death, which reduces the costs of health insurance for the eld-

erly under Medicare and of defined-benefit pensions, most notably Social Security. The Congressional Research Service updated this analysis to 1995 with an estimate of thirty-three cents per pack, still well below the average level of state and federal excise taxation. Even this low figure is the subject of considerable controversy, as Kip Viscusi claims that smoking actually generates net benefits for society.<sup>18</sup>

However, these estimates may be too low for a number of reasons. The first is the health costs of secondhand smoke, arising through increased risk of lung cancer and (even more importantly) cardiac disease. The size of such costs is quite ambiguous and controversial. While Viscusi claims that there is little credible evidence of significant costs associated with secondhand smoke, Frank Chaloupka and Ken Warner suggest that such costs may amount to as much as seventy cents per pack.<sup>19</sup> A second issue involves pregnant women. Smoking leads to an increased incidence of low-birthweight babies, which imposes both short-run costs of medical care and long-run costs of special education. Bill Evans and colleagues present a detailed calculation showing that these costs may amount to forty-two to seventy-two cents per pack.<sup>20</sup> Of course, both of these cases raise the difficult issue of what share of costs to the family from secondhand smoke and to one's children from low birthweight should be considered internal and what share external.

A third potentially sizable effect that remains outside this framework includes the loss in workplace productivity from smoking. Earlier calculations include an increase in sick days but not lower productivity. This is only a cost to others to the extent that it is not reflected in wages; Phillip Levine and colleagues do show that smokers are paid much lower wages, but they do not compute whether this fully compensates for any productivity reduction.<sup>21</sup>

Finally, a more modest but potentially nontrivial effect is the annoyance to nonsmokers from smoking. If each U.S. nonsmoker would value the cost of not dealing with smokers at \$10 per year, this would amount to more than ten cents per pack of cigarettes sold.

*Rational addiction model.* Beyond the measurement of the costs to society associated with smoking, there is a more fundamental issue, which is the applicability of the rational addiction model on which these government policy arguments are premised. There are a number of reasons to question whether the assumptions of the rational addiction model apply to smoking decisions. In particular, Botond Köszegi and I have argued that the decision to smoke is more fruitfully modeled in a framework that allows smokers to be "time inconsistent."<sup>22</sup> In the traditional economics model, when individuals assess decisions over time, they are equally impatient in

evaluating decisions today versus decisions in the distant future. But time inconsistency arises when individuals are more impatient when evaluating trade-offs between today and tomorrow than when evaluating trade-offs in the future. In the simplest form of such a model, the “naïve” version, individuals do not recognize this impatience. For example, they truly believe that even though they cannot quit smoking today, they can easily quit at some point in the future (“I’ll start my diet tomorrow”). In the more complicated version of this model (the “sophisticated” version), individuals appreciate the costs of today’s impatience, but they cannot control it (“I wish I could quit but I can’t”). While the appropriate form of this model probably varies by the decision setting, psychological evidence from laboratory settings uniformly suggests that this is a more appropriate way to model choice over time than is the traditional economics approach.

A host of casual evidence suggests that smokers, in particular, are time inconsistent. Naïve, time-inconsistent consumers are distinguished by an inability to realize desired future levels of smoking. In fact, smokers commonly state their intentions to quit at some future date but don’t actually quit. Eight of ten smokers in America express a desire to quit their habit.<sup>23</sup> Among high school seniors who smoke, 56 percent say that they will not be smoking five years later, but only 31 percent of them have in fact quit five years hence. Moreover, among those who smoke more than one pack per day, the smoking rate five years later among those who stated that they would not be smoking (74 percent) is actually higher than the smoking rate among those who stated that they would be smoking (72 percent).<sup>24</sup>

Other types of time-inconsistent consumers (labeled “sophisticated” by the time-inconsistency literature) will understand that they will be smoking in the future and want to stop but are unable to do so. This is because they always want to put off the pain of quitting; given that they are impatient today but patient tomorrow, it always makes more sense to quit tomorrow. But when tomorrow arrives, they are impatient again, and thus never quit.

An important piece of evidence of this type of behavior is found in smokers’ demand for self-control devices, which lower the attractiveness of smoking.<sup>25</sup> People regularly set up socially managed incentives to refrain from smoking by betting with others, telling others about the decision, and otherwise making it embarrassing to smoke.<sup>26</sup> Various punishment and self-control strategies for quitting are also widely studied in controlled experiments on smoking cessation, and they are recommended by both academic publications and self-help books.<sup>27</sup> In one study, for example, subjects tore up a dollar bill for every cigarette they smoked above their given daily limit and

*“The corrective effect of higher cigarette prices operates more strongly on the poor than on the rich.”*

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reduced that limit gradually. Presumably, these experiments incorporate self-control devices because such devices are seen as the best option for helping people quit smoking, as could be the case if they were time inconsistent.

Köszegi and I investigated the implications of time inconsistency within the Becker-Murphy rational addiction framework.<sup>28</sup> We found that with these plausibly more realistic preferences, there is a strong case for government intervention above and beyond interpersonal effects. In essence, government regulatory policy acts as the self-control device that time-inconsistent agents desire to help in controlling their habits and corrects any misperceptions among “naïve” agents about the addictiveness and health impacts of smoking. In effect, cigarette taxes correct the “internalities” (the effects on one’s own health), as well as the externalities, of smoking.

This distinction is not an academic one. The internal costs of consuming a pack of cigarettes, because of the enormous mortality implications of smoking, is more than \$32, on average.<sup>29</sup> If even a small part of those internal costs count, then it could suggest much higher optimal taxes on smoking. For example, Köszegi and I considered a case with modest time inconsistency (much more modest than is suggested by the psychological literature) and with only death-related externalities from smoking (not the adverse effects of reduced health), and concluded that the optimal tax is at least \$1.80 per pack more than is suggested by externalities alone.

This is only one class of alternatives to the Becker-Murphy formulation; Fritz Laux discusses other important potential failures of the rational addiction framework, particularly focused on problems with decision making by youths who are becoming addicted to cigarettes.<sup>30</sup> A critical goal for future work must be to empirically assess the magnitudes of these deviations from full rational addiction. But the important general point is that when standard public finance analyses suggest that the appropriate tax on addictive products is equal only to their external costs, those analyses are implicitly embracing a rational addiction model that makes a number of strong assumptions. Given the enormous magnitude of the internal costs to smoking, alternative models that consider the possibility of “internalities” must be considered seriously in designing regulatory policy toward addictive goods.

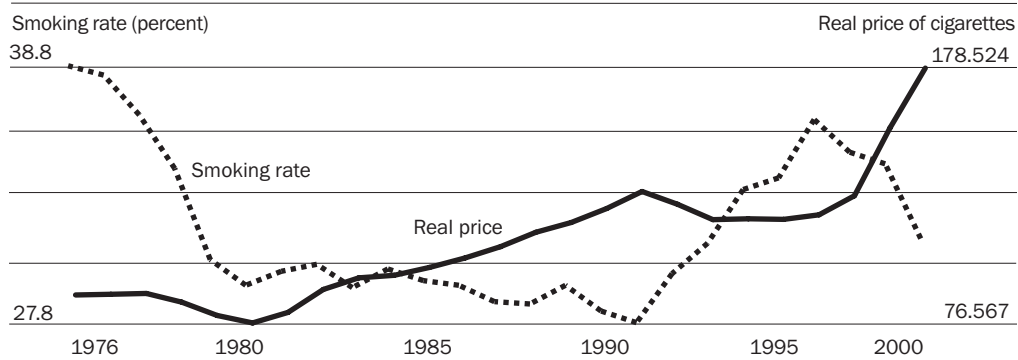
■ **Distributional considerations.** The discussion thus far has

considered only the efficiency implications of tobacco tax levels. But another major concern is the distribution of those taxes. This concern arises because smoking has become socioeconomically concentrated. The smoking rates in 1994 of the lowest income quartile were almost twice those of the highest quartile. This is a marked change from twenty years earlier, when smoking rates were similar across quartiles.<sup>31</sup> Expenditures on tobacco products as a share of family income fell from 4 percent in the bottom income quintile to only 0.5 percent in the top income quintile.<sup>32</sup> This pattern raises a concern that increased cigarette taxes will be excessively burdensome on those with the lowest incomes.

Once again, however, these calculations implicitly embrace a rational addiction framework. As Kőszegi and I have argued, when one recognizes that smoking decisions may not be made in a time-consistent fashion, the regressivity of cigarette taxation is greatly reduced or even reversed. This is for two reasons. First, since the poor smoke more, they benefit more from the corrective effect of higher cigarette prices in a time-inconsistent model. Second, the poor are much more sensitive to cigarette prices than are those with higher incomes; indeed, Kőszegi and I have estimated that, among the lowest income groups, cigarette expenditures actually fall as prices rise, while there is a much more modest response among higher income groups. As a result, the corrective effect of higher cigarette prices described above operates more strongly on the poor than on the rich. That is, cigarette taxation is beneficial to the poor, while mildly harmful to the rich.

■ **Youth versus adult smoking.** Much of the public policy concern over smoking revolves around youths. While youth smokers only account for 2–3 percent of the packs of cigarettes smoked, more than three-quarters of smokers begin smoking before their nineteenth birthday. Smoking (defined as any cigarette consumption over the past thirty days) among high school seniors fell dramatically in the late 1970s, declined slowly in the 1980s, then rose rapidly beginning in the early 1990s, before declining again in recent years (Exhibit 2).<sup>33</sup>

*Price-sensitivity.* What explains these time trends in youth smoking? Jonathan Zinman and I investigated a number of hypotheses.<sup>34</sup> We found that the rise in youth smoking in the 1990s cannot be explained by changes in background characteristics or by changes in youth attitudes toward smoking. But a clear candidate remains: cigarette prices. Indeed, as Exhibit 2 shows, there is a striking correspondence between youth smoking rates and cigarette prices: Youth smoking fell in the 1980s as prices rose, quickly rose again in the mid-1990s as prices fell, and then declined sharply in the late 1990s

**EXHIBIT 2****Smoking Among High School Seniors And Prices Over Time, 1976–2000**

**SOURCES:** W. Orzechowski and R. Walker, *The Tax Burden on Tobacco: Historical Compilation*, Vol. 34 (Arlington, Va.: Tobacco Institute, 1999); and data from the Monitoring the Future Project, University of Michigan, 2001.

as prices rose again.

Zinman and I also investigated the price-sensitivity of youth smokers, using data on high school seniors over 1991–1997 from the Monitoring the Future (MTF) survey.<sup>35</sup> We found that the price-sensitivity of smoking participation in this population is quite high, with a central estimated elasticity of  $-0.66$ ; that is, for every 10 percent rise in cigarette prices, smoking falls by 6.6 percent. This estimate is more than three times as large as the best estimates of the price elasticity of smoking participation among adult smokers.<sup>36</sup> But even this very high price elasticity suggests that prices can explain only about 25 percent of the rise in youth smoking in the mid-1990s. Moreover, this price elasticity would have predicted a 32 percent decline in youth smoking since 1997, whereas the actual decline was only 14 percent. So other factors clearly are at work.<sup>37</sup>

*Impact of other public policies.* Zinman and I also investigated the impact of other public policies on youth smoking—in particular, clean air laws and youth access restrictions. We found no evidence that these other policies play a systematic role in lowering youth smoking. Thus, we concluded that taxation is the most important public policy instrument available for reducing youth smoking.

*Effect of youth smoking on adult smoking.* Another critical issue is the extent to which changes in youth smoking affect levels of adult smoking. Despite the fact that most smokers start as youths, the answer here is not obvious, since much of the simple correlation between teen and adult smoking may reflect unobserved heterogeneity rather than a causal role for starting as a youth. Thus, it is possible that reductions in youth smoking only cause those predisposed to smoking for other reasons to wait until their adult years to begin smoking, when higher incomes are available to finance ciga-

rette purchases. To estimate the long-run impact of price increases or other policies targeted at youth smoking, one must measure the true underlying causal effect of youth smoking on smoking later in life.

Zinman and I have presented two pieces of evidence to suggest that there is a sizable intertemporal correlation.<sup>38</sup> First, there is a very strong correlation of 0.5 across cohorts—as opposed to individuals—in the smoking rate as youths and as young adults, even when time trends and trends in smoking among older cohorts are taken into account. Second, and more convincingly, persons who faced higher cigarette taxes as youths are less likely to smoke as adults, even when the contemporaneous tax rate is accounted for. These estimates also take into account fixed effects for both state of residence and state of birth, to control for underlying social tastes for smoking in both sites. Thus, if half of the rise in youth smoking in the 1990s persists into adulthood, it will result in 3.2 million years of life lost for this cohort.<sup>39</sup>

### **What Now? A Federal Menu Of Choices**

■ **Let the lawsuits proceed.** The federal government now faces a menu of choices with respect to the tobacco industry. At one extreme, it can sit back and let the lawsuits proceed—both private lawsuits and those of the DOJ. The disadvantage of this approach is that the tort mechanism is haphazard and inefficient for reducing tobacco use in the United States, and the legal processing costs and fees paid to lawyers are enormous.

Moreover, it is quite difficult to predict how the industry will react to huge damages or settlements. On the one hand, they may collude to pass these costs on to prices. If cigarette taxes are too low, then further price increases may enhance social welfare, but these increases may go beyond the optimal level. On the other hand, the industry may find itself unable to pass these cost increases on in the form of prices, either because of collusion difficulties or because of fringe companies that are granted an enormous cost advantage by assessments only on the major industry players. Some firms might go bankrupt and pass their brands to new entities that do not face the same legal risk. This could undercut the very goals of anti-smoking advocates, as these new entities would not be subject to penalties and thus could set low prices for their products.

As noted above, a key tension that underlies this environment is the desire of anti-tobacco advocates to raise cigarette prices as high as possible to deter smoking, on the one hand, and to punish cigarette manufacturers for past misdeeds, on the other hand. These goals are generally in conflict, as a monopolized industry would

*“It appears that the United States is headed toward a future of much higher cigarette prices.”*

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maximize both price and profits of the manufacturer. Advocates must acknowledge this conflict and choose their policy positions carefully.

■ **Shield the industry against legal risk.** At the other extreme, the government can intervene, providing the industry with the kind of legislative shield against legal risk that it sought through the proposed 1997 attorneys general settlement, perhaps in return for some level of payment and tighter regulation of tobacco products. But providing a legal shield for the industry is a risky strategy as well. There is enormous uncertainty about the “optimal” cigarette price that would capture accurately at least the externalities—and perhaps also some of the internalities—of smoking. In addition, the federal government does not have an enviable track record for regulating this industry, and once the lobbying begins, there is some risk that the insurance would be sold too “cheaply.” A trade-off that involves settlement of current lawsuits but no new lawsuits also would cause enormous perceived inequities for those smokers who have not yet brought smoking-related claims. This could set a disturbing precedent, if future corporate entities see a possibility of avoiding tort liability by signing government agreements.

■ **Ease the path to higher prices.** Whatever route the government chooses, it appears that the United States is headed toward a future of much higher cigarette prices, which in turn will lead to reductions in consumption. There are two steps that can ease the transition path to this new world. The first step is to increase public funding for smoking cessation, such as subsidized or free provision of quitting aids. An enormous body of evidence suggests that such policies provide a cost-effective means of lowering smoking rates.<sup>40</sup> Any revenues garnered from the DOJ suit, for example, could be used to subsidize cessation interventions for existing smokers.

The second step is to increase efforts to limit youth smoking. Increases in the price of cigarettes are probably the most effective way to limit youth smoking. But there is also evidence (albeit controversial) that coordinated access restrictions across all forms of sale—enforcing age limits in stores, banning cigarette vending machines in public places, and so on—can greatly lower youth smoking.<sup>41</sup> These effects would be magnified if a uniform national access policy were pursued. Since the tobacco industry itself likely has information on how to best manipulate youth use of its product, the

government as part of any settlement (or legislation) could include financial incentives for the industry to reduce youth smoking, along the lines of the “lookback” penalties proposed in the McCain bill.<sup>42</sup>

Finally, the fact that youths appear to think that they will not be addicted to smoking suggests that standard information campaigns that emphasize the long-term costs of smoking are not likely to be effective. Rather, the government should highlight the short-run implications of smoking in terms of reduced physical performance, appearance, and other costs important to youths. Specific penalties for youths, such as loss of drivers’ licenses if caught purchasing cigarettes when underage, would bring the costs into the time frame on which these youths appear to be focused.

EVENTUALLY, A MUTUALLY ACCEPTABLE DEAL between government regulators and tobacco companies might emerge around some mix of settlement payments and limited protection from lawsuits. For example, the government could mandate a cap on punitive damages that would provide some protection without altogether eliminating the possibility of future lawsuits that smokers might bring. In return, the government could receive settlement payments and perhaps the right for the FDA to regulate tobacco products; these settlement payments could be used to finance cessation and youth smoking interventions. Any such compromise solution would best be approached through an expert nonpartisan or bipartisan commission that could debate the issues at arms’ length from the political pressures that beset Congress when it attempts to discuss this issue.

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**NOTES**

1. D. Cutler et al., “The Economic Impacts of the Tobacco Settlement,” *Journal of Policy Analysis and Management* 21, no. 1 (2001): 1–19.
2. W. Orzechowski and R. Walker, *The Tax Burden on Tobacco: Historical Compilation*, Vol. 34 (Arlington, Va.: Tobacco Institute, 1999). This volume, which is the standard reference on tobacco data, was produced by the Tobacco Institute, an industry lobbying arm that emerged from the 1998 settlement with the states. All data in this section are from this volume unless otherwise stated.
3. Data for 1997, as well as historical data going back to 1955, are available at the Centers for Disease Control and Prevention Web site, <www.cdc.gov/

- tobacco/research\_data/adults\_prev/prevali.htm> (21 December 2001).
4. See P.D. Jacobson and J. Wasserman, *Tobacco Control Laws: Implementation and Enforcement* (Santa Monica, Calif.: RAND, 1997).
  5. See J. Gruber and J. Zinman, "Youth Smoking in the U.S.: Evidence and Implications," in *Risky Behavior among Youth: An Economic Analysis*, ed. J. Gruber (Chicago: University of Chicago Press, 2001).
  6. For a full history of legal action, see <www.tobacco.org>.
  7. *Castano v. American Tobacco Company*, 160 F.R.D. 544, 31 Fed. R. Serv. 3d 1306 (E.D. La. 1995), *rev'd*, 84 F.3d 734 (5th Cir. 1996).
  8. J. Bulow and P. Klemperer, "The Tobacco Deal," *Brookings Papers on Economic Activity: Microeconomics* (1999): 323–394.
  9. *Ibid.*
  10. These suits did not directly relate the damages to the net cost of smoking to the state but rather to the gross costs of increased medical care to the state, not net of any savings through reduced pensions or even excise tax collections.
  11. This settlement mandated that payments be passed forward to prices.
  12. Bulow and Klemperer, "The Tobacco Deal."
  13. *Ibid.* The impact on industry profitability computed by Bulow and Klemperer ignores the collusive aspects of price setting in this industry. As argued below, the settlement of state lawsuits may have actually increased profitability.
  14. This is in addition to settlements that were reached during 1998 with Mississippi, Florida, Texas, and Minnesota for roughly \$40 billion.
  15. G.S. Becker and K. Murphy, "A Theory of Rational Addiction," *Journal of Political Economy* 96, no. 4 (1988): 675–700.
  16. *Ibid.*
  17. See W. Manning et al., "The Taxes of Sin: Do Smokers and Drinkers Pay Their Way?" *Journal of the American Medical Association* 261, no. 11 (1989): 1604–1609; W.K. Viscusi, "Cigarette Taxation and the Social Consequences of Smoking," in *Tax Policy and the Economy*, ed. J. Poterba (Cambridge, Mass.: MIT Press, 1995), 51–101; F.J. Chaloupka and K. Warner, "The Economics of Smoking," in *Handbook of Health Economics*, ed. A.J. Culyer and J.P. Newhouse (New York: North-Holland, 2000): 1539–1628; and W. Evans, J. Ringel, and D. Stech, "Tobacco Taxes and Public Policy to Discourage Smoking," in *Tax Policy and the Economy*, vol. 13, ed. J. Poterba (Cambridge, Mass.: MIT Press, 1999), 1–56.
  18. Viscusi, "Cigarette Taxation and the Social Consequences of Smoking."
  19. *Ibid.*; and Chaloupka and Warner, "The Economics of Smoking."
  20. Evans et al., "Tobacco Taxes and Public Policy to Discourage Smoking."
  21. P.B. Levine, T.A. Gustafson, and A.D. Velenchik, "More Bad News for Smokers? The Effects of Cigarette Smoking on Labor Market Outcomes," *Industrial and Labor Relations Review* (April 1997): 493–509.
  22. J. Gruber and B. Köszegi, "Is Addiction 'Rational'? Theory and Evidence," *Quarterly Journal of Economics* (November 2001): 1261–1303.
  23. J. Burns, "Looking to the Future," *Business and Health* 10 (1992): 21–22.
  24. U.S. Department of Health and Human Services, *Preventing Tobacco Use among Young People: A Report of the Surgeon General* (Washington: National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health, 1994).
  25. These are to be distinguished from quitting aids. Whereas quitting aids decrease the disutility from not smoking, self-control devices lower the utility from smoking. Time-consistent decisionmakers might use a quitting aid when they decide to stop smoking, but in general they won't use a self-control device: With time consistency, either they want to smoke or they don't, and lowering the utility of an undesired alternative is irrelevant for decision making. But for some types of time-inconsistent agents, self-control devices are

- valued as a means of combating one's own time-inconsistent tendencies.
26. J.O. Prochaska et al., "Self-Change Processes, Self-Efficacy, and Self-Concept in Relapse and Maintenance of Cessation and Smoking," *Psychological Reports* 51 (1982): 983-990.
  27. D.A. Bernstein, "The Modifications of Smoking Behavior: An Evaluative Review," in *Learning Mechanisms in Smoking*, ed. W.A. Hunt (Chicago: Aldine, 1970), 3-41; J.L. Miller, "Self-Control in the Elimination of Cigarette Smoking: Case Histories Using a Changing Criterion Design" (Master's thesis, Western Michigan University, 1978); R.G. Murray and S.A. Hobbs, "Effects of Self-Reinforcement and Self-Punishment in Smoking Reduction: Implications for Broad-Spectrum Behavioral Approaches," *Addictive Behaviors* 6, no. 1 (1981): 63-67; and J. Grabowski and S.M. Hall, "Tobacco Use, Treatment Strategies, and Pharmacological Adjuncts: An Overview," in *Pharmacological Adjuncts in Smoking Cessation*, ed. J. Grabowski and S.M. Hall, National Institute on Drug Abuse Research Monograph Series no. 53 (Washington: NIDA, 1985), 1-13. See also "You Can Quit Smoking," Tobacco Information and Prevention Source, <[www.cdc.gov/tobacco](http://www.cdc.gov/tobacco)> (21 December 2001).
  28. Gruber and Kőszegi, "Is Addiction 'Rational?'"
  29. *Ibid.*
  30. *Ibid.*; and F.L. Laux, "Addiction as a Market Failure: Using Rational Addiction Results to Justify Tobacco Regulation," *Journal of Health Economics* 19, no. 4 (2000): 421-437.
  31. Evans et al., "Tobacco Taxes and Public Policy to Discourage Smoking."
  32. Congressional Budget Office, *Federal Taxation of Tobacco, Alcoholic Beverages, and Motor Fuels* (Washington: U.S. Government Printing Office, 1990).
  33. Gruber and Zinman, "Youth Smoking in the U.S."
  34. *Ibid.*
  35. *Ibid.*
  36. W. Evans, M. Farelly, and E. Montgomery, "Do Workplace Smoking Bans Reduce Smoking?" *American Economic Review* 89, no. 4 (1999): 728-747.
  37. This finding mirrors the other findings of the volume in which this paper appears (*Risky Behavior among Youth*, ed. Gruber). The basic conclusions of this series of studies are that (1) youths respond rationally to incentive variables such as prices and penalties on risky behavior, but (2) time trends in these incentives (and in other variables) cannot explain much of the volatile trends over time in youth risk taking.
  38. Gruber and Zinman, "Youth Smoking in the U.S."; and J. Gruber, "Youth Smoking in the 1990s: Why Did It Rise and What Are the Long Run Implications?" *American Economic Review* 91, no. 2 (May 2001): 85-90.
  39. Gruber, "Youth Smoking in the 1990s."
  40. U.S. Department of Health and Human Services, *Report of the Surgeon General: The Health Benefits of Smoking Cessation* (Washington: U.S. GPO, 1990); and "Cigarette Smoking among American Teens Continues Gradual Decline" (University of Michigan press announcement, 17 December 1999).
  41. L.A. Jason et al., "Active Enforcement of Cigarette Control Laws in Prevention of Cigarette Sales to Minors," *Journal of the American Medical Association* 266, no. 22 (1991): 3159-3161.
  42. An interesting trade-off with such policies is whether the incentives should apply to the industry as a whole or to specific companies. Bulow and Klemperer, "The Tobacco Deal." On the one hand, there are likely to be industry-wide components to efforts to raise or lower youth smoking, and gathering brand-specific information on smoking rates may be difficult. On the other hand, if individual companies are not targeted, then there may be free-rider problems in getting any company to reduce their targeting of youth smoking.