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The Straw to Break the Camel's Back

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**SYNOPSIS:** TEENAGE CIGARETTES SMOKING is sensitive to the price of cigarettes. The most recent research suggests that a 10% increase in price would reduce the number of teenagers who smoke by 7%. If the proposed 43-cent hike in the Federal excise tax rate on cigarettes contained in the Hatch-Kennedy Bill were enacted, the number of teenage smokers would fall by approximately 16%. This translates into more than 2.6 million fewer smokers and more than 850,000 fewer smoking-related premature deaths in the current cohort of 0 to 17-year-olds. Adjusted for inflation, the current 24-cent-a-pack tax costs the buyer about half of the original cigarette tax of 8 cents imposed in 1951. A substantial tax hike would curb youth smoking; this strategy should move to the forefront of the antismoking campaign.

**TEXT:**

These are not good times for the U.S. cigarette industry. For decades, policy makers and consumer activists have unsuccessfully attempted to rein in the tobacco industry. Now, new legal strategies are bearing fruit, more stringent regulations regarding the marketing and sales of cigarettes are being implemented, and a bill to significantly increase cigarette taxes has been put before the Senate. A large cigarette tax complements the gains made on other fronts by making cigarettes less desirable to teenagers, the next generation of addicts.

Thirty-two states to date have filed lawsuits accusing the tobacco industry of hiding knowledge of the adverse effects of smoking and seeking compensation for billions of dollars in Medicaid costs incurred for treatment of people with smoking-related illnesses. In March of this year, the Liggett Group, Inc., the smallest of the five leading cigarette makers, agreed to a settlement in which it acknowledged that the nicotine in tobacco is addictive, that tobacco causes cancer, and that cigarette companies had deliberately marketed their products to teenagers for many decades. The company also agreed to pay a quarter of its pretax profits annually to the 24 states for the next 25 years.

In mid-April, it was disclosed that the two biggest cigarette makers, Philip Morris Companies and RJR Nabisco Holdings Corporation, had initiated negotiations with 24 state attorneys general to settle the Medicaid lawsuits. These corporations, like Liggett, have offered to disclose their research on smoking and health and specifically to make known the hundreds of chemical additives in cigarettes. Under their proposed settlement, the companies would make payments of more than \$ 250 billion over the next 25 years to compensate states and individuals for the costs of cigarette-related illnesses and would create a fund of as much as \$ 500 million to educate young people about the risks of smoking. They would also submit to sweeping new Food and Drug Administration (FDA) regulations authorized by the Clinton administration in August 1996, regulations that the companies had previously vowed to challenge in court. Under these regulations, the FDA would be renamed the Food, Drug, and Tobacco Administration.

In late April 1997, Judge William L. Osteen Sr. of the Federal District Court in Greensboro, North Carolina, upheld the FDA's power to regulate nicotine on the basis that it is a drug and to regulate cigarettes on the basis that they are drug delivery systems. However, he also ruled that the agency lacked the authority to control advertising intended for young people because Congress had not given it this power. This does not mean that the advertising restrictions will not eventually take effect, as

the judge did not rule that these restrictions violate the Constitution's protection of free speech. The Federal Trade Commission, which Congress has empowered to control advertising, could impose them. The Clinton administration will appeal the part of the ruling prohibiting the FDA from regulating cigarette advertising. However, if the final settlement of the Medicaid lawsuits includes restrictions on advertising and if these are included in consent decrees and ratified by Congress, the legal barrier to FDA control over advertising might be eliminated.

Under one of the new FDA regulations that took effect on February 28, 1997, cigarette customers who appear younger than age 27 must supply proof to retailers that they are at least 18. Effective August 28, 1997, other measures to discourage teenage smoking--including restrictions on advertising--will go into effect. If the Clinton administration wins its appeal of Judge Osteen's ruling, cigarette vending machines will not be permitted except in certain nightclubs and other places where people under 18 cannot go. Sales of cigarettes in packs of fewer than 20 and distribution of free samples will not be allowed. Billboards within 1000 feet of schools and playgrounds will be banned. All advertisements in magazines favored by teenagers as well as all outdoor cigarette advertising will be restricted to black-and-white, text-only presentations. Logos of cigarette brands will no longer be permitted on T-shirts, gym bags, or baseball caps. Beginning August 28, 1998, cigarette makers will be allowed to display only their corporate logos--without brand names--at sporting events.

It is not surprising that the new FDA regulations focus on curtailing youth smoking. Numerous studies have shown that roughly 90% of smokers begin the habit as teenagers. [n1] Each day, approximately 6000 youths try a cigarette for the first time, and about half of them become daily smokers. [n2] Among people who have ever smoked daily, 82% began smoking before age 18. [n1] Thus, cigarette control policies that discourage smoking by teenagers may be the most effective way of achieving long-run reductions in smoking in all segments of the population.

The upward trend in teenage smoking in the 1990s is alarming to public health advocates. Between 1993 and 1996 the number of high school seniors who smoke grew by 14%. [n3] At the same time the number of tenth grade smokers rose by 23%, and the number of eighth grade smokers rose by 26%. [n3]

The FDA regulations approach the problem of youth smoking by curtailing access to cigarettes and attempting to reduce the appeal of cigarettes by putting limits on cigarette advertising. Increased taxation, which results in higher prices, is another means to accomplish the goal of discouraging young people from smoking. Unfortunately, increases in the Federal excise tax rate on cigarettes have not been motivated by a desire to curtail smoking. The purpose of each of the three tax increases since 1951 was to raise tax revenue or reduce the Federal deficit rather than to discourage smoking. The tax was fixed at 8 cents per pack between November 1, 1951, and the end of 1982. It rose to 16 cents per pack effective January 1, 1983, as part of the Tax Equity and Fiscal Responsibility Act of 1982. The tax was increased further to 20 cents per pack effective January 1, 1991, and to 24 cents per pack effective January 1, 1992, as part of the Omnibus Budget Reconciliation Act of 1990. But if the tax had simply been adjusted for inflation each year since 1951, it would be 47 cents per pack today; therefore, in effect today's tax is *much lower* than the 1951 tax.

A 43-cent tax hike is proposed in a bill introduced by Senators Orrin G. Hatch and Edward M. Kennedy in this Congress. As with past tax increases, the primary focus is not to discourage teenage smoking. The goal of the tax increase in the Hatch-Kennedy Bill is to finance health insurance for low-income children who are currently uninsured. Two-thirds of the estimated annual \$ 6 billion increase in tax revenue would be allocated for grants to the states to provide health insurance for children below the age of 18 whose low-income working parents do not qualify for Medicaid. The remaining one-third would be applied to reducing the Federal deficit.

The industry has known and public health advocates have come to realize, however, that an increase in the cigarette tax can influence the behavior of smokers. The American Cancer Society, the Robert Wood Johnson Foundation, and other members of the antismoking lobby are supporting a proposal to raise state cigarette tax rates to a uniform \$ 2 per pack nationwide in the next few years, from the current range of 2.5 cents in Virginia to 82.5 cents in Washington State. According to John D. Giglio, manager of tobacco control advocacy for the American Cancer Society: "Raising tobacco taxes is our number one strategy to damage the tobacco industry. The . . . industry has found ways around

everything else we have done, but they can't repeal the laws of economics." [n4]

The cigarette industry's recognition of the potency of excise tax hikes as a tool to discourage teenage smoking is reflected in a September 1981 Philip Morris internal memorandum written by Myron Johnson, a company economist, to his boss, Harry G. Daniel, manager of research on smoking by teenagers. The memo was written in reaction to a National Bureau of Economic Research (NBER) report authored by Michael **Grossman**, Eugene M. Lewit, and Douglas Coate, which was later published in the *Journal of Law and Economics*. [n5] In the memo Johnson wrote: "Because of the quality of the work, the prestige (and objectivity) of the NBER, and the fact that the excise tax on cigarettes has not changed in nearly 30 years we need to take seriously their statement that '...if future reductions in youth smoking are desired, an increase in the Federal excise tax is a potent policy to accomplish this goal.' [**Grossman** et al.] calculate that...a 10% increase in the price of cigarettes would lead to a decline of 12% in the number of teenagers who would otherwise smoke." [n6]

### Why Taxes Work

There are strong logical reasons for expecting teenagers to be more responsive to the price of cigarettes than adults. First, the proportion of disposable income that a youthful smoker spends on cigarettes is likely to exceed the corresponding proportion of an adult's smoker's income. Second, peer pressure effects are much more important in the case of youth smoking than in the case of adult smoking. [n7] Interestingly, peer pressure has a positive multiplying effect when applied to teenage smokers: a rise in price curtails youth consumption directly and then again indirectly through its impact on peer consumption (if fewer teenagers are smoking, fewer other teenagers will want to emulate them). Third, young people have a greater tendency than adults to discount the future.

The "full" price to an individual of a harmful smoking addiction is the price of cigarettes plus the monetary and emotional costs to the individual of future adverse health effects. The importance and value placed on these future health effects varies among individuals and especially with age. Becker, **Grossman**, and Murphy have shown that young people are more responsive to the price of cigarettes than adults because they give little weight to the future, while adults are more sensitive to perceived or known future consequences. [n8] Young people may underestimate the health hazards of and the likelihood that initiation of this behavior leads to long-term dependency. And, even when fully informed, teenagers have a tendency to give a great deal of weight to present satisfaction and very little weight to the future consequences of their actions.

Becker and Mulligan [n9] argue that children become more future oriented as the result of an investment process. Many of the activities of parents and schools can be understood as attempts to make children care more about the future. Some parents and schools succeed in these efforts, but others do not. These failures are particularly troublesome because of the two-way causality between addiction and lack of a future orientation. People who discount the future more heavily are more likely to become addicted to nicotine and other substances. [n10] And the adverse health consequences of these substances make a future orientation even less appealing.

Consumers are not unaware of the dangers of smoking. A survey by Viscusi [n11] suggests that both smokers and non-smokers overestimate, not underestimate, the probability of death and illness from lung cancer due to tobacco. Teenagers, who have less information than adults, actually attach much higher risks to smoking than the rest of the population. Other risks of cigarette smoking, including the risk of becoming addicted, may, however, be underestimated.

Cigarette smokers harm others (external costs) in addition to harming themselves (internal costs). The ignored internal costs of smoking can interact with the external costs. A striking example is smoking by pregnant teenage women, who may engage in this behavior because they heavily discount the future consequences of their current actions. Pregnant women who smoke impose large external costs on their fetuses. Numerous studies show that these women are more likely to miscarry and to give birth to low birth weight infants. Some of these infants die within the first month of life. More require extensive neonatal intensive care and suffer long-term impairments to physical and intellectual development.

The conventional wisdom argues that people who are addicted to nicotine are less sensitive to price

than others. Therefore, adults should be less responsive to price than young people because adult smokers are more likely to be addicted to nicotine and, if so, are likely to be more heavily addicted or to have been addicted for longer periods of time. The conventional wisdom that addicted smokers are less sensitive to price has been challenged in a formal economic model of addictive behavior developed by Becker and Murphy, [n10] which shows that a price increase can have a cumulative effect over time.

Since cigarettes are addictive, current consumption depends on past consumption. A current price increase has no retroactive effect on "past consumption" and therefore reduces the amount smoked by an addicted smoker by a very small amount in the short run. But the size of the effect would grow over time because even a small reduction in smoking during the first year after a price increase would also mean a reduction in smoking in all subsequent years. So, for example, 10 years after a price hike, "past consumption" would have varied over a 10-year period.

Changes in the total number of young people who smoke are due primarily to changes in the number of new smokers (starts). [n7] Among adults, changes in the total number of smokers occur primarily because current smokers quit (quits). Clearly, quits are inversely related to past consumption--there are more quitters among those who have smoked the least [n7]--while starts are independent of past consumption. Thus, the effect of price on choosing whether to smoke should be larger for young people than for adults.

### The Evidence

Suggestive evidence of the responsiveness of teenage smoking to the price of cigarettes can be found in recent upward trends in smoking. In April 1993, the Philip Morris Companies cut the price of Marlboro cigarettes by 40 cents. Competitors followed suit. Marlbors are popular among teenagers: 60% reported that Marlboro was their brand of choice in 1993, [n12] while Marlboro had an overall market share of 23.5% in the same year. [n12] In 1993, 23.5% of teenagers in the eighth, tenth, and twelfth grades smoked. [n3] In 1996, 28.0% of the students in these grades smoked; [n3] this represented a 19% increase over a three-year period. Yet during this period, the number of smokers ages 18 years and older remained the same. [n13,n14] Some attribute this increase in teenage smoking to a broad range of social forces thought to be associated with increases in other risky behaviors by teenagers, especially the use of marijuana. But we attribute it to a fall in cigarette prices: between 1993 and 1996 the real price of a pack of cigarettes (the cost of a pack of cigarettes in a given year divided by the Consumer Price Index for all goods for that year) fell by 13%. [n15,n16]

More definitive evidence of the price sensitivity of teenage smoking can be found in two NBER studies that used large nationally representative samples of thousands of young people between the ages of 12 and 17. [n5,n17] These studies capitalized both on the substantial variation in cigarette prices across states (primarily because of different state excise tax rates on this good) and on other state-specific factors such as parents' education and labor market status that may affect the decision to smoke and the quantity of cigarettes consumed. The findings of a 1981 study by **Grossman**, Lewit, and Coate [n5]--the subject of the 1981 Philip Morris internal memorandum--were used by the news media throughout the 1980s and early 1990s to project the effects of Federal excise tax hikes. The authors' 1996 study [n17] has been cited by Senators Hatch and Kennedy as evidence that a major benefit of the tax increase in their health insurance bill would be to discourage youth smoking. [n18]

The **Grossman** et al. 1981 study [n5] used data from Cycle III of the U.S. Health Examination Survey, a survey of almost 7000 young people between the ages of 12 and 17 conducted between 1966 and 1970 by the National Center for Health Statistics. The authors found that a 10% increase in the price of cigarettes would reduce the total number of youth smokers by 12%. Yet teenagers who already smoked proved much less sensitive to price: a 10% increase in price would cause daily consumption to fall by only 2%.

In our 1996 study, [n17] we used data from the 1992, 1993, and 1994 surveys of eighth, tenth, and twelfth grade students conducted by the Institute for Social Research at the University of Michigan as part of the Monitoring the Future Project. Taken together, these three nationally representative samples included approximately 150,000 young people. We found that a 10% increase in price would

lower the number of youthful smokers by 7%, a somewhat smaller effect than the 12% projected in the 1981 study. Consumption among smokers, however, would decline by 6%, which is three times larger than the decline projected in the 1981 study.

Comparable studies of adults have found smaller effects of a projected 10% price increase. In a 1982 study of people age 20 years and older, Lewit and Coate reported that a 10% rise in price would cause the number of adults who smoke to fall by 3% and a decline of 1% in the number of cigarettes smoked per day by those who smoke. [n19] In a 1991 study of adult smokers, Wasserman et al. [n20] found that a 10% increase in price would cause the number who smoked to fall by 2% and the number of cigarettes smoked per day to fall by 1% while in a 1995 study Evans and Farrelly found declines of 1% in both categories. [n21] Based on the most recent estimates, a 10% increase in the price of cigarettes would reduce the number of teenagers who smoke by 7% [n17] while it would reduce the number of adults who smoke by only 1%. [n21] Daily consumption of teenage smokers would fall by 6%, while daily consumption of adult smokers would fall by 1%.

### **Price Increases as a Policy Tool**

The proposed 43-cent cigarette tax hike in the Hatch-Kennedy Bill would, if fully passed on to consumers, raise the price of a pack of cigarettes by approximately 23%. According to our 1996 study, the number of teenage smokers would fall by approximately 16% and the number of cigarettes consumed by teenage smokers would decline by approximately 14%. Some of these smokers might compensate for a reduction in the number of cigarettes smoked by switching to higher nicotine and tar brands, inhaling more deeply, or reducing idle burn time. These factors, while representing a public health concern, are not relevant in evaluating the effect of an excise tax hike on whether an individual chooses to smoke at all.

Since very few smokers begin smoking after the ages of 20, [n1] these relatively large reductions in the total number of teenage smokers imply that excise tax increases are very effective ways to prevent the onset of a habitual behavior with serious future health consequences. A 16% decline in the number of young smokers associated with a 43-cent tax hike translates into over 2.6 million fewer smokers in the current cohort of 0 to 17-year-olds. Using a common estimate that one in three smokers dies prematurely from smoking-related illnesses, we can calculate that over time a real (adjusted for inflation) 43-cent tax increase would reduce smoking-related premature deaths in this cohort by over 850,000. And larger tax increases would result in even bigger reductions in the number of young smokers and the number of premature deaths.

A tax hike would continue to discourage smoking for successive generations of young people and would gradually affect the smoking levels of older age groups as the smoking-discouraged cohorts move through the age spectrum. Over a period of several decades, aggregate smoking and its associated detrimental health effects would decline substantially.

The effect of a price or tax hike also grows over time because of the addictive nature of smoking: a small reduction in current cigarette consumption by smokers due to a tax hike would decrease consumption in all future years to follow. Becker, **Grossman**, and Murphy [n22] have estimated that each 10% rise in price causes the number of cigarettes consumed by a fixed population (number of smokers multiplied by cigarettes consumed per smoker) to fall by 4% after one year and by as much as 8% after approximately 20 years.

**Caveats.** Several caveats are required in evaluating the benefits of a tax hike. First, for a cigarette tax increase to continue at the same level in real terms, it would have to be indexed to the rate of inflation. The same objective could hypothetically be accomplished by converting to an *ad valorem* cigarette excise tax system under which the cigarette tax is expressed as a fixed percentage of the manufacturer's price. The latter approach has one limitation: the Congressional Budget Office points out that it might induce manufacturers to lower sales prices to company-controlled wholesalers to avoid part of the tax. [n23]

Second, Ohsfeldt, Boyle, and Capilouto have reported that the number of males between the ages of 16 and 24 who use smokeless tobacco would rise by approximately 12% if a state excise tax rate on cigarettes rose by 10%. [n24] Some would view such an increase with alarm because smokeless

tobacco increases the risks of oral cancer and other oral diseases. [n25] On the other hand, Rodu [n26] argues that these elevated risks are very small and are more than offset by reductions in cigarette-related cancers and heart disease. The substitution of smokeless tobacco for cigarettes could be discouraged by raising the Federal excise tax on smokeless tobacco. But this would raise the cost of a safer nicotine delivery system than cigarettes and could be viewed as an unfair penalty on those who cannot give up their addiction.

Third, in strictly financial terms, we would expect a tax hike to yield higher rates of return in the short run than in the long run because of its cumulative effect in reducing smoking. The Becker et al. study [n22] implies that a Federal excise tax rate on cigarettes of approximately \$ 1.00 a pack would maximize long-run Federal revenue from the tax at roughly \$ 13.3 billion annually approximately 10 to 20 years after the new rate is in effect--only \$ 7.6 billion more than the revenue from today's 24-cent tax. Clearly, the 67-cent tax in the Hatch-Kennedy Bill, which is expected to yield an additional \$ 6 billion annually for the next few years, will have a much smaller yield in the long run.

The gap between long-run and short-run tax yields highlights a danger of justifying a cigarette tax increase to achieve goals other than reductions in smoking. For a while, public health advocates can have their cake and eat it too. But after a number of years, the large cumulative reduction in smoking would take a big bite out of the tax revenues initially generated by the tax hike. One would hardly like to see the development of a situation in which fiscal needs create pressure on the government to encourage smoking or at least not discourage it. The extensive advertising campaigns conducted by state-run lotteries are examples of the danger of the government becoming too dependent on revenue from a harmful addiction.

## Conclusion

We would like to see politicians and public health advocates focus discussions of the appropriate Federal cigarette excise tax rate squarely on the issue of reducing smoking. Both external costs and ignored internal costs justify the adoption of government policies that interfere with private decisions regarding the consumption of cigarettes.

Taxing cigarettes to reduce smoking by teenagers is a rather blunt instrument because it imposes costs on other smokers. But an excise tax hike is a very effective policy with regard to teenagers because they are so sensitive to price. The current Federal excise tax of 24 cents on a pack of cigarettes is worth about half in real terms of the 8-cent tax in effect in 1951. A substantial real tax hike to curb youth smoking should move to the forefront of the antismoking campaign.

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**GRAPHIC:** Pictures 1 through 3, no caption