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The Tobacco Deal

Q. Could you please explain the recent historic tobacco settlement?

A. Sure. Basically, the tobacco industry has admitted that it is killing people by the millions, and has agreed that from now on it will do this under the strict supervision of the federal government.

Dave Barry[1]

ON JUNE 20, 1997, the largest cigarette companies, most state attorneys general, and trial lawyers agreed to a comprehensive settlement of tobacco litigation: the tobacco resolution. By settling litigation largely in return for tax increases on cigarettes, the resolution was a superb example of a win-win deal. Agreeing to a tax increase that would cost the companies about $1 billion a year in lost profits and yield the government about $13 billion a year in revenues made all the parties to the deal happy. The companies would settle lawsuits cheaply, smoking would decline because of the price increase, state governments would raise taxes under the name of "settlement payments," and the lawyers would be able to argue for contingency fees based on tax collections instead of the much smaller cost to companies. Only consumers, in whose name class action suits were filed, would lose out.

We thank Ian Ayres, Jonathan Baker, Jack Calfee, Jonathan Gruber, Peter Reiss, our colleagues and seminar participants, and members of the Brookings Panel on Microeconomic Activity for their comments. After this paper was completed, Bulow was named Director of the Bureau of Economics, Federal Trade Commission. The views expressed here are his and Klemperer's and do not reflect those of the FTC or its commissioners.

1. David Barry, "Tobacco Road's Toll; Except for Lawyers, It'll Go Up in Smoke," Knight-Ridder Newspapers, August 10, 1997.

In effect the resolution facilitated collusion among the companies to raise prices. (That the proceeds were used to buy off the states and lawyers is irrelevant to this point.) The only problem was that antitrust authorities might challenge the resolution's collusive pricing and the related provisions deterring market entry for new companies, provisions needed to maintain collusive prices.[2] Therefore these terms of the deal and others, especially the protections against future litigation, required congressional legislation. The Senate Commerce Committee approved the National Tobacco Policy and Youth Smoking Reduction Act, better known as the McCain bill, after its chief sponsor Senator John McCain. The McCain bill was based on the resolution, but it evolved into anti-tobacco legislation after lobbying by antismoking groups, which had declined to participate in the settlement negotiations. The companies fought back with television ads, denouncing the bill as a huge tax increase, and it was killed on June 17, 1998, to be replaced in part by a scaled-down agreement reached in November 1998 between the states and the tobacco companies.

This paper analyzes the major economic issues raised by the resolution and bill. We do not debate whether dramatically increasing cigarette taxes is good social policy.[3] Nor do we address whether giving companies protection from class action suits is a good idea. Instead, without taking sides on the major normative issues, we assume certain objectives for the major players and ask how a better deal could be achieved for them all.

We assume that the companies focus on maximizing shareholder value, public health officials on reducing the adverse health conse-

2. The FTC did object strongly to a provision in the resolution that would have given the deal antitrust immunity. See U.S. Federal Trade Commission (1997).

3. See, for example, Gravelle and Zimmerman (1994), who conclude that 33 cents a pack, an amount considerably below current excise taxes, was both the best and median estimate of studies that have estimated the externalities involved in smoking. Also see Viscusi (1994), who contends that although tar and nicotine yields are about 25 percent of what they once were, most mortality calculations have been based on epidemiological studies going back to the 1950s and 1960s and on smokers who spent years puffing cigarettes much more toxic than those that are now on the market. Viscusi concludes that smokers actually saved society money by dying younger and represent a break-even proposition if claims about the effects of secondhand smoke are taken at face value. Hanson and Logue, however, contend that smokers do not rationally assess the damage that cigarettes cause to them and that a tax of $7.00 or more a pack should be imposed to force them to make correct calculations about smoking.

quences of smoking, and the government on enacting a politically popular bill that raises tax revenues subject to a constraint on the cost to the firms. Aiming for political popularity means placing a special emphasis on reducing (or seeming to reduce) smoking among young people. The trial lawyers want to maximize their take.

The paper begins with some background on the economics of the industry in 1997, followed by a brief description of the legal environment. In this context we then discuss the economic issues.

We first review the kinds of taxes imposed by the bill and argue that very different kinds would have better served all parties' purposes. The bill's unusual fixed-revenue taxes yield lower prices and raise less tax revenue at a *higher* cost to the firms than ordinary specific taxes would yield. Ad valorem taxes would probably have been an even better choice, especially to combat youth smoking. And public health advocates, at least, should prefer to tax tar and nicotine rather than the volume of cigarettes.

We next address the proposed damage payments and legal protections. The distribution of damage payments demonstrates clearly that the settlement reflects a negotiation based on companies' differing abilities to pay rather than a punishment based on their relative responsibilities for tobacco-related problems. We also focus on the perverse incentive effects of the proposed legal protections, which would have produced a further bonanza for lawyers.

We challenge the proposition that the bill was primarily focused on youth smoking. Many widely proposed youth smoking measures were never adopted or were even relaxed during the amendment process. Although a focus on overall smoking rather than youth smoking makes sense from a public health standpoint, it is inconsistent with the language of the bill and the surrounding rhetoric.

We also challenge the conventional wisdom on the importance of youth smoking to the companies. Certainly companies compete aggressively to win new smokers because smokers tend to be very brand loyal. But this competition increases costs and holds down prices, so the present value of profits from new smokers is very small. Therefore the marketing restrictions included in both the resolution and the bill would have reduced youth smoking at very little cost to the companies' shareholders.

We consider the fees proposed for the lawyers (Texas's lawyers alone

Table 1. Cigarette Sales and Profits, by Major Company, 1997

Company	Unit sales (billions of cigarettes)[a]	Market share (percent)	Operating revenues (millions)	Operating profits (millions)	Profits as percent of revenue
Philip Morris	235	49.2	10,663	4,824	45
RJR	117	24.5	4,895	1,510	31
Brown and Williamson	77	16.2	3,114	801	26
Lorillard	42	8.7	1,915	777	41
Liggett	6.5	1.3	235	20	9
Industry	478	100	20,822	7,932	38

Sources: Company 10k reports for all but Brown and Williamson. Operating profits are reported profits plus reported settlement costs deducted from profits. For example, Philip Morris reported domestic tobacco operating profits of $3,267 million. Brown and Williamson data are from its Web site, www.bw.com. Go to site index and then to B&W annual review. B&W operating profits are from a phone conversation with Sanford C. Bernstein analyst Gary Black. Column 5 is calculated as column 4 divided by column 3.

a. There are twenty cigarettes to a pack.

have claimed $2 billion) and the equally remarkable exemption for Liggett that would have produced more than $400 million a year in pretax profits for a company with a presettlement market value of about $100 million. Although Liggett's turning "state's evidence" may have been a significant turning point in the battle against "big tobacco," we question the bases on which these rewards were calculated.

We next discuss the individual state settlements that were modeled on the national resolution but were the only deals left after the failure of the national legislation. As collusive agreements that effectively impose federal excise taxes for the exclusive benefit of one plaintiff, these deals set very dangerous precedents. The multistate settlement of November 1998 is equally bad.[4] After offering some radical solutions, we conclude with views about how a better deal for all parties might be negotiated.

The U.S. Tobacco Industry

The tobacco industry in 1997 was a tight oligopoly dominated by four highly profitable firms controlling about 98 percent of the market—

4. Most of this paper was written in early summer 1998 after discussion at the June 1998 meeting of the Brookings Panel on Economic Activity: Microeconomics. The section on the multistate agreement was written in November 1998, but, as we argue here, this agreement resolved little and does not affect our analysis and conclusions about the earlier resolution and bill.

Table 2. Product Mix, by Major Tobacco Company and Market Shares across Segments, 1997

Percent

Company	*Sales in premium segment*	*Sales in branded discount segment*	*Sales in generic and private label segment*	*Market share, premium segment*	*Market share, discount segments*
Philip Morris	86	12	2	58	26
RJR	63	31	6	21	34
Brown and Williamson	43	51	6	10	35
Lorillard	94	6	0	11	2
Liggett	25	15	60	0.5	3.5

Sources: Column 1, for Philip Morris and RJR, company, 10k reports. For Brown and Williamson, Lorillad, and Liggett, Federal Trade Commission (1997, table 7). Breakdown between columns 2 and 3, Federal Trade Commission (1997). Columns 4 and 5 are taken from the 10k reports of Philip Morris, RJR, and Liggett. Column 4 for Lorillard is from the Loews' Corporation 10k report. Column 5 for Lorillard is based on the Federal Trade Commission (1997, table 7). Columns 4 and 5 for Brown & Williamson are calculated from the company's market share and Federal Trade Commission (1997, table 7).

Philip Morris, RJR, Brown and Williamson, and Lorillard. A fifth firm, Liggett, had a 1.3 percent share of the market.[5] Advertising restrictions—tobacco advertising has been banned on TV and radio in the United States since 1971—and the prospect of becoming embroiled in the industry's legal woes severely hindered entry on a major scale. Further deterrents to entry were the declining size of the market and the strong brand loyalty of most customers (see the section on the value to the companies of the youth market). There are also some economies of scale, but these are not too large at the scales of the major firms. Philip Morris, which has half the market, has average costs that are just 5 cents a pack lower than fourth-ranked Lorillard, which has less than 10 percent of the market. Given the enormous profitability of the major companies, scale economies cannot be the primary barrier to large-scale entry.[6] Table 1 briefly summarizes the size and profitability of the five leading firms.

The market was divided into premium, discount, and deep discount cigarettes. Table 2 shows the companies' different positions in these segments, and table 3 shows the implications for their profitabilities.

5. In addition to these five companies, more than one hundred fringe firms held in aggregate perhaps 0.1 percent of the market when the settlement was reached (Federal Trade Commission, 1997, p. 1). These fringe firms were growing rapidly, attaining an estimated 1.1 percent of the market by 1998. See Black and Rooney (1998).

6. Economies of scale, including economies in distribution, may be more important in hindering smaller-scale entry, however.

Table 3. Product Mix and Profitability, by Major Tobacco Company, 1997

Company	*Percent of sales in premium segment*	*Revenue per pack (cents)*	*Costs per pack (cents)*	*Profits per pack (cents)*
Philip Morris	86	91	50	41
RJR	63	84	58	26
Brown & Williamson	43	81	60	21
Lorillard	94	92	55	37
Liggett	25	73	67	6
Industry	73	87	54	33

Sources: Federal Trade Commission (1997, table 7) and calculations from table 1.

Although average costs of manufacturing premium and discount cigarettes vary by only a few cents, wholesale prices for premiums are 18.5 cents a pack higher than for discounts and 34 cents a pack higher than for deep discounts.[7] These price differentials mean that most of the market's profits are earned on the premium brands. This explains why Lorillard, with a market share of less than 10 percent, is almost as profitable as Philip Morris, while RJR and Brown and Williamson, with intermediate market shares, lag behind in profitability. Liggett's much poorer profitability seems due both to the company's much weaker position in the more attractive market segments and to its higher costs.[8]

Because different firms have different presences in the premium and discount segments, they have a conflict of interest on pricing. Table 4 presents an abbreviated history of price changes since 1990 and shows a striking change in the relative prices of the three market sectors in 1992–93. In April 1992 premium cigarettes sold for $1.10 a pack at wholesale, discounts at 97 cents, and deep discounts at 36 cents. The discount segments grew to 36 percent of the market. Philip Morris and RJR aggressively attempted to increase their market shares and took 60 percent of the business in those segments. They then tried to increase prices. When adequate cooperation from Brown and Williamson and

7. For example, according to the company's 10k report filed with the Securities and Exchange Commission, Liggett's average costs for its discount cigarettes are about 3.7 cents a pack less than its costs for its premium cigarettes.

8. One contributing factor to these higher costs is that Liggett's chief executive officer pays himself about 25 percent more than the CEO of Philip Morris, even though Philip Morris's market value and profitability are 500 times as great as Liggett's. His pay comes to considerably more than a penny a pack. See the company 10k reports filed with SEC.

Table 4. Prices of Premium and Discount Cigarettes, Selected Months, June 1990–August 1998

Cents per pack

Month and year	*Premium*	*Discount*	*Deep discount*
June 1990	89.3	65.0	35.5
December 1990	94.3	70.0	40.5
January–February 1991	94.5	70.2	40.7
March 1991	96.0	75.2	40.7
June 1991	99.5	83.2	43.2
November 1991	105.0	88.7	45.7
April 1992	110.5	96.7	35.75
July–August 1992	115.5	75.7	39.75
November 1992	121.0	81.2	43.75
January 1993	121.2	81.4	43.95
February 1993	121.2	81.4	51.9
March 1993	123.2	83.4	56.9
August 1993	83.9	83.4	56.9
November 1993	87.9	83.4	60.9
May 1995	90.9	83.4	63.9
April–May 1996	94.9	83.4	67.9
March 1997	99.9	83.4	67.9
September 1997	106.9	90.4	74.9
January 1998	109.4	92.9	77.4
April 1998	112.4	95.9	80.4
May 1998	119.4	100.9	85.4
August 1998	125.4	106.9	91.4

Source: Authors' calculations based on data from U.S. Department of Agriculture. Premium brand prices can be found at *http://www.econ.ag.gov/briefing/tobacco/Table8.htm*. Includes leading brands. A 3 percent discount is made for payment within ten days or 2 percent within fourteen days. Discount and deep discount prices (including federal excise taxes) can be found at http://www.econ.ag.gov/briefing/tobacco/Table7.htm.

Liggett was not forthcoming, Philip Morris announced a cut of 40 cents a pack in the price of Marlboros on April 2, 1993, dubbed "Marlboro Friday." After Marlboro Friday premium cigarettes sold for 84 cents, discounts for 83 cents, and deep discounts for 57 cents. By March 1998, before a series of price increases to offset the effect of state settlements went into effect, prices had risen to $1.00 for premiums, remained at 83 cents for discounts, and had risen to 68 cents for deep discounts. Predictably, the combined share of the discount and deep discount market has fallen steadily since 1993 to about 27 percent; the deep discount segment in particular has collapsed to about 4 percent.[9]

9. Prices in this paragraph and the current size of the deep discount market are from table 4. Market share numbers are from Eben Shapiro, "Cigarette Burn: Price Cut on

The higher price of deep discount cigarettes sold by the five largest firms has encouraged some small-scale entry at the low end. Smaller firms now have about 1 percent of the market, selling mostly discount cigarettes at wholesale prices of about 34 cents a pack.[10]

Although the industry is highly profitable, it is clear that full cooperation among the players would lead to much higher prices still: the demand elasticity is widely estimated to be around −0.4.[11] Sales are declining over time. Consumption has fallen by about 25 percent since 1981, from 640 billion cigarettes a year to 480 billion. This decline has come about because the number of smokers has decreased approximately 10 percent from its peak, and the number of cigarettes consumed per smoker has also decreased. As a result, per capita adult consumption, which peaked at 4,345 in 1963, fell to 2,423 by 1997 (table 5).

Manufacturers sell their cigarettes to thousands of jobbers, who then resell to retailers. Retail sales are divided primarily among convenience stores (47 percent), supermarkets (17 percent), and cigarette-only stores (13 percent). The remaining 23 percent is split among "the vending industry, restaurants, mass merchandisers, warehouse clubs, Indian reservations, and traditional gasoline service stations."[12] One implication is that convenience store owners are a force opposing cigarette tax hikes and rules that would restrict where cigarettes can be sold.

A rough breakdown of the cost of the average pack of cigarettes at retail is given in table 6. Of manufacturing costs, 8–9 cents are for leaf and 3–4 cents for packaging, while fixed manufacturing costs represent only about 2 cents.[13] Although some administrative and marketing ex-

Marlboro Upsets Rosy Notions about Tobacco Profits," *Wall Street Journal,* April 5, 1993, p. A1; and Philip Morris 1997 10k report.

10. See Black and Rooney (1998).

11. Traditional estimates have been in the range of −0.3 to −0.5; see National Cancer Institute (1993). The FTC in its analysis used −0.4. Martin Feldman of Salomon Smith Barney stated that his point estimate was −0.47, although he used −0.36 in some of his calculations. See "Statement of Martin Feldman before the Senate Commerce Committee," March 19, 1998 (available at http://www.tobaccoresolution.com/ctrans/feld03.html). Townsend (1993) cites some higher estimates. The tobacco industry cited a recent study by Becker, Grossman, and Murphy (1994) that estimates a short-run elasticity of −0.45 and a long-run elasticity of −0.75. The FTC, however, cites studies using a similar approach that indicate less elasticity. For example, Chaloupka (1991) estimates −0.27 to −0.37.

12. National Association of Convenience Stores (1998).

13. See the report on Philip Morris by David Adelman, Investment Report 2651147, Morgan Stanley, Dean Witter, March 3, 1998, table 5.

Table 5. Total and Per Capita Consumption of Cigarettes, Selected Years, 1900–97

Year	*Total consumption (billions of cigarettes)*	*Per capita consumption (age eighteen and older)*
1900	2.5	54
1905	3.6	70
1910	8.6	151
1915	17.9	285
1920	44.6	665
1925	79.8	1,085
1930	119.3	1,485
1935	134.4	1,564
1940	181.9	1,976
1945	340.6	3,449
1950	369.8	3,552
1955	396.4	3,597
1960	484.4	4,171
1963	523.9	4,345[a]
1965	528.8	4,258
1970	536.5	3,985
1975	607.2	4,122
1980	631.5	3,849
1981	640.0[a]	3,836
1985	594.0	3,370
1990	525.0	2,826
1995	487.0	2,515
1996	487.0	2,483
1997	480.0	2,423

Sources: 1900–95: Centers for Disease Control Web site *http://www.cdc.gov/nccdphp/osh/consump1.htm*, which cites the following sources: U.S. Department of Agriculture (1987, 1996); Miller (1981, p. 53); and 1996 and 1997 from U.S. Department of Agriculture Economic Research Service, (1998, tables 1 and 2).

a. Peak year.

penses are subject to economies of scale, the barriers to entry are not on the production side. Therefore the industry will be vulnerable to entry in the generic segment if new entrants are given a substantial cost advantage over incumbents as the outcome of litigation or legislation.

The final major firm involved in tobacco litigation in the United States is UST, which sells smokeless tobacco. This business is, if anything, even more profitable than cigarettes. UST's gross tobacco revenues in 1997 were $1.2 billion and its operating margin was approximately 60 percent.[14]

14. UST 10k reports to the Securities and Exchange Commission.

Table 6. Breakdown of Cigarette Prices, 1997 (Cents per pack)

Retail price	190	
− State excise tax		(32)
− Trade margin		(47)
= Wholesale price	111	
− Federal excise tax		(24)
= Operating revenue	87	
− Advertising & marketing		(23)
− Other marketing		(5)
− Manufacturing costs		(20)
− Legal		(2.5)
− Other		(2.5)
= Operating profit	33	

Sources: Retail price, state excise tax, federal excise taxes: Federal Trade Commission (1997, table 8). Advertising, marketing; table 10. Operating revenue per pack and operating profit per pack calculated from table 1. Trade margin calculated as Retail price − State excise tax − Federal excise tax − Operating revenue. Wholesale price calculated as Operating revenue + Federal excise tax. Manufacturing costs: David Adelman (Morgan, Stanley, Dean Witter March 3, 1998 INVESTEXT Report Number 2651147 report on Philip Morris estimates manufacturing costs at 18 cents per pack. Liggett 10k report implies manufacturing costs of about 17 cents a pack for discount cigarettes and 21 cents a pack for premiums. Other marketing and Legal: Estimated from Gary Black, "Tobacco Industry: U.S. Profitability by Manufacturer," Sanford C. Bernstein, INVESTEXT report number 1917209, May 2, 1997, p. 4. Other calculated as operating revenue − advertising & marketing − other marketing − manufacturing costs − legal − operating profit.

Litigation

The three major categories of domestic tobacco litigation are individual personal injury, class action personal injury, and health care cost recovery (mostly brought by governments and unions). Litigation has mushroomed in all three categories. The number of cases Philip Morris was defending rose from 185, 20, and 25 in the three categories on December 31, 1996, to 375, 50, and 105 at the end of 1997. Seventeen of the individual cases and 6 of the class actions involved environmentally transmitted smoke (ETS, or second-hand smoke). RJR was defending 540 cases as of March 3, 1998, versus 54 at the end of 1994.[15]

The current flood of lawsuits, starting in 1994, is called the "third wave" of tobacco litigation. From 1954 to 1965, the companies faced a first wave of tort litigation, generally based on warranty and failure-to-warn claims.[16] The second wave, which ran from 1983 to 1992,

15. The number of cases are from the 10k reports for 1997 filed by the two companies. In addition to its domestic cases, Philip Morris also faced class actions in Brazil, Canada, and Nigeria.

16. Some authors use slightly different dates. Two concise summaries of tobacco tort litigation are Robert L. Rabin, "Tobacco Tort Litigation in the United States,"

again involved individual lawsuits against the companies. Claimants were operating in a more favorable legal environment, but failure-to-warn claims became less credible in light of the health warnings that were displayed on every pack of cigarettes after 1964. These lawsuits were played out as in the Kreps-Wilson-Milgrom-Roberts model of entry deterrence: cases arrived sequentially, most smokers never brought suit, and those who did faced companies that would never settle and would pay millions to fight (and win) each case, staunching the flow of future suits.[17]

Obviously a large contributory factor to the third wave is that the tobacco companies (and smokers in general) have become so despised. But several other factors have tipped the balance against the companies and made suing them far more attractive. For example, Merrell Williams, a paralegal, stole some 4,000 pages of sensitive documents from Brown and Williamson and traded them to Richard Scruggs, a trial lawyer who is the brother-in-law of Trent Lott, the Senate Majority Leader, for a job and some gifts, including the funds to purchase a $109,600 house for cash. Because the documents were stolen, Scruggs could not introduce them directly into a case, but they were copied and distributed widely and anonymously, and University of California Professor Stanton Glantz posted the documents on the World Wide Web on July 1, 1995.[18] These documents, which indicated that the tobacco companies had hidden information about the health effects of smoking, helped plaintiffs erode the defense that health warnings have been posted on cigarette packages since 1965. They helped win an individual case in Florida in August 1996 and have probably led to the discovery of many documents since.[19]

The recent certification of class actions has greatly increased the potential payoff to plaintiffs' lawyers from filing suits. The first such case was *Castano et. al.* v. *The American Tobacco Company et. al.*, in which sixty-five leading law firms together filed a class action suit in

available at www.cnr.it/CRDS/rabin.htm, and Mark Gottlieb, "Chronology," available at www.tobacco.neu.edu/TobaccoTalk/disc1/00000009.htm.

17. Kreps and Wilson (1982); Milgrom and Roberts (1982).

18. Mollenkamp and others (1998, pp. 12, 41, 46, 47).

19. *Carter* v. *American Tobacco Company et al.* No. 95-934-CA Fla Cir Aug. 9, 1996. The American Tobacco Company is now part of Brown and Williamson. The Carter verdict was overturned in the spring of 1998.

March 1994 charging that the tobacco companies had failed to warn smokers adequately about the addictive properties of cigarettes.[20] Although this suit was thrown out as unwieldy by the Fifth Circuit Court of Appeals in May 1996 (after having been approved by a federal district judge), by then the trial lawyers were ready to file individual state class actions.[21]

It became common to argue that despite the health warnings on cigarette packs, there were no adequate warnings of addiction. The state suits to recover health care costs also circumvented the problem that smokers knowingly contributed to their illnesses. Florida's Medicaid Third-Party Liability Act of 1994 represented a new type of legislation, which allowed the state to sue the 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 was said to have been conceived by the Inner Circle, "an exclusive group of 100 personal injury lawyers."[22] The statute barred the assumption-of-risk argument, imposed joint and several liability, and allowed the courts to order damages on the basis of market share, regardless of the brands used by medicaid patients. The legislation was made retroactive, and several other states are in the process of enacting similar legislation.[23]

A turning point in the legal war came in early 1996 when Liggett broke ranks with its rivals and settled with five states.[24] Liggett's position was far different from that of its rivals because it had a market share of less than 2 percent and was teetering on the edge of bankruptcy. It was therefore able to negotiate a light deal in return for handing over secret industry documents that would be damaging to the other companies.[25] It also agreed to admit the dangers of smoking and conceded

20. The law firms each agreed to contribute $100,000 a year to fund the litigation.

21. It would have been difficult to consolidate cases from different states with different fraud and negligence laws as well as different evidentiary laws.

22. Junda Woo, "Tobacco Firms Face Greater Health Liability," *Wall Street Journal,* May 3, 1994, p. A3.

23. See Larry Rohter, "Florida Prepares New Basis to Sue Tobacco Industry," *New York Times,* May 27, 1994, p. A1.

24. Liggett settled with the attorneys general of Florida, Louisiana, Massachusetts, Mississippi, and West Virginia on March 15, 1996. It settled with seventeen more states on March 20, 1997, four states plus the District of Columbia and the Virgin Islands during the rest of 1997, and fourteen states on March 12, 1998.

25. The terms included payments of $1 million a state to be spread over ten years,

that the industry was liable for damages. Settling early, and in effect turning state's evidence, also offered the possibility of a much larger reward for assisting in the other companies' defeat.[26]

Market Valuation of Litigation Risk

The companies now faced a tremendous amount of risk: except for BAT (the owner of Brown and Williamson), which is not a U.S. firm and has most of its assets outside the United States, there was some prospect that companies would ultimately be bankrupted if the lawsuit barrage was left unabated. By early 1997 the stock market appeared to value future domestic tobacco profits at little more than the present value of settling present and future domestic litigation. The market value of RJR illustrates this: on March 31, 1997, the company had non-Nabisco long-term debt of $5.2 billion, $1.5 billion of preferred stock outstanding, and a common stock value of $8.7 billion for a total enterprise value of $15.4 billion. Against this, RJR owned Nabisco shares worth $8.7 billion. This left a residual value for the combined domestic and foreign tobacco businesses of $6.7 billion. The foreign business earned $670 million before taxes in 1997. According to Gary Black of Sanford C. Bernstein, perhaps the leading industry analyst, RJR's foreign business could be sold for approximately 8.5 times pretax earnings, implying a value of $5.7 billion.[27] Therefore the net value of the domestic business cum legal liabilities was approximately $1 billion, or less than the expected operating income for the remainder of the year.[28]

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plus a share of Liggett's currently nonexistent pretax profits (set at 7.5 percent for the first five states, then raised to 27.5 percent after forty-one states settled).

26. Liggett's imaginative legal strategy led to an options grant of 1.25 million shares to its lead attorneys, Marc Kasowitz and Daniel Benson. See Liggett's 10k report. It is possible that Liggett may have realized that settlements with the major companies would be financed largely by increases in cigarette taxes and, as we show later, even a partial exemption from such taxes could enable Liggett to become extremely profitable.

27. Telephone conversation with Black, June 4, 1998. The calculation was based on the market valuation of comparable European manufacturers such as Gallagher and Imperial.

28. Similarly, in explaining RJR Nabisco's eagerness for a settlement, CEO Steven Goldstone stated, "I do not have to tell you that the continuing controversy surrounding our domestic business has caused investors to give that business no value—and I mean zero value when you add up all the components of RJR Nabisco stock. When you realize that today that business earns $1.4 billion operating earnings a year and it has no value

Settlements

The low stock market values of the companies and the increasingly hostile legal environment, combined with new leadership at Philip Morris and RJR, pushed the four large companies to the bargaining table in April 1997. They negotiated simultaneously with two groups of plaintiffs, the state attorneys general who had filed medicaid suits, and the class action lawyers, known collectively as the *Castano* lawyers, who were fighting on behalf of smokers rather than states.[29] There was considerable mistrust between the two groups of contingency-fee attorneys, those representing the states and the *Castano* lawyers. Perhaps as a counterweight to the political connections of Scruggs, who repre-

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from the stock market, there clearly is some up side." Remarks at an October 27, 1997, conference sponsored by the Investor Responsibility Research Center, available at www.irrc.org/profile/tis/conf97/goldston.htm.

The market's valuation of potential litigation losses has created an incentive for firms to spin off their domestic tobacco assets from the rest of their businesses as a way of shielding other assets from litigation. BAT recently announced a spin-off of its tobacco operations from its financial operations, and its stock rose by about 25 percent in one month. According to one investment report, "B.A.T.'s ability to move forward with the spin-off is the envy of its American counterparts, which relish the chance to break up their own conglomerates in an effort to raise shareholder value. Tobacco litigation stands in the way of these moves by U.S. companies. Plaintiffs, who want to prevent the companies from taking any action that may diminish their ability to pay future claims, are prepared to charge them with fraudulent conveyance of assets if they try to break apart." *Investors' Tobacco Reporter*, vol. 2, July 1998, published by the Investor Responsibility Research Center and available at http://www.irrc.org/profile/tis/itr_iss6/page3.htm. A spin-off would not guarantee a company legal immunity. For example, Fortune Brands, the parent of the American Tobacco Company from 1904 to 1994, is a party to ninety-seven lawsuits. (BAT, which purchased American, is contractually obligated to reimburse Fortune for all related legal expenses and damage payments; see Fortune Brands 10k report.) Of course, in this case Fortune spun off its tobacco businesses. Nontobacco assets might be a little more protected from litigation if, say, RJR Nabisco spins off Nabisco than if it spins off R. J. Reynolds.

In early November 1998, the *Financial Times* reported that RJR Nabisco shares "surged by more than 20 percent in recent days amid speculation that the company is about to sell or spin off . . . its overseas tobacco business. . . . [W]orries that anti-tobacco litigants would sue to prevent a spin-off [seem] likely to ease in the near future because U.S. tobacco companies are close to settling the biggest lawsuits pending against the industry—those brought by the states." Richard Tomkins, "RJR Shares Surge 20 Percent: Speculation Over Sale of Overseas Tobacco Business," *Financial Times*, November 4, 1998, p. 17.

29. As of June 1998, forty-one state suits were outstanding. A little fewer than half were filed after the settlement negotiations began. For a comprehensive list of filing dates, see "State Suit Summary," available at http://www.stic.neu.edu/summary.htm.

sented Mississippi and several other states, the *Castano* group added Hillary Clinton's brother, Hugh Rodham, even though he had never tried any major cases and had been only an assistant public defender in Florida.[30] The lead attorney general was Mike Moore of Mississippi. On June 20, 1997, a settlement, the tobacco resolution, was announced.

Because of its terms, the resolution required congressional approval. While awaiting legislation, the four major companies settled state suits with Mississippi (July 1997), Florida (August 1997), Texas (January 1998), and Minnesota (May 1998) on terms modeled after the resolution. The Senate Commerce Committee passed S.1415, the McCain Bill, on April 1, 1998. But the parties to the resolution had made a major tactical blunder by not explicitly including the congressional leadership in the negotiations and by not recognizing the importance of achieving widespread support in the public health community for any settlement.[31] The bill was considerably less favorable to the companies than the resolution and was subsequently amended many times by the Senate, magnifying the costs to the companies and, in the end, eliminating their benefits. The companies then lobbied and advertised heavily against the bill, and on June 17, 1998, the Senate voted against cloture, dooming the legislation. A scaled-down version of the resolution, settling only the states' medicaid claims, was signed on November 23, 1998.

The Tobacco Resolution

The resolution brilliantly satisfied the needs of the tobacco companies for legal protections, the attorneys general for a political win, and the lawyers for big transfers on which to base legal fees. Described as a $368.5 billion deal over twenty-five years, it included a projected $358.5 billion in tax increases, plus $10 billion in lump-sum damage

30. Mollenkamp and others (1998, p. 74).

31. The public health community had largely declined to participate in the negotiations. The exception was Matt Myers of the National Center for Tobacco-Free Kids, but most public health interest groups said that "there's no negotiating with killers" and that using the courts would be a more effective way to achieve their goals. Mollenkamp and others (1998, pp. 188–90).

payments by the companies.[32] Specific taxes were to be increased by 35 cents a pack immediately and by 62 cents after five years, with adjustments for inflation. These tax increases would effectively apply to all U.S. tobacco sellers, not just the settling companies, so that new companies would not find it profitable to enter the market.[33] The resolution would have settled the state claims and eliminated state class action suits (*Castano* claims) and punitive damages for past actions. Individual claims against the industry were to be capped at $1 billion a year, with a four-for-one matching fund set up to subsidize plaintiffs who won judgments against and settlements from the companies.[34] The companies also agreed to significant marketing restrictions and ratified Food and Drug Administration (FDA) regulation of tobacco.[35]

The central trade-off was that the companies would accept an increase in cigarette taxes in return for liability protection. Given standard industry demand elasticity estimates of -0.4 and a current retail price of approximately $2.00 a pack, a 62-cent tax would reduce sales by about 12 percent. Assuming that average profit margins would remain

32. This estimate ignored the inflation adjustment in the tax rate, set at a maximum of 3 percent a year plus the rate of increase in the Consumer Price Index, and ignored the effect on tax revenue of projected declines in smoking. The projection was a simple sum, undiscounted.

33. Nonsettling firms who did not wish to participate in the settlement would have been required to escrow as a bond against future legal claims (for thirty-five years) 150 percent as much money as they would have had to pay in new excise taxes. Furthermore, any distributors and retailers who handled nonsettling firms' products would lose the proposed exemptions from civil liability suits. As a practical matter, the purpose was to force other cigarette producers to "voluntarily" agree to pay the same excise taxes as the four largest firms.

34. A rough calculation of the cost of the resolution to the companies is that the taxes would cost them about $1 billion a year, the $10 billion in lump sum damages are roughly equivalent in cost, settling lawsuits would cost at most $1 billion a year, and the other aspects of the deal would not be very costly (see, for example, the section "Marketing Restrictions"). So, given the firms' domestic pretax profits of $8 billion, the total corresponds to perhaps 40 percent of their value absent any litigation liability. The widespread prediction of securities analysts that passage of the resolution would help tobacco stocks was probably accurate (see the section "Market Value of Litigation Risk").

35. The FDA claimed the right to regulate tobacco in 1996. On August 14, 1998, after the McCain bill collapsed, a federal appeals court ruled that the FDA does not have the authority to regulate cigarettes and smokeless tobacco. See Barry Meier, "Court Rules FDA Lacks Authority to Limit Tobacco," *New York Times,* August 15, 1998, p. A1.

about 33 cents a pack,[36] pretax profits would decline by about $1 billion a year, while the bill would raise about $13 billion a year.[37] This leverage was the primary driver behind the resolution. Effectively, the resolution created a collusive agreement among the companies. By agreeing with the attorneys general that each of the companies would pay a per-pack tax, the companies would push the price of cigarettes closer to the monopoly level, enabling them to pay the states and the attorneys about twice as much as their annual pretax profits without being badly damaged.[38] The fact that the proceeds of the companies' agreement were to be used to buy legal protections does not in any way alter the collusive nature of the arrangement.

36. This assumption is the most important one here. The assumption of constant margins is consistent with log-linear demand in a Cournot model. More generally, in a Cournot model the pass-through rate is equal to $N/[N-1+(\text{slope of industry marginal revenue curve} \div \text{slope of demand curve})]$, where N is the number of firms in the industry. This is a simple generalization of the monopoly analysis in Bulow and Pfleiderer (1983). That is, for linear demand, where the marginal revenue curve is twice as steep as the demand curve, the pass-through rate is less than 100 percent, while for constant-elasticity demand the pass-through rate is more than 100 percent. This matters. For example, if 110 percent of a tax is passed through to consumers, it will probably increase operating profits.

The issue is further complicated by the two-tier industry price structure. Specific taxes of the kind proposed by the resolution probably favor the premium brands and may aid profitability (see the section on specific versus ad valorem taxes).

Jobber and retailer margins are less important, but the FTC assumed that they would be essentially unchanged, which is roughly consistent with empirical studies that indicate a pass-through rate of slightly more than 100 percent of state taxes at the retail level. See, for example, Sumner (1981) and Merriman (1994). The industry, which had incentive to say taxes would be costly, argued that at least 112 percent of any company's price increase would be passed on at retail; see Bozell Sawyer Miller Group (1997). But MIT economist Jeffrey E. Harris calculated that real retailer margins fell by 1.3 percent a year from 1994 to 1997, whereas real manufacturer revenues per pack rose by 4.7 percent. See "Prepared Statement before the Senate Democratic Task Force on Tobacco," table 1, available at http://www.mit.edu/jeffrey/harris/.

37. The resolution scaled taxes so that if sales remained constant, new tax revenues would be $15 billion a year. A 12 percent reduction in sales would reduce this amount to $13 billion. Additionally, current state and federal cigarette excise taxes are about $14 billion a year. Those revenues would also fall by 12 percent. Furthermore, the increase in excise taxes would leave smokers with less money to spend on other goods, ultimately reducing income tax revenues. Allowing for a conventional estimate of a 25 percent offset on income tax collections, the net effect of the resolution on total state and federal revenues would have been an increase of about $8 billion a year.

38. Assuming a current per-pack price of $2, a current profit margin of 33 cents, and a demand elasticity of -0.4, linear demand would imply a monopoly price of about $4.34, while log-linear demand would imply a monopoly price of $6.67.

We are concerned, more broadly than in just this case, that negotiating collusive price increases to settle lawsuits will seem a great way to benefit plaintiffs, lawyers, and defendants at the expense of consumers.[39] This kind of deal would clearly violate the antitrust laws if the companies worked out an equivalent arrangement on their own, and the prospects for mischief with these kinds of settlements are enormous. For example, with a little tinkering the resolution could be restructured to raise prices enough to increase tax revenues still further *and* boost industry profits. Raise the tax to $1.10 a pack but give each company an exemption equal to 10 percent of base year sales. The increase in specific taxes would reduce sales and profits by about 20 percent.[40] But because of the exemption, the companies would increase their pretax profits by about $1 billion a year.[41] Tax revenues net of the exemption would be about $17 billion instead of the $13 billion under the resolution.

For political reasons the per pack payments were called "settlement payments" rather than taxes. The states had an incentive to frame their actions as a victory over "big tobacco" rather than a tax increase on smokers. The contingency-fee attorneys could get fees as a percentage of "damage payments" but maybe not as a percentage of tax increases. And the companies wanted to describe their concessions as being painful rather than admit to having sold out their customers by agreeing to cigarette tax hikes in return for protection from lawsuits.[42]

39. Of course, the class action suits were theoretically filed on behalf of consumers, so the consumers were the plantiffs and suffered a financial loss in the settlement. Their attorneys, however, represented themselves very aggressively.

40. This estimate assumes a log linear demand curve with a current elasticity of −0.4 and a current price of $2. It further assumes that prices will rise by the amount of the tax increase.

41. The lost sales would reduce current profits of $8 billion by $1.6 billion. The rebate of $1.10 on 10 percent of a current 24 billion packs sold each year would increase profits by $2.6 billion, for a net gain of $1 billion.

42. Furthermore, according to the industry's official Web site,

—Under budget-scoring conventions, excise taxes raise only 75 percent of the actual amounts received because of an offset for lost income taxes. (Simplistically, if you spend a dollar on goods and services, someone else will receive a dollar in income and have to pay an average of 25 cents in income taxes.) Settlement payments would not suffer from this offset if they were treated as fees paid to the federal government. So avoiding the tax terminology would allow the federal government to increase spending by more.

—Excise taxes are scored on the "mandatory" side of the budget and thus cannot

The resolution required congressional approval for several reasons. First was the requirement that the terms apply to nonsettling companies. Second were the restrictions on future litigation. Third was the collusive nature of the deal. The resolution specifically included an antitrust exemption for the companies. Whether such collusive price agreements would be legal without national legislation has yet to be tested. This issue takes on greater relevance now that the bill has died but state settlements, modeled on the resolution, remain.

Tax Increases

Although the tobacco deal's overall strategy of substituting taxes for damages seems brilliant (from the point of view of the parties involved), the detailed execution of this strategy seems less well done. The differences between the kinds of taxes that the resolution and bill proposed, and between these and other possible tax instruments, are critical to whether the parties' objectives would be likely to be met. In fact, the taxes started out rather badly designed (in the resolution) and managed to get worse (in the bill).[43]

"Fixed-Revenue" Taxation versus Specific Taxes

The resolution proposed standard specific taxes (taxes at a fixed rate per pack).[44] Instead of setting a tax per pack, however, the McCain bill

be used for discretionary spending items unless a 60 percent super majority votes to waive budget rules. Settlement payments can be treated as user fees that offset discretionary spending.

It was also particularly important for the Senate Commerce Committee not to refer to the payments as taxes, since it has no jurisdiction over tax issues. (Similarly, in the state settlements, avoiding the tax terminology may allow the attorneys general to both negotiate the "damages" and decide how to spend them without consulting the state legislatures—currently a hot political issue in Texas.) See www.tobaccoresolution.com. Click under "The Real Story," "Issue Briefs," and "Why Not an Excise Tax" to find a document labeled "'Excise Tax' Treatment for Industry Payments Is Inappropriate."

43. Economists at the Treasury Department and the FTC made some improvements in the bill.

44. The proposed taxes were an increase of 35 cents a pack the first year, rising to 62 cents in the fifth year. These amounts would then be increased annually by the maximum of 3 percent plus the rate of inflation as measured by the consumer price index. They were set so that if volume remained at 24 billion packs, revenue would equal $8.5 billion in year one, $9.5 billion in year two, $11.5 billion in year three, $14 billion in year four, and $15 billion in year five and later.

specified a total tax bill for years one to five, to be apportioned according to market share. The taxes were set at $14.4 billion in year one (1999), rising to $ 23.6 billion in year five.[45] For year six and thereafter, the original bill specified a switch to a per pack tax, the amount of the tax to be determined by dividing a fixed sum by sales in year five, but this last provision was particularly perverse and was later changed.[46]

It is worth thinking through the impact of the McCain bill's fixed-revenue taxation system. For a monopoly, this would be a lump-sum tax. But the industry "only" earns about $8 billion a year before taxes. Therefore, if the industry were a perfectly functioning cartel, the McCain bill would have put it out of business.[47] However, all estimates of the demand elasticity for cigarettes imply that the market price is well below the monopoly price, so a tax increase would lead to a much smaller loss in profits, and we must think through the McCain fixed-revenue tax program for an oligopoly.

The most salient feature of fixed-revenue taxation is that companies' marginal tax rates will generally be less than their average tax rate. Let the average tax rate per pack be t and the market share of a firm be s. If the firm makes an additional sale that would otherwise have been made by a competitor, its marginal tax rate is just t, because the tax burden on its other sales is unaffected. If selling the additional pack does not affect other companies' sales, however, the firm will have to pay t in taxes on the new pack, but the industry tax burden on inframarginal packs will be reduced by t. Because the firm's market share is s, its tax burden on inframarginal packs is reduced by ts, so the firm's marginal tax rate becomes $t(1 - s)$. Note that for a monopolist the marginal rate is zero, and for a competitive (or very small) firm the marginal rate is equal to the average rate.

45. Before the bill died, the number of years with fixed payments was reduced to three, thanks in part to economists at the Treasury Department and the FTC. Discussion with Jonathan Gruber (Treasury) and Jonathan Baker (FTC).

46. Another provision of the original bill that was subsequently eliminated would have imposed a per pack fee of 2 cents on all overseas sales. Philip Morris, RJR, and Brown and Williamson all have substantial international businesses, with Philip Morris's international volume about three times its domestic volume.

47. Even if we were to assume that the industry colludes on a monopoly price to maximize the rents available in the market and then dissipates some of those rents through marketing competition, the magnitude of the McCain tax would drive the industry out of business. That is, gross revenues net of manufacturing costs but before other nontax expenses are about $16 billion, which is less than the McCain tax.

There are several important implications. First, fixed-revenue taxation gives firms an incentive to focus on building sales through expanding the market rather than by stealing share from competitors. If the goal of the legislation is to reduce smoking, this form of taxation clearly provides the wrong incentives. Second, fixed-revenue taxes give larger firms lower marginal tax rates than smaller firms, and so result in bigger differences in market shares between firms than do ordinary specific taxes. That is, Philip Morris will have a larger market share under fixed-revenue taxation than under specific taxation.[48] Third, because fixed-revenue taxation gives lower marginal tax rates, it results in lower pass-through to prices than does specific taxation. In a Cournot model the pass-through of a small fixed-revenue tax increase in an N firm industry is $(N-1)/N$ times the pass-through of a specific tax increase that yields the same average tax per pack.[49]

The last point has very severe consequences for profitability. Making the conventional assumption that industry demand for tobacco is log-linear, specific taxes are passed through dollar for dollar. So a $1.10 (average) tax increase, the level the McCain bill proposed, imposed through fixed-revenue taxation on a four-firm industry implies only an 82.5 cent pass-through or a five-sixths reduction in current industry margins. In other words, the model (taken literally) implies that fixed-revenue taxation that yields the same per pack rate as a given specific tax reduces industry profits to one-sixth of the level achieved by the specific tax, and of course also yields higher sales of cigarettes than the specific tax.[50] Obviously the parties to the deal, governments who want

48. Under the conventional assumption that demand for tobacco is log linear, a Cournot oligopolist with lower costs than the (unweighted) industry average gains market share under fixed-revenue taxation, but its market share is unchanged under specific taxation. With inelastic constant-elasticity demand, however, a low-cost firm loses market share under either kind of taxation.

49. Because price in a Cournot model depends only on the (unweighted) average of firms' marginal costs plus marginal tax rates, and the average firm has share $s = 1/N$, hence marginal tax rate $[1 - (1/N)]t = [(N - 1)/N]t$ under fixed-revenue taxation. See appendix A for more details. The result in the text also holds true for nonmarginal tax increases with standard demand curves including linear, log linear, constant elasticity, and so forth.

50. Of course, a given average tax rate imposed as a fixed-revenue tax yields a higher tax take (because of the higher sales) than a specific tax imposed at the same rate. Unless the taxes would yield prices above the (no-tax) monopoly price, however, a given total tax take can be raised at a lower cost to firms' profits and at higher prices (thus less smoking) through a specific tax than through a fixed-revenue tax.

taxes, firms who want profits, and public health advocates who want lower smoking, can all do better with specific taxes. Appendix A gives more details of these points.

The quantity adjustment after year five in the bill involved a less subtle mistake. With the tax per pack for the future to be determined by sales in year five, firms were given a significant incentive to sell as much as possible in year five through promotions and by moving sales back from year six and forward from year four. This flaw was ultimately corrected.

The best explanations for the fixed-revenue taxation are that Congress wanted revenue certainty for budgetary purposes and wished to understate the change from the resolution.[51]

Distributional Issues

Because cigarettes are an inferior good—people smoke less as their incomes rise—taxes on cigarettes are highly regressive. Table 7 illustrates the distributional consequences of the original McCain proposal when fully implemented in 2003. The bill would have increased taxes by 9 percent for the average household making less than $30,000 (in 1998 dollars). Consumers with incomes in excess of $30,000 would face a tax increase of less than 1 percent, and taxes for consumers with incomes in excess of $100,000 would increase less than 0.1 percent.[52]

Both the resolution and the bill were careful to deal with the distributional consequences for other interest groups such as tobacco farmers, vending machine owners, quota holders, and even sports events that had been receiving tobacco sponsorship.[53]

51. All of the revenue estimates for the resolution and the bill were made by taking the undiscounted sum of revenue over twenty-five years, assuming no inflation adjustment and no decline in sales, even though volume was likely to fall substantially. By fixing taxes paid each year rather than adjusting for lower sales, the bill's authors could raise the real tax rate without changing the bill's reported size.

52. These distributional effects might have been somewhat mitigated by the primary amendment to the bill, which would have used a third of the revenues to reduce the "marriage penalty" tax on two-income households, particularly those earning less than $50,000 a year. This Republican-sponsored amendment was criticized by some public health advocates who wanted all the revenues to be allocated to public health and antismoking programs. It was also criticized by some Republicans, who opposed the tobacco bill and were concerned that bundling in the tax cut would increase the chance of passage by attracting more Republican support.

53. According to the FAQ page produced by the Senate Commerce Committee,

Table 7. Distributional Effects of the Tobacco Payment Provisions of S. 1415, Calendar year 2003

Income category[b]	Change in federal taxes[c]		Federal taxes under present law[c]		Federal taxes under proposal[c]		Effective tax rate[d]	
	Millions	Percent	Billions	Percent	Billions	Percent	Present law (Percent)	Proposal (Percent)
Less than 10,000	2,544	44.6	6	0.4	8	0.5	6.9	10.0
10,000 to 20,000	3,911	12.3	32	2.0	36	2.2	7.5	8.4
20,000 to 30,000	4,170	5.4	78	4.8	82	5.0	13.2	13.9
30,000 to 40,000	3,796	3.3	114	7.1	118	7.2	16.2	16.7
40,000 to 50,000	2,675	2.2	120	7.4	123	7.5	17.6	18.0
50,000 to 75,000	4,109	1.5	280	17.3	284	17.3	19.5	19.8
75,000 to 100,000	1,884	0.7	252	15.6	254	15.5	22.6	22.8
100,000 to 200,000	446	0.1	351	21.7	351	21.4	24.9	25.0
200,000 and over	65	[e]	383	23.7	383	23.4	29.3	29.3
All taxpayers	23,600	1.5	1,614	100.0	1,638	100.0	20.8	21.2

Source: Joint Committee on Taxation, (1998). Available at http://www.house.gov/jct/x-40-98.htm. Columns may not add because of rounding.

a. Includes gross payments by tobacco companies distributed equivalent to an excise tax.

b. The income concept used to place tax returns into income categories is adjusted gross income (AGI) plus tax-exempt interest, employer contributions for health plans and life insurance, employer share of FICA tax, worker's compensation, nontaxable social security benefits, insurance value of medicare benefits, alternative minimum tax preference items, and excluded income of U.S. citizens living abroad. Categories are measured at 1998 levels.

c. Federal taxes are equal to individual income tax (including the outlay portion of the earned income credit, employment tax (attributed to employees), and excise taxes (attributed to consumers). Corporate income tax is not included due to uncertainty concerning the incidence of the tax. Individuals who are dependents of other taxpayers and taxpayers with negative income are excluded from the analysis. Does not include indirect effects.

d. The effective tax rate is equal to federal taxes described in table note c divided by income described in table note b plus additional income attributable to the proposal.

e. Less than 0.02 percent.

Taxes on Tar and Nicotine Consumption

The bill and the resolution both taxed all cigarettes at the same rate. There was no financial incentive for consumers to switch to cigarettes with less tar or nicotine, and almost none for firms to develop safer cigarettes.

If one makes extreme assumptions that the tar in cigarettes causes all the health problems and that nicotine is the sole cause of addiction, a rational addiction model along the lines of Becker and Murphy's would imply that tar is what should be taxed.[54] It is clear, however, that the public health goals are not based on such a model. If consumers, especially young consumers, are myopic and fail to understand how addictive cigarettes are, nicotine levels are critical to lifetime consumption and should also be taxed.

Taxes should perhaps not just be proportional to a (weighted) sum of tar and nicotine: Smoking low tar and nicotine cigarettes may contribute to an addiction to smoking rather than an addiction to nicotine and, of course, cigarettes may contain other dangerous ingredients. Furthermore, it is often claimed that the machines that the Federal Trade Commission (FTC) uses to determine tar and nicotine levels in cigarettes understate the consumption of real smokers, particularly for low

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"The bill contains legislation drafted by tobacco state Senators to provide comprehensive assistance to farmers and rural communities. Congress is committed to ensuring that innocent, hardworking American farmers and tobacco dependent rural communities will receive the support and assistance they need." The page goes on to say, "The Committee believes the tobacco vending machine companies and employees should be compensated if their industry is adversely affected by a tobacco settlement. The tobacco bill passed by the Commerce Committee would create a non-profit corporation that includes tobacco vending machine industry representatives, to provide payments to vending machine companies. The amount of compensation provided to individual vending companies would be determined by this non-profit Board. The vending machine industry strongly supported this proposal and urged the Committee to include the provision in the bill." Available at http://www.senate.gov/commerce/legis/tobfaq.htm.

Furthermore, quoting from the resolution, title VII A (5): "Beginning in the second year, $75,000,000 [will be allocated] annually for a period of ten (10) years to compensate events, teams or entries in such events, who lose sponsorship by the tobacco industry as a result of this Act."

54. Becker and Murphy (1988). The argument here assumes that health effects are linear in consumption. If smoking twice as much is more than twice as bad, then taxing nicotine might serve as a proxy for taxing heavy smokers disproportionately more. But if smokers can get their nicotine fix from gum and patches, tar and nicotine become less closely tied and the argument for taxing nicotine becomes less compelling.

tar and nicotine brands (although ideally tests should be developed to measure accurately the effects of cigarettes on smokers). A straightforward solution is a tax on cigarettes of the form $Tax = a + b^* Tar + c^* Nicotine$.[55] In any case, it is hard to see the health reason for taxing all cigarettes at the same rate.

There was some implicit recognition of this principle in the resolution and the McCain bill. Title I, Section E5A of the resolution limited cigarettes to a maximum of 12 milligrams of tar based on current testing methods. Both the resolution and the bill continued requirements for publishing tar and nicotine ratings, presumably because that information is useful to consumers. The quantity restrictions, however, would have done nothing to encourage the development of safer cigarettes.[56]

Specific Taxes versus Ad Valorem Taxes

A further issue is whether the taxes should have been ad valorem (proportional to the pretax price, like a value added tax) rather than specific (additive to the pretax price). Currently all taxes (except state sales taxes) on cigarettes in the United States are specific, which is appropriate if the taxes are meant to correct an externality. However, if one imagines that the purpose of the bill was, as stated in its title, youth smoking reduction, ad valorem taxes merit consideration.

Write a firm's profits absent taxes as $\pi = p \cdot q - c$, in which p is the firm's price, q its quantity, and c its total costs. A specific tax of s then

55. One could imagine more complex taxes, but these are problematic if smokers use multiple brands.

Although we are assuming the use of specific taxes in our discussion, a similar formula could be used with ad valorem taxes.

56. Other clauses in the resolution may be detrimental to innovation. For example, the requirement that any safer cigarette technology be cross-licensed across the industry at "reasonable" prices may discourage R&D. The bill contained a provision making it difficult for a company to get approval from the secretary of health and human services that a cigarette was "reduced risk." According to section 913 (2) (B) "the Secretary shall take into account (i) the risks and benefits to the population as a whole, including both users of tobacco products and non-users of tobacco products; (ii) the increased or decreased likelihood that existing users of tobacco products will stop using such products including reduced risk tobacco products; (iii) the increased or decreased likelihood that those who do not use tobacco products will start to use such products, including reduced risk tobacco products; and (iv) the risks and benefits to consumers from the use of a reduced risk tobacco product as compared to the use of products approved under chapter V to reduce exposure to tobacco."

results in profits $\pi_s = p \cdot q - (c + s \cdot q)$, while an ad valorem tax of $100t$ percent results in profits $\pi_t = [p/(1 + t)] \cdot q - c$, which can be rewritten as $\pi_t = \{1 - [t/(1 + t)]\}[p \cdot q - (1 + t)c]$. So while a specific tax corresponds to a fixed increase in marginal costs, an ad valorem tax can be thought of as the sum of a profit tax and a multiplicative tax on *all* costs. A specific tax causes substitution from the taxed attribute (quantity) to other attributes (quality).[57] Relative to a specific tax, an ad valorem tax greatly reduces the incentive to spend on advertising and promotion and gives a strong incentive to cut (pretax) price, because it effectively multiplies a firm's perceived elasticity by $(1 + t)$.[58]

In short, specific taxes encourage firms to produce and market high-priced and highly promoted premium brands, while ad valorem taxes encourage the sale of low-priced generics. Figure 1 shows how pretax prices vary with the level of specific taxes across the European Union.[59]

The advantage of specific taxes, then, is that they will lead to higher average prices, which would lead to lower consumption, other things being equal.[60] But correspondingly higher ad valorem taxes can achieve the same price levels without the same level of promotional activity; ad

57. Barzel (1976).

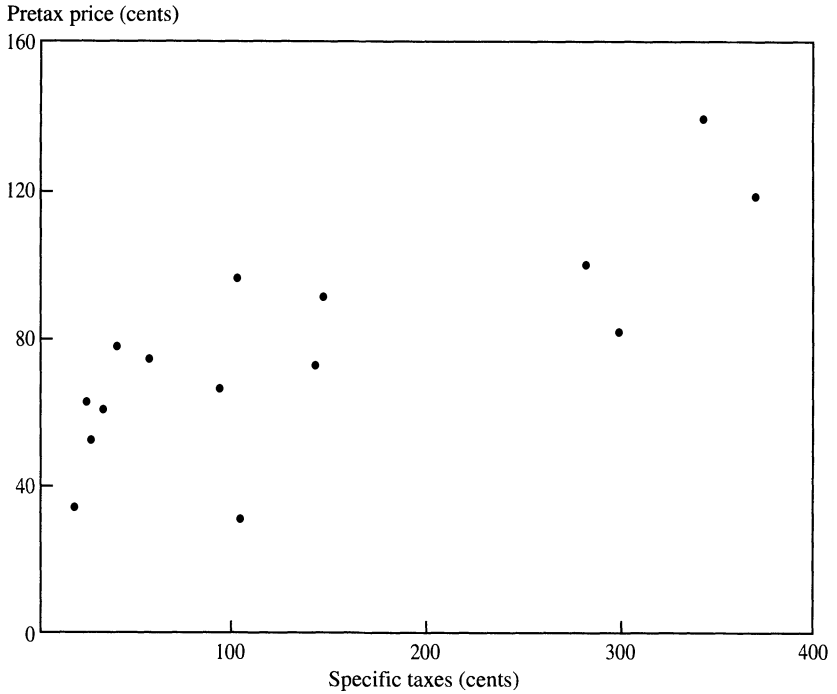
58. A specific tax has little effect on advertising and promotion activities that increase the price that can be charged for a given output, but it does reduce activity that increases sales.

59. There is a wide variation between similar countries. For example, as of January 1998, Sweden had an unavoidable tax of $3.45 a pack and a proportional tax rate of 0.61 while its neighbor Finland had an unavoidable tax of $1.04 a pack and a proportional rate of 2.14. By proportional tax, we mean (1 + ad valorem rate) × (1 + VAT rate) − 1. Delipalla (1995) and Delipalla and O'Donnell (1998) also study the European industry. See Keen (1998) for discussion of the substantial shift toward specific taxation in the 1980s in the Netherlands, which also seems to have favored more expensive brands.

Several papers, including Barzel (1976), Johnson (1978), Sumner and Ward (1981), and Sobel and Garrett (1997), have examined the claim that specific taxes favor premium brands by exploiting the variation in taxes across states in the United States. Limitations include lack of variation in the data, firms' difficulty in producing different products for different states, and their use of national advertising and promotional campaigns. In a very recent contribution, however, Sobel and Garrett (1997, 884) estimate that "for approximately every 3 cents of state [specific] tax there is an increase of one percentage point in the market share of premium brands [in that state]," while the effect of ad valorem taxes on the share of premiums as opposed to that of generics is "insignificantly different from zero."

60. Even if the higher prices reduce total youth consumption, the number of youth smokers may not be greatly reduced if the product is made more glamorous, so the effect on future addiction rates may be limited.

Figure 1. Pretax Prices versus Specific Taxes in the Fifteen European Union Countries as of January 1, 1998



Source: Authors' calculations based on data from U.K. Tobacco Manufacturers' Association and Confederation of European Community Cigarette Manufacturers. Specific taxes are total unavoidable tax per pack (tax at pretax price of zero). EU taxes consist of a fixed per-cigarette tax, a proportional ad valorem tax that is calculated on the sum of the pretax price and the fixed tax, and a value-added tax that is then calculated on the sum of all the foregoing. The total unavoidable tax per pack equals [(fixed) × (1+ ad valorem rate) × (1+VAT rate)]. Note that by contrast with our terminology the fixed tax is generally referred to as the specific tax. Pretax price is the price of the most popular price category.

valorem taxes that favor deglamorized generic products may support continued sales to old addicted smokers but fail to attract so many new young smokers.

Another way to view the argument for ad valorem taxes is that it is similar to that for taxing nicotine content. As noted earlier, ad valorem taxes effectively tax all costs; that is, they tax the advertising as well as the contents of a cigarette. This is appropriate if the advertising helps get youth smokers addicted.[61] Ad valorem taxes are also preferable for

61. There is some evidence that youth smokers are less interested than adults in

distributional reasons because they reduce the relative taxes on cheaper products.[62]

The major argument against ad valorem taxes is that they would probably be far worse for firms' profits.[63] There are other ways to compensate the companies, however. For example, instead of setting average and marginal taxes equal, marginal rates could be set above average rates—exactly the opposite of what would have happened under the McCain bill's fixed-revenue taxation. This can be done, for example, by allowing all companies an annual tax exemption on one pack for every five or ten sold in 1997. These adjustments could be further tailored to account for the current differences in firms' mixes between premium and discount cigarettes.

Lump-Sum Damages

Both the resolution and the bill specified that the industry would pay damages of $10 billion in rough proportion to the relative market values of the companies. The way these payments were to be split proves that the settlement was based on the relative bargaining power of the various

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generics. Although only 72.5 percent of cigarette sales are of premium brands, youth smokers report that more than 90 percent of the cigarettes they smoke are premium cigarettes. See Centers for Disease Control and Prevention, Tobacco Information, "Comparison of Advertising to Brand Preference in Adolescents and Adults, 1993." Available at http://www.cdc.gov/nccdphp/osh/brndtbl.htm. Specific taxes are less undesirable if all advertising and promotional activities can be completely banned, but we fear that cigarette companies may continue to find ways to market their brand images.

62. This conclusion assumes that poorer people are relatively more likely to buy generics. Some believe that the poor view premium cigarettes as one of their few "affordable luxuries," but Townsend, Roderick, and Cooper (1994) provide evidence from Great Britain that lower socioeconomic groups are much more sensitive to cigarette prices than are higher socioeconomic groups.

63. Ad valorem taxes are worse for profits for any given rate (cents per pack) of tax, but they are better for a monopoly (or sufficiently collusive oligopoly) for a given amount of tax raised. See Keen (1998) for a summary of the literature.

A practical concern is that specific taxes may give more precise control of the market price (and tax revenues) than ad valorem taxes do. A senior U.K. treasury official argues that specific taxes provide less scope for fraud (private conversation). The United Kingdom has the highest specific taxes in the European Union: total "fixed" taxes were $3.71 a pack in January 1998. Finally, by favoring premium brands over generics, specific taxes may also tend to favor home producers over inexpensive imports.

Table 8. Share of Tobacco Sales since 1950 versus Lump-Sum Damage Payments
Percent

Company	*Current market share*	*Share of tobacco sales since 1950*	*Share of lump-sum damage payments*
Philip Morris	49.2	23.0	68
RJR	24.5	31.0	7
Brown and Williamson	16.2	30.0	18
Lorillard	8.7	8.5	7
Liggett	1.3	7.5	0

Sources: Tobacco sales were calculated from FTC data on market shares over time (Federal Trade Commission, 1997) and U.S. Department of Agriculture Economic Research Service estimates of tobacco consumption in cigarettes. Damage payments were calculated from the McCain bill. Actual amounts were $6.58 billion for Philip Morris, $660 million for Reynolds, $1.73 billion for Brown and Williamson, $710 million for Lorillard, and $320 million for US Tobacco. Percentages were calculated excluding US Tobacco.

firms rather than on any measure of the damages for which they were responsible.

Table 8 compares the relative amounts of tobacco sold by the five major tobacco companies since 1950 with the percentages of the lump-sum payments they were to make. If firms' lump-sum payments were set in proportion to damage to today's sick smokers, RJR and Liggett would probably be liable for even more than their share of tobacco sales since 1950. There are three reasons, all relating to these companies having larger market shares in the early years. First, the amount of tar and nicotine in cigarettes per pound of tobacco has declined over time. Second, sick smokers are predominantly older smokers who have disproportionately smoked the declining brands. Third, one might wish to assign liability disproportionately to the brand that the smoker began smoking when young, if one believes that addiction caused by youth smoking is at the root of smoking problems. Philip Morris's market share when most of today's sick smokers started smoking was closer to 10 percent than 50 percent. This explains why RJR faces more individual suits than Philip Morris.

In fact, the payments were based on deep pockets: they were to be directly proportional to companies' equity valuations. This is the outcome one would anticipate from a negotiation in which there are bimodal expectations for tobacco litigation: either litigation in the absence of a deal will generally fail, or it will be so successful that it will put all the companies into bankruptcy. It is also consistent with the focus in bill negotiations on whether future suits could be brought only against

the domestic tobacco subsidiaries of the companies or against the conglomerates.[64]

So RJR's leveraged buyout in 1989 by Kohlberg, Kravis and Roberts, which left it with less equity and more debt, reduced its payments. Philip Morris's tremendous growth, its dominance of the premium markets, and its ownership of Miller Brewing and Kraft increased its payments. The allocation of these damages were even less "fair" than the tax increases that allocated companies' costs in proportion to their current and future, but not past, market shares.

The $6 billion after-tax cost of these lump-sum damages is about 4 percent of the market value of the equity of the firms but perhaps 13 percent of what their domestic tobacco businesses would be worth were there no prospective litigation costs.[65] The lump-sum damages would have been roughly as costly to the firms as the resolution's proposed $358.5 billion in tax increases. So although economic theory can explain the allocation of the lump-sum payments, we have more trouble explaining their existence; they seem less desirable for all parties than tax increases that can raise more money at a much lower cost to companies, while seeming to the general public to be more punitive, and also having the public health advantage of raising prices. The negotiators now better understand this point, as we will show when we describe the multistate settlement of November 1998.

Legal Protections

In return for the tax increases and lump-sum damages, the resolution banned all punitive damage suits based on the companies' past actions

64. The bill at first protected the nondomestic tobacco assets of the companies, but antitobacco forces loudly protested this provision.

65. Calculation by Gary Black, based on approximately $8 billion in industry earnings before interest and taxes in 1997 before the costs of settling state litigation, a multiple of 6 times pretax earnings for Philip Morris and a 15 percent discount for the rest of the industry, corresponding to about 10 times unlevered aftertax earnings for Philip Morris and 8.5 times unlevered aftertax earnings for other firms. See Gary Black, "Philip Morris/RJR/UST Company Report," INVESTEXT Report 1896658. March 31, 1997.

as well as class action suits.[66] These legal protections are the reason, apart from the taxes, that federal legislation was required to implement the resolution.

The resolution capped the amount of damages the companies would have to pay out in any one year to $1 billion. Specifically, the resolution placed a cap of $5 billion on the amount that could be awarded in judgments each year and gave the companies "coinsurance" of 80 percent by paying 80 percent of the judgments from the tax revenues collected.

This coinsurance produces two obvious incentive conflicts. First, the governments and public health agencies that were the financial beneficiaries of the resolution would effectively pay 80 percent of any verdict against a tobacco company, so they would have more at stake than the companies in trying to defeat the suits. Second, and probably more important, is simply that it would be less costly for a company to settle a suit for $1 million than it would be to spend $250,000 fighting and winning in court. This would greatly counter the companies' reputational incentive not to settle individual suits and would probably lead to more suits.[67]

Further incentive problems might arise if the companies came to feel that the cap would be reached every year. There would then be little point in defending against suits, except that some suits might provide disproportionately large claims against one firm or another, so negotiations could be over which suits to settle first. Litigation is usually thought of as having social value in discovering information and in punishing the guilty, but if the companies gave up on trying to keep payments below the cap, the lawsuits would generate neither of these benefits.

The original McCain bill included an 80 percent coinsurance clause, as in the resolution, but provided a cap of $6.5 billion instead of $5 billion. A more significant difference is that McCain provided no protection against class actions and punitive damage cases, so there was a much greater likelihood of large payments.

66. Although it seems unlikely that a federal class action could proceed, based on cases like the Supreme Court asbestos case, *Amchem Products* v. *Windsor,* 117 S. Ct. 2231, 2249–50 (1997), the resolution was meant to ban state class actions.

67. Of course, the companies might currently have an excessive incentive to fight for reputation reasons, so coinsurance might in that way actually improve incentives.

An important provision in the early drafts of the McCain bill was that companies' liability was limited to their domestic tobacco assets.[68] Because the market value of the domestic businesses was roughly equal to the companies' legal liabilities, this provision in itself should have been enough for the deal to be a good one for stockholders. Antitobacco forces objected to the provision, however.[69]

Although the public health community and the antitobacco lawyers wanted all of the companies' assets to be available for paying damages, actually putting them into bankruptcy might be disastrous. If the companies were placed in chapter 11, their brands and factories might be sold to new companies that would have no liability for the past actions of the tobacco manufacturers. Facing much less potential legal liability, the new firms would have much less incentive to trade marketing restrictions and tax increases for litigation protection.[70]

By the time the Senate had finished amending the McCain bill, essentially all of the companies' legal protections—the carrots that induced the companies to make a deal in the first place—had been removed.

68. This provision was not included in the resolution but was not really needed there because the resolution effectively eliminated the risk of bankruptcy from lawsuits. It was important in the McCain bill because even the original draft specified some circumstances in which the damage caps would be lifted and later drafts abandoned the caps.

69. Daynard and others (1998), available at http://www.tobacco.neu.edu/Congress/McCain/index.html#EXECUTIVE. As is clear from our analysis of the allocation of the lump-sum damage payments across companies, as well as of the stock market discounts of the companies, the vulnerability of domestic nontobacco and foreign tobacco assets to U.S. lawsuits affected the companies' bargaining power.

70. Jeffrey Goldberg, "Big Tobacco's Endgame," *New York Times Magazine,* June 21, 1998 p. 36. "According to Steven Goldstone of RJR, 'This is what would happen if we had to go into reorganization. . . . Any judgment against us would be stayed, the states wouldn't get their money, the shareholders of the company would suffer, all of the lawsuits against the industry would grind to a halt. The only thing that will still be going the day after is that we'd still be making cigarettes. . . . What have these public-health people achieved in 40 years? They think they'll end smoking by bankrupting us, but believe me, that's not going to happen.'" Goldberg goes on to say, "Goldstone argues that bankruptcy is a real possibility—and that a bankrupted industry could mean the formation of new tobacco companies with no history, and therefore no liability for past practices. Goldstone sounds almost gleeful when he mentions that scenario."

Youth Smoking

Everyone would like to end youth smoking, and it was a major focus of attention. On the one hand, the stated purpose of the bill was to reduce youth smoking; on the other hand, the companies are often said to regard young smokers as "tomorrow's cigarette business."[71] But the truth is that the value to the companies of the youth market is tiny: most of the present value of future tobacco profits resides in the lungs of smokers who are currently older than age eighteen. Nor is it so clear that the public health community is, or should be, focused primarily on youth smoking, although the political value of referring to smoking as a children's disease is not lost on anyone. It is in these contexts that we discuss the provisions of the resolution and bill that were advocated as youth smoking measures.

The Value to the Companies of the Youth Market

Even if all smokers were equally profitable, the present discounted value of all future smokers would probably be only one-sixth, at most, of the present value of all current and future smokers.[72] But this calculation ignores smokers' strong brand loyalty. Many smokers seem to become addicted to a particular brand; only about 10 percent switch brands in any year.[73] Assuming new smokers are relatively uncommit-

71. Steve Lohr and Barry Meier, "Cooperation and Miscalculations on Shaping Tobacco Legislation," *New York Times,* April 11, 1998, p. 1, quoting an RJR memo from 1974 making this vacuous comment.

72. To compute this, observe that the current quit rate of all smokers is 2.5 percent a year. Given the long-term downward trend of more than 0.5 percent a year in the number of smokers, this implies entry of no more than 2.0 percent a year. Discounting all future profits by 8.5 percent and allowing for a 1 percent decline in cigarette purchases per smoker, the present value of future profits from current smokers is current profits divided by 0.12, while the present value of future profits including future smokers is current profits divided by 0.10. The discount rate was chosen to give the companies a price-earnings ratio of 10 in the absence of future litigation costs (summing the discount rate and the decline in annual sales and assuming that profits per pack would remain constant), which is broadly consistent with how the firms are valued (see note 65).

The value of the youth market is even lower if we use the alternative estimates that the combined quit and death rate of smokers is 3.5 percent while the "smoker formation rate" is 2.2 percent, resulting in a decline of 1.3 percent a year. See National Association of Convenience Stores (1998). These figures are attributed to analyst Gary Black.

73. Department of Health and Human Services (1989, p. 503). Similarly, "only about 10 percent of [cigarette smokers] switched annually, and then often to brands of the same manufacturer" (Kluger, 1996, p. 632). Note, however, that prices of brands

ted to any particular brand, the value of new customers is relatively tiny compared with the value of mature smokers. As we show in appendix B, the competition to capture youth smokers dissipates most of the future profits from them. The argument is that if price discrimination were possible, firms would be willing to cut prices substantially to new potential customers. But if price discrimination is impossible, firms will still cut prices to all customers a little to capture the youth market. Although it will then appear from an accounting perspective that the new customers are as profitable as any others, short-run profits will be lower and long-run profits will not be much higher than if there were no new customers.

The Public Health Significance of the Youth Market

Youth smoking is one of the serious public health issues monitored by the Youth Risk Behavior Surveillance System sponsored by the Centers for Disease Control and Prevention. Table 9 puts the problem in perspective. According to the Department of Health and Human Services, "more than 80 percent of all adult smokers had tried smoking by their 18th birthday and more than half of them had already become regular smokers by that age."[74] But these facts do not necessarily imply that more effective deterrence of youth smoking will lead to a proportional reduction in adult smoking.[75] For example, black high school senior smoking rates have averaged less than half of white rates over the past twenty years, but because of dramatically lower quit rates among African American adults, their current smoking rate is slightly higher than the smoking rate among white adults.[76]

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within a category are very similar, which does not encourage switching; that perhaps 70 percent of smokers have a second-choice brand; and that about 25 percent regularly buy more than one brand each month. See Sullum (1998, p. 102).

74. U.S. Department of Health and Human Services, "Children's Future at Risk from Epidemic of Tobacco Use," press release, August 23, 1996, available at http://www.hhs.gov/news/press/1996pres/960823d.html.

75. Of course, it is true that many young people who become addicted to smoking would never have started if they could have been deterred until age 18. But extreme versions of the argument are reminiscent of the claim that because historically very few women married after age 25, a structural change that made marriage before that age much less likely would result in tens of millions of permanently unmarried women.

76. Department of Health and Human Services, "Tobacco Use Among U.S. Racial/Ethnic Minority Groups" A Report of the Surgeon General," 1998, available at www.cdc.gov/nccdphp/osh/sgr-min-fs-afr.htm.

Table 9. Major Youth Risk Behaviors, Grades 9–12, 1995
Percent

Risk factor	*Lifetime participation*	*Current participation*	*Frequent participation*
Tobacco	71.3	34.8	16.1
Alcohol	80.4	51.6	32.6
Marijuana	42.4	25.3	4.6
Cocaine	7.0	3.1	. . .
Sex	53.1	37.9	17.8
Pregnancy	. . .	6.9	. . .
Carry a gun	. . .	7.6	. . .
Attempted suicide	. . .	8.7	. . .
Drink and drive	. . .	15.4	. . .

Source unless otherwise cited: Centers for Disease Control "Youth Risk Behavior Surveillance-United States, 1995," *Morbidity and Mortality Weekly Review* 45 (no. SS-1996): 1-86. Data available at CDC Web site, *ftp://ftp.cdc.gov/pub/Publications/mmwr/ss/ss4504.pdf*. Definitions: For all categories, lifetime participation means one or more experiences. For tobacco, current participation means one or more cigarettes in the past thirty days. Frequent participation means one or more cigarettes on twenty of the past thirty days. For alcohol, current participation means one or more drinks in the past thirty days. frequent participation means five or more drinks on at least one occasion in the past thirty days. For marijuana, current participation means at least one smoke in the past thirty days. Frequent participation is for daily use, cited in Rhonda L. Rundle, "Smoking Marijuana, Crack Cocaine Linked to Increased Lung-Cancer Risk," August 19, 1998. *Wall Street Journal*, August 19, 1998 p. B5, citing a paper in *Journal of the National Cancer Institute*. For cocaine current participation means at least one use in the past thirty days. For sex, current participation means sexual intercourse within the previous three months. Frequent participation means four or more sexual partners during lifetime. Pregnancy refers to the percentage of students who had either been pregnant or gotten someone pregnant. Carry a gun refers to the past thirty days. Attempted suicide refers to the past year. Drink and drive refers to the past thirty days as a driver.

Look-back penalties would have been based on daily, rather than monthly, uses.

Furthermore, youth smokers make up only 2 percent of consumption, and their primary death risk is perhaps forty years distant. Much may change in that time to make cigarettes safer, quit rates generally higher, and medical care more effective. In addition, there is some evidence that the health risks of smoking increase more than proportionally with years of smoking.[77] So getting an extra 35-year-old to quit smoking seems at least as important as preventing an 18-year-old from becoming a regular smoker. Therefore, although youth smoking is a serious problem, there would still be public health concerns if it ended tomorrow.

A disproportionate emphasis on youth smoking is warranted if it is easier to stop young people from becoming regular smokers than it is to get an equal number of adults to stop, but whether this is true is unclear. Until recently, most studies indicated that youth smoking is more elastic than adult smoking, improving the case for classifying tax hikes as youth smoking measures.[78] But some recent studies have argued the

77. Peto (1986); Townsend (1993).

78. For example, the Congressional Budget Office estimates that the youth partici-

opposite.[79] As a theoretical matter, if youth smokers mistakenly assume that they can and will easily quit in a few years, a price increase will deter them from starting to smoke less than it will persuade an addicted adult that quitting will provide a significant financial benefit.

Of course, many people would argue that adults should make their own choices about smoking, and governments should do no more than correct externalities,[80] so any bill should be targeted at underage smoking. However, we believe that the real (and appropriate) goal of the public health community is to reduce smoking in all age groups and that this explains many aspects of the bill, including the emphasis on smoking cessation programs and high taxes. A problem with the youth smoking rhetoric is that if a bill narrowly focused on youth smoking is passed now, it may become harder to pass broader antismoking legislation later.

Nonprice Youth Smoking Measures

The resolution and the bill both contained marketing restrictions that could be construed as youth smoking measures and that we show later to be a sensible part of any settlement. In other ways, though, the bill moved away from its stated purpose of curtailing youth smoking. For example, it reversed the resolution to prohibit color advertising in adults-only outlets. To the extent that adults-only outlets are less likely to be sources of underage tobacco purchases, one might wish to en-

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pation elasticity is in the range of -0.50 to -0.75, implying that a $1.10 tax increase would drop consumption by about a third. See U.S. Department of the Treasury, "Background on Youth Smoking Elasticity Estimates," April 20, 1998. Addiction theory (Becker and Murphy, 1988) would also seem to predict a higher elasticity among people who are not yet addicted. The U.S. Treasury report noted that Canadian youth smoking fell by almost 50 percent from 1981 to 1991 as real prices rose by about 100 percent. Townsend (1993) reported that teenage smoking in Britain increased "from 20 percent to 25 percent [in] 1988–90 when the relative price of cigarettes was falling," but youth smoking participation (one cigarette a week or more for those aged 11 to 16) rose from 8 percent to 13 percent in 1988–96 despite a 26 percent increase in real prices (statement of Martin Feldman, March 19, 1998, before the Senate Commerce Committee, citing Office of National Statistics data).

79. Most notably, DeCicca, Kenkel, and Mathios (1998).

80. In this case taxes should be lowered, not raised. See note 3. This is especially true now that smoking has been banned in so many places that much of the secondhand smoke problem is between spouses, where presumably the Coase theorem applies.

courage their growth.[81] Similarly, an amendment to the bill eliminated a provision that gave the Food and Drug Administration (FDA) authority to prohibit cigarette sales in specific categories of retail outlets.[82]

Because the marketing restrictions in the bill would have largely tied the companies' hands, and because the new taxes meant the states' share of tobacco revenues would be much greater than the companies' share, strong provisions to encourage states to curtail youth smoking would seem desirable. We would advocate giving the states greater financial incentives to enforce existing laws and to develop other innovative solutions to curb youth smoking. Perhaps states should be subject to performance penalties if their youth smoking rates fail to fall as much as those in other states.[83]

In fact very few requirements were placed on states.[84] Nothing in the resolution or bill required any jurisdiction to increase the legal age for

81. Adults-only tobacco stores grew from 1 percent of the market in 1992 to 13 percent in 1998. See Barnaby J. Feder, "Tough Climate May Benefit Smoke Shops; Catering to Adults Only Is Becoming Bigger Plus," *New York Times,* August 5, 1997, D1.

82. These changes were made at the behest of the convenience store lobby. See "Thank You NACS Members! Grassroots Outpouring Helped Secure Changes in Tobacco Bill," *National Association of Convenience Stores Washington Report,* vol. 13, June 1, 1998, available at http://www.cstorecentral.com/REGISTER/RESOURCE/washrep/rf25.htm, under "past issues." The report says that it became clear that the FDA would eliminate convenience stores as a "class of trade" eligible to sell tobacco and that the provision exempting tobacco-only and adults-only stores from restrictions would have been potentially disastrous. Senator Spencer Abraham, a Republican from Michigan, is especially thanked for killing these provisions.

83. Of course, both the states and the companies might argue that youth smoking is affected by exogenous factors. Pringle (1998, p. 174) cites a 1988 in-house study by Philip Morris noting that high school students older than the age at which they were allowed to drive sharply cut back smoking when the price of gas rose in the late 1970s, but those under the driving age did not change their consumption. Pringle quotes from the report, "When it comes to a choice between smoking cigarettes or cruising around in his car, the average red-blooded American male would probably choose the latter." (So raising gasoline prices might therefore be a better way to cut youth smoking than raising cigarette prices and would have the additional benefit of reducing global warming, arguably a greater environmental hazard than environmental tobacco smoke.) A larger point is that income effects may be important for youth smoking. Townsend and others (1994) provide evidence from U.K. data that income elasticities are much larger than price elasticities for young men.

84. The main requirement was that each state should perform 250 random checks a month per million residents on retail smoking outlets for illegal sales to minors. Assuming that these checks cost a generous $50 apiece to perform, this imposed a nationwide burden of $40 million a year.

smoking, use scanner technologies to show proof of age, or put in practice several other youth smoking measures.[85] Although we do not know enough about these commonly suggested proposals to know whether they would make good policy, they have the advantage of discriminating against youth smokers much more heavily than would taxes.

"Look-Back" Penalties

The resolution included "look-back" penalties that would have increased taxes by about 8 cents a pack if youth smoking participation rates failed to fall by 35 percent over ten years.[86] A company that complied with the resolution, however, would be eligible for up to a 75 percent reduction in these penalties.[87] Because even the maximum tax, if applied to the whole industry, would not hurt the companies very much, the real problem for a company would be if it had to pay 8 cents when its competitors only had to pay 2 cents. Therefore the primary effect of the resolution's look-back penalties would have been to enforce compliance with its marketing restrictions.[88]

The much larger look-back penalties in the bill moved significantly away from a genuine youth smoking focus. If youth smoking participation fell by less than 38.4 percent over ten years, the excise tax on cigarettes would rise by 28 cents a pack plus inflation.[89] For perspective,

85. For a range of such measures, see the Tobacco Retailer Responsibility Initiative at http://stic.neu.edu/trri. See Chaloupka and Grossman (1996) and Chaloupka and Pacula (1998) and the references they cite for discussion of the effectiveness of various measures to reduce youth smoking.

86. The maximum penalty was described as $2 billion if sales remained at the current level of 24 billion packs, with reductions proportional to quantity declines. Youth smoking participation was to be measured by the University of Michigan's Monitoring the Future survey data.

87. Specifically, companies would be eligible "if they could thereafter prove to FDA that they had fully complied with the Act, had taken all reasonably available measures to reduce youth tobacco use, and had not taken any action to undermine the achievement of the required reductions."

88. Because the penalty rate per pack increased with the number of youth smokers, the companies' marginal tax cost of an extra youth smoker would have exceeded the average rate, creating some small distortions similar to the much larger ones we discuss in our analysis of the bill's look-back provision.

89. Penalties were to begin if youth smoking participation fell by less than 60 percent, reaching a maximum of about 17 cents a pack if the decline was less than 38.4 percent. Because the penalties were not tax deductible, the maximum penalty translated to an excise tax increase of about 28 cents a pack.

the maximum penalties would have been imposed even if the number of young people who regularly smoke tobacco fell to less than half the number who now smoke marijuana every month.[90] Some penalties would be imposed even if the number fell below the number who claim to have carried a gun in the previous month or attempted suicide in the previous year. Of course, the credibility of youth surveys may be doubted, but that is another reason to question their use in determining tax rates.

So the most likely effect of these look-backs would be an increase in the tax rate on all smoking, with no marginal incentive to reduce youth rates. If, however, youth participation were to decline by more than 38.4 percent, firms' incentives would become bizarre, as we now show.

The look-back penalty per pack was increasing in youth participation in the range in which youth participation was between 38.4 and 60 percent of its base level, so the marginal tax rate on a pack of cigarettes therefore would exceed the look-back rate.[91] For example, if ten years from now Philip Morris sold an extra 100 million packs of Marlboro and this created 18,000 extra youth participants, the look-back rate would rise by about 1 cent.[92] If Philip Morris were selling 6 billion

90. In 1995, 27.6 percent of students in grade 11 had smoked marijuana in the previous thirty days; Centers for Disease Control, "Youth Risk Behavior Surveillance—United States, 1995," *Morbidity and Mortality Weekly Review,* vol. 45, no. SS-4 (1996), pp. 1–86. Data available at CDC Web site, www.cdc.gov/nccdphp/. In the same year, 21.6 percent of 12th graders reported smoking one or more cigarettes a day (CDC table, "Smoking status of high school seniors—United States, Monitoring the Future Project, 1976–1996," available at the same web site.) See also table 9, which implies that daily youth smoking would have to fall to 40 percent of monthly marijuana use to avoid maximum penalties.

The Joint Committee on Taxation estimates that penalties at or near the maximum would be paid. See Joint Committee on Taxation, "Description and Analysis of Revenue-Related Provisions of S. 1415 Relating to National Tobacco Policy as Modified by the Manager's Amendment," JCX-45-98, June 3, 1998.

91. Assuming, of course, that youth participation is increasing in total sales.

92. This estimate assumes a decline in youth smoking of between 38.4 and 50 percent and initially 3 million youth smokers, based on a population of 19 million and a daily participation rate of about 16 percent (see table 9). The penalty would increase by 1 cent for each 1 percent, or 30,000 participants, but adjusting for the nondeductibility of the penalties makes the rate 1 cent for every 18,000 participants. Marlboro sales were 8.2 billion packs in 1998 (Philip Morris 10k report), and Marlboro was estimated to have 60 percent of the youth market, implying 22,000 youth smokers for every 100 million packs. See "Comparison of Advertising to Brand Preference in Adolescents and

packs by then, the cost to the company of this increase in the look-back rate would be $60 million, making the marginal tax rate on Marlboro about 60 cents above the average look-back rate.[93] But if youth participation were equally sensitive to an increase in the sales of Lorillard's Newport, Lorillard's marginal rate would be only 10 cents above the look-back rate, because Lorillard is only a sixth the size of Philip Morris.[94] Because the largest firms would have marginal costs that are furthest above average, they would tend to lose market share in equilibrium. The reasoning is the mirror image of that for fixed-revenue taxation, where the large firms benefited (in terms of market share) by having marginal costs that were the furthest below average.

Because prices reflect marginal rather than average taxes, more than 100 percent of the look-back penalties would be passed through to consumers. So if the decline in youth participation did exceed 38.4 percent, the look-backs would probably raise industry profits.[95]

The bill also contained company-specific look-backs, which would have had very different effects. Within ten years companies would have to pay $1,000 (not tax deductible) for every estimated youth smoker in excess of 40 percent of their starting amount. So if there are currently 3 million youth smokers and youth participation fell by 30 percent, the companies would be liable for the equivalent of $1.5 billion in pretax profits, or 12.5 cents a pack if overall volume were 12 billion. Again,

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Adults, 1993," cited in full in note 61. This source claims that 60 percent of youth smokers report preferring Marlboro, 13.3 percent Camel, and 12.7 percent Newport.

93. Total smoking was estimated to fall 46 percent between 1999 and 2007, to 12.3 billion packs, by the Joint Committee on Taxation, "Description and Analysis of Revenue-Related Provisions," JCX-45-98, June 3, 1998. If Philip Morris's sales fell by the same percentage, it would sell about 6 billion packs.

94. For example, if the look-back penalty were 20 cents, the marginal tax cost to Lorillard of selling an extra pack of Newport would be 30 cents in all. But each extra pack of Newport that Lorillard sold would cost Philip Morris 60 cents.

95. The companies would benefit most if youth smoking fell 38.4 to 50 percent. If youth smoking fell by 50 to 60 percent, the marginal impact of an extra smoker on the tax rate would be much lower than if the rate fell by less than 50 percent, so the difference between marginal and average rates would be less. The FTC recognized that look-backs could facilitate higher industry prices and profits (conversation with Jonathan Baker, director of the Bureau of Economics). There might be a strong incentive for firms to collude to get youth smoking to decline by more than 38.4 percent to create this large wedge between marginal and average taxes. The companies' protests about these penalties is an indication, however, that they did not believe that the maximum penalties would be avoided.

marginal rates could be very different from average rates—probably higher but possibly lower, depending on the elasticity of youth participation with respect to overall volume.[96]

The penalties would also have a tremendously different impact across companies. Philip Morris would probably have to pay hundreds of millions of dollars a year, while Brown and Williamson (which would be unlikely to have to pay any penalty because of a de minimis exemption) would see its profits soar as Philip Morris raised its prices in response to its penalties.[97]

Although taxing young people's favorite brands more heavily seems a good idea in principle, this plan has problems. First, the way the penalties are calculated makes them closer to fines than taxes. The penalties would undoubtedly be challenged by Philip Morris, Lorillard, and RJR if they were passed without a global settlement.[98] Companies could reasonably argue that if they are not breaking any laws about selling to youth (they sell only to jobbers), they should not be subject to such fines.[99] The companies could also contest whether a survey of high school students was adequate evidence to impose the large penal-

96. For example, if Marlboro gained 18,000 youth smokers from selling an extra 100 million packs, its marginal tax rate would be 30 cents a pack. That is, 18,000 smokers times 1,000 dollars divided by 100 million packs equals 18 cents nondeductible, which is the equivalent of a 30 cent excise tax. The marginal rate would certainly exceed the average rate if the elasticity of youth participation with respect to overall consumption were 0.6 or greater but might be lower if consumption and youth participation had little relation. Specifically, if youth participation fell by $100X$ percent, $X < 0.6$, the marginal rate would equal the average rate times $(1-X)/(0.6-X)$ times the elasticity of youth consumption with respect to overall consumption. So, for example, if youth smoking fell by 40 percent, the marginal rate would exceed the average rate as long as the elasticity was greater than 0.33.

97. The de minimis exemption would apply because very few youth smokers claim Brown and Williamson's discount products as their "usual brands." With its competitors' average costs increasing, and their marginal costs increasing even more, Brown and Williamson would be well positioned to increase both its margins and its market share. For example, if its competitors passed on cost increases of 12.5 cents a pack, Brown and Williamson could choose to go along, raising its profits from about 20 cents to 32.5 cents a pack. An ardently antitobacco senior congressional staffer, arguing for even stronger brand-specific penalties, claimed that he had talked to Brown and Williamson and that they considered such penalties "very reasonable" (private telephone conversation).

98. Brown and Williamson and Liggett would effectively be exempted from the company-specific penalties by de minimis rules.

99. If the companies violate the marketing restrictions, they would be liable for the penalties prescribed for those violations.

ties in the bill. For example, if about 50,000 students are surveyed (as is currently the case) and 19 million youths are in grades 8 through 12, then on the margin a company would owe $380,000 for each additional young person who said he or she usually smoked one of its brands.[100] Beyond that, if smokers typically smoke a "usual" premium brand but sometimes smoke discount and less popular premium brands, the penalties on the leading brands will be disproportionate to the fraction of youth smoking that their brands account for. Finally, if companies are left with any nonprice weapons to affect sales, their incentives will be as much to get youths to switch to other brands as to get them to quit smoking.[101]

Given the marketing restrictions in the bill, the main effect of the company-specific look-backs would have been to raise further the price of certain brands of cigarettes.[102] But this could probably could have been done in a more straightforward manner. For example, ad valorem taxes might have a broadly similar effect without the problems. It is our belief that the designers of the look-back penalties had other agendas besides youth smoking: a desire to raise cigarette taxes even higher and to punish the most profitable manufacturers. The badly flawed design of these provisions relates to the political decision to cast them in terms of their impact on youth smoking.

Marketing Restrictions

Both the resolution and the bill contained marketing restrictions roughly along the lines of earlier proposals by the Food and Drug Administration. These restrictions seem to be a good idea. If youth participation is highly sensitive to promotion, marketing restrictions are

100. Antismoking teenagers could do little to hurt the industry more than falsely reporting that they smoked one of the leading brands.

101. The analysis is similar to Ayres and Levitt's (1998) comparison of The Club and Lojack as systems to reduce car theft. The Club, a metal bar locked to the steering wheel, is a device to encourage criminals to steal someone else's car. Lojack, a hidden device that enables police to find stolen vehicles quickly, discourages overall theft. Company-specific penalties create Club-like incentives. Of course, companies will be most concerned with affecting reported, rather than actual, youth smoking.

102. If the bill had dropped the resolution's marketing restrictions, or if they had been overturned in court, the company-specific look-backs could also have been important in discouraging youth-oriented marketing.

Table 10. Cigarette Marketing Expenditures, by Category, 1996
Millions of dollars unless otherwise specified

Category	*Industry expenditure*	*Percent of total*
Promotional allowances	2.15 billion	42.1
Coupons and retail value added promotions (e.g., free lighters)	1.31 billion	25.6
Specialty item distribution (e.g., branded clothing)	544.3	10.7
Outdoor advertising	292.3	5.7
Point-of-sale ads	252.6	4.9
Magazines	243.0	4.8
Public entertainment	171.2	3.4
Direct mail	38.7	0.8
Transit advertising	28.9	0.6
Sampling distribution	15.9	0.3
Newspapers	14.1	0.3
Internet	0.4	0
Testimonials	0	0

Source: Federal Trade Commission (1998, table 3E). Available at http://www.ftc.gov/os.1998/9803/index/htm#17. The FTC also collects data on expenditures on sporting events, which may be allocated among several categories. The total in 1996 was $85 million. No money was spent on having cigarettes appear on television or in movies. No money has been spent on testimonials since 1988 (U.S. Department of Agriculture 1997, tables 3C, 3D).

a good way to target youth consumption, and the companies will not lose much because the profits from the youth market are largely competed away by advertising. Indeed, if marketing expenditures serve largely to redistribute a fixed supply of new customers, the restrictions may actually raise company profits.[103] Also, marketing restrictions do not have the adverse distributional consequences of a tax increase.

Table 10 shows the FTC's breakdown for industry spending in 1996 on advertising and promotion. The proposed restrictions affected virtually every category listed other than the first two. The resolution banned tobacco brand names, logos, and selling messages on non-tobacco merchandise; prohibited sponsorship of sporting and cultural events in the name, logo, or selling message of a tobacco product brand; and restricted tobacco advertising to black text on white background except in adult publications and adult-only facilities. It required tobacco advertising to carry a statement of intended use (''nicotine delivery

103. Of course, if marketing simply redistributes a fixed number of customers between the discount and premium segments and does not affect youth smoking, the marketing restrictions will serve no public health purpose and may hurt the profits of the premium producers.

device'') and banned offers of nontobacco items or gifts (t-shirts, gym bags, caps) based on proof of purchase of tobacco products. It also banned human images and cartoon characters like the Marlboro Man and Joe Camel in all tobacco advertising and on tobacco product packages; all outdoor tobacco product advertising, including advertising in enclosed stadiums and indoor advertising directed outdoors; and tobacco product advertising on the Internet unless designed to be inaccessible in or from the United States. Finally, it limited point-of-sale advertising to black-on-white, text-only signs and regulated the number and size of signs (except in adult-only facilities). The McCain bill was similar to the resolution, except that it also extended some of the restrictions on other outlets to adult-only stores.

Based on the list of current advertising vehicles employed by the industry, very little would be left other than free cigarette lighters, black-and-white point-of-sale and magazine advertising, some color ads in adult-only facilities, and promotional allowances and coupons. Although promotional allowances and coupons are the largest categories of ''marketing expenditures,'' they are really forms of price cuts that the companies use to price discriminate among retailers and consumers, respectively, and the effect of banning them seems unclear.[104]

In principle, there are many reasons to promote cigarette brands. Companies may wish to steal customers from other brands or defend their current customers from other brands, but if these were the primary motivations, companies would gain from (and not object to) marketing restrictions.[105] They may wish to deter entry or promote new brands,

104. The literature about the effects of permitting price discrimination is mixed in its conclusions. For a monopoly firm selling to segmented markets, Varian (1989) shows that price discrimination has ambiguous effects on total output, and if demand curves are linear, price discrimination leaves total output unchanged. In the case of oligopoly, which is more relevant here, the effects of price discrimination are still ambiguous, but there seems a greater presumption that price discrimination may increase total output. For example, Corts (1998) proposes a duopoly model in which price discrimination causes all prices to fall (thus output rises). Armstrong and Vickers (1998) analyze a duopoly model in a Hotelling framework and show that price discrimination causes total output to increase whenever the products are sufficiently close substitutes. Futhermore, banning price discrimination may facilitate collusion by improving price coordination among the oligopolists. See Ordover and Panzar (1980) for discussion of quantity discounts to retailers. Recent work by Morton (1997) and Elzinga and Mills (1997) on prescription drugs also suggests that banning price discrimination may raise prices.

105. Although some individual companies might object, we would not expect in-

but neither of these activities looms large given the current state of the industry and the ban on radio and television commercials for smoking. There may also be a desire to influence the media and social culture generally, but free-riding would make marketing for this purpose unlikely for any company except Philip Morris.[106] The most compelling reason why marketing restrictions might harm shareholders is that marketing can help maintain a brand's premium status, allowing it to continue charging a premium price.[107]

Firm managers may oppose marketing restrictions because the firms are marketing-driven organizations and the managers wish to retain their jobs and empires, but that is is no reason for shareholders to value marketing. Similarly, marketing may be important for attracting new customers, which is a further reason for executives who value their future jobs to fight to defend it. As we showed earlier, however, there is likely to be little net profit gain to the industry in being able to advertise for new customers because the marketing competition will dissipate a lot of the profits that the new customers generate.[108]

Ironically, the more sensitive youth smoking is to youth-oriented marketing, the larger the fraction of the present value of profits from

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dustry associations to object to restrictions. But in fact the U.K. Tobacco Manufacturers' Association, for example, objects very strongly to marketing restrictions.

106. Warner, Goldenhar, and McCaughlin (1992) show that magazines' coverage of the health risks of smoking is negatively related to the proportion of advertising revenues derived from tobacco advertising (and not merely related to the binary variable of whether tobacco advertising is accepted or not, which suggests the direction of causation may not only be from magazines' attitudes to choice of advertising). The Smee report (U.K. Department of Health, 1992) argues that it is likely that some magazines have modified their stance in deference to tobacco advertisers.

Marsh and Matheson (1983) show that 44 percent of smokers and 26 percent of nonsmokers agree with the statement that "smoking can't be really dangerous or the Government would ban cigarette advertising," despite the government's health education program. See also the Smee report. Tobacco advertising and tobacco company sponsorship of sports and other activities may also increase the social acceptability of smoking.

107. When marketing a brand to increase the willingness to pay of consumers who already prefer that brand, a firm is in the position of a monopolist, and there may thus be less dissipation of rents than when the oligopolists compete for a new customer. Of course, the distinction between different kinds of marketing is very fuzzy.

108. See the section on the value to the companies of the youth market. So the traditional argument that companies oppose marketing restrictions because of the impact on recruiting new customers (see, for instance, Tye, Warner, and Glantz, 1987), would seem to have to rely on the agency-theory argument of the previous sentence.

today's youth smokers that will be competed away through the marketing competition. So even if advertising is very important for recruiting new customers, restrictions that eliminate the competition for youth smokers are likely to reduce the market valuations of the companies only slightly and will also increase short-term profits. Of course, if the industrywide number of new smokers is insensitive to marketing efforts, firms may actually gain if youth marketing is banned. These results are consistent with the tenor of negotiations over the resolution, in which the companies agreed to give up Joe Camel and the Marlboro Man after the very first day of meetings.[109] We develop these points further in a simple model in appendix C. The bottom line is that strong marketing restrictions oriented against youth smoking are an efficient part of any deal.[110]

Special Interests

The bill, in particular, catered to a variety of special interests with a host of economically unjustifiable provisions. The most notable among these were provisions rewarding Liggett, small manufacturers, and the trial lawyers involved in the deal.

Liggett

Liggett argued that it should be rewarded because it had in effect turned state's evidence by settling early with the state attorneys general and turning over secret industry documents. The amended version of the bill accordingly exempted it from the taxes so long as its market share remained under 3 percent (more than twice its share at the time). Assuming cigarette sales would be about 19 billion packs once the tax of $1.10 a pack is instituted, the exemption is potentially worth $630 million a year. Because Liggett's market share is well below 3 percent, it would have to raise prices by a little less than $1.10 to benefit

109. See Mollenkamp and others (1998, p. 137). For perspective, the negotiations took about two and a half months overall (April 4–June 20).

110. We are assuming marketing is undesirable from the standpoint of public health. Marketing could be very desirable if it were to facilitate entry of new, less-toxic products.

maximally from its tax break.[111] Liggett's state settlements require it to turn over 27.5 to 30 percent of its pretax profits to the states, so the net pretax benefit to the company would perhaps be closer to $400 million a year.[112] Still, this is a remarkable annual payment for a firm with a total market value of around $100 million presettlement.[113]

We suspect this provision could only have passed because of confusion between the concepts of exempting Liggett from being economically punished by the bill, and exempting Liggett from paying the "damages" or "settlement payments," a confusion that would be less likely if the payments had been referred to honestly as taxes. If the aim were to exempt Liggett from punishment, a simple solution would be to treat it as a new manufacturer. This would imply exempting it from the $10 billion up-front payment and giving it a tax credit for any amounts it pays to the states under its state settlement agreements. A more generous approach—it is arguable that Liggett's betrayal of its competitors was a crucial turning point in the war against Big Tobacco—would be to reward it out of the payments that would otherwise be paid to the attorneys for their part in the victory.

From an economic viewpoint Liggett should probably be closed down (or merged into another firm). Its costs are much higher and its average quality lower than the those of the big four, implying substantial deadweight losses, and few appear concerned about maintaining price competition in this industry.[114]

111. The company has claimed that it will raise its list prices along with the other manufacturers, but obviously it will have an enormous incentive to provide retailers with whatever incentives it takes to get to a 3 percent share. Given the large market share of deep discount cigarettes before Marlboro Friday, it seems likely that Liggett can return to 3 percent of the market while increasing its prices by close to a dollar.

112. The primary beneficiary would have been Bennet LeBow, a controversial businessman who controlled Brooke Group, which owns Liggett. On LeBow, see Laurie P. Cohen, "Ready Credit: Head of Brooke Group Draws on Its Coffers to Tune of Millions," *Wall Street Journal,* July 30, 1993, p. A1.

Liggett's state settlements are available at http:///www.ag.ohio.gov/agpubs/Tobacco/liggett1.htm.

113. It would have been much cheaper to buy control of Liggett, photocopy its secret papers, and close it down, writing off the cost as part of the litigation expense, than to give the company even a fraction of the proposed subsidy.

114. In any case, giving Liggett a fixed market share removes the company as a force for holding down profit margins, because the rest of the firms then know that they will end up with 97 percent of the market, no matter what.

More generally, mergers in this industry might be less undesirable than usual, al-

Small Manufacturers

The Senate Commerce Committee version of the bill gave small companies a 75 percent tax reduction on the first 150 million packs they sold and a 50 percent reduction on the next 150 million packs.[115] The implication is that a new manufacturer (or an importer) could market 150 million packs of generic cigarettes at an 80 cents a pack advantage over Philip Morris. This incentive would have swamped the market with billions of packs of generic cigarettes from small labels. The Treasury and FTC noticed this problem and persuaded the Senate to cut back the provision to apply only to the Kentucky chewing tobacco companies it was originally designed to protect.

Lawyers' Fees

Because it was widely agreed that even the smallest amount of money the trial lawyers would ask for would seem outrageous, neither the bill nor the resolution quantified fees but instead left them to be determined by arbitrators.[116] State settlements adopted the technique of announcing a settlement with lawyers' fees to be paid in addition, so that the governments could disclaim spending the billions of dollars. Knowing that if the trial lawyers were not bought off, the whole deal might fall apart, the companies offered to pay the lawyers an annuity of up to $500 million a year, presumably in proportion to each company's sales, as part of any national settlement.[117]

Jeffrey E. Harris, an MIT economist and longtime industry critic, who has served as plaintiffs' expert witness in three major cases, including the Florida medicaid suit, proposed a scheme under which lawyers from the states that have contingency fee agreements would receive 12.9 to 14.6 percent of the revenues that would go to those

though an argument could be made that Liggett is valuable because it mostly sells discount brands, if those brands have less appeal to youth smokers.

115. See section 403(d)(B).

116. There would be three arbitrators, one chosen by the lawyers, one by the companies, and one jointly. Smokers, who would pay most of the costs, would have no say.

117. See Milo Geyelin, "Tobacco Firms Quiet on Fees to Be Paid to Plaintiffs' Lawyers under Settlement," *Wall Street Journal,* December 15, 1997, p. B16.

states.[118] These rates were consistent with the fees that had already been negotiated in the Texas and Minnesota state cases.[119] The Harris plan would cost at least $15 billion in present value based on the bill's taxes and would be financed by a "lawyer's tax" of 8 cents a pack.[120] Put another way, it would amount to an average of more than $30 million apiece for 470 class action lawyers for a deal that yields smokers no money.[121]

The week the bill died Republicans succeeded in putting caps on legal fees. The cap for lawyers who filed suit before December 31, 1994, was $4,000 an *hour*.[122] Richard Scruggs, who would have had his fees very sharply reduced by this limitation, argued that the provision was unconstitutional.[123] Richard A. Daynard, chairman of the To-

118. Jeffrey E. Harris, "Written Testimony Before the Subcommittee on Courts and Intellectual Property, Committee of the Judiciary, U.S. House of Representatives, Oversight Hearing on Attorneys Fees and the Proposed Global Tobacco Settlement," available at www.mit.edu/people/jeffrey.

119. In Texas a 15 percent contingency fee for the lawyers, projected to be about $90 million a year forever, adjusted for inflation, has been ruled reasonable by Judge David Folsom; see Scott Baldauf, "Texas-Size Lawyers' Fee Rankle in State Tobacco Suit," *Christian Science Monitor,* April 13, 1998. One calculation indicated that these fees come to as much as $92,000 an hour; see Barry Meier and Jill Abramson, "Tobacco War's New Front: Lawyers Fight for Big Fees," *New York Times,* June 9, 1998, p. A1. These fees mean that if the Texas settlement holds, every pack sold anywhere in the United States will include a ⅜ cent tax for select members of the Texas plaintiffs' bar. In Minnesota, Attorney General Hubert Humphrey has already defended a proposal to award plaintiffs' attorneys $565.9 million in fees and expenses over five years; see David Shaffer, "Minneapolis-Based Law Firm to Collect Millions from Tobacco Settlement," *St. Paul Pioneer Press,* June 2, 1998. Although this fee was widely reported as 7 percent, the lawyers would be paid over five years while the state would be paid over twenty-five years. Discounting payments at 10 percent, the lawyers' fee was closer to 17 percent. In both cases the amounts were effectively financed by raising the national excise tax.

120. This estimate assumes a tax rate of $1.10 a pack, Harris's estimates of lawyers' fees of 6.65 to 7.14 cents a dollar, and Harris's estimates of the present value based on the resolution's taxes. It also assumes that firms would divide fee payments by future market shares, effectively turning them into a national excise tax.

121. The estimate of 470 lawyers comes from Paul A. Gigot, "$50 Million Men: Tobacco Lawyers Become Sultans," *Wall Street Journal,* June 27, 1997, p. A14.

122. The caps were $2,000 an hour for those who filed before April 1, 1997; $1,000 an hour for those who filed before June 15, 1998; and $500 an hour for those who filed after June 15.

123. Jeffrey Taylor, "Senate Votes to Selectively Limit Fees of Trial Attorneys in

bacco Products Liability Project at Northeastern University School of Law, argued that the caps would "protect the tobacco cartel by effectively quashing tobacco litigation forever."[124]

The Senate was surely right to place some limits on fees: We believe there are crucial differences between litigation, under which the lawyers' contingency fee contracts would apply, and legislation. In particular, in a conventional class action lawsuit, parties can choose not to participate in the class. Would Kentucky be allowed to opt out of the bill, its citizens not paying the tax increase and the state not receiving its share of the tax revenues?[125] No. Could a settlement make as yet unborn companies be liable for damages of $1.10 for every pack of cigarettes they sell, a crucial component of the bill? Of course not. Because most of the payments would be taxes rather than damages, and all would be the result of legislation rather than litigation, the contingency agreements seem to be of limited relevance.[126] Furthermore, as a general principle, we are very troubled by the prospect of a group of private citizens getting paid a percentage of a tax increase they helped pass.

Tobacco Cases," *Wall Street Journal,* June 17, 1998, p. A4. Scruggs is in line for contingencies from more than twenty states.

124. See Tobacco Products Liability Project, "Law Professor Says Senate Bill Would Protect Tobacco Cartel by Effectively Quashing Tobacco Litigation Forever," press release, June 17, 1998, available at http://www.tobacco.neu.edu/Congress/GortonPR.htm. Daynard was a member of the trial lawyer team in Florida, where attorneys have been asking for fees with a present value of $1.3 billion just for that state settlement. About that controversy, Daynard said, "If the money is being distributed, I want my share, but I'm not going to get involved" in fee disputes. See John D. McKinnon, "State's Lawyers Battle over Tobacco-Suit Fees," *Wall Street Journal,* September 10, 1997, *Florida Journal,* p. F2.

125. Similarly, an individual smoker who was part of the *Castano* class action would not be allowed to withdraw from the "settlement," and avoid the $1.10 per pack tax increase in return for forgoing the "free" smoking cessation materials that would be provided in the bill. Smokers might regard the situation as Orwellian: "their" lawyers would be claiming a great victory with a net financial cost to the clients of several hundred dollars a year. States can refuse their share of settlement revenues but cannot avoid taxes on their citizens.

126. If the bill maintained its fixed-revenue taxation, part of the cost to firms would probably not have been passed through to consumers, and that part might reasonably be regarded as damage payments.

Individual State Settlements

Before the demise of the bill, settlements modeled on the resolution were negotiated in Florida, Minnesota, Mississippi, and Texas. These deals all included scaled-down marketing restrictions, lump-sum payments, and national excise taxes, called "damage payments," as in the national tobacco resolution. That is, the revenues for each state would be collected nationally even though they would be distributed only to plaintiffs in that state.[127] Congress, of course, has the right to legislate a national tax that is economically equivalent to a collusive agreement. And Texas, for example, has the right to raise prices within its own state.[128] But the idea that Texas should be able to impose taxes on cigarettes manufactured in Virginia and sold in Kentucky seems a terrible precedent.

Another unappealing feature of states being able to impose national taxes on cigarette companies is that other state legislatures will feel compelled to pass laws similar to Florida's Medicaid Third Party Liability Act and sue the companies so that they can get their fair shares of national tobacco taxes.[129] Maryland and Vermont rapidly did exactly that.[130] States that do not wish to sue the industry, or that are unwilling to distort their state constitutions to improve their bargaining power in this case, will find their residents paying new tobacco taxes but not benefiting from the revenues. Similarly, judges who have to face elections will have an incentive to bias their rulings in favor of the state.[131]

127. In fact all firms raised national prices after the Florida and Mississippi deals and again on the days after the Texas and Minnesota deals.

128. Although an agreement that raised prices throughout Texas would still be collusive if the "damages" were not interpreted as a tax, it might fall under the principle of "state action," which is what allows cities and taxi owners to fix fares without running afoul of the federal antitrust laws.

129. Even North Carolina Attorney General Michael Easley called on his state's legislature to repeal a law that he says makes it virtually impossible for the state to sue the industry. See "However Unhappily, Easley Does His Duty," *Wilmington, N.C. Sunday Star-News,* July 26, 1998, p. 6E. The dismissal of Indiana's suit in state court increased the pressure.

130. Those states "also stripped the industry of its traditional defenses, such as that smoking carries well-known risks." See Tara Parker-Pope and Milo Geyelin, "Tobacco: Without Legislation, Price Rises Could Ease," *Wall Street Journal,* June 19, 1998, p. B1.

131. For example, in Minnesota the companies were not allowed to argue that the state estimates of medicaid costs were overstated because they did not allow for the

A further troubling aspect of the state cases is that they are negatively related to any losses the states might be suffering because of smoking. Table 11 lists taxes state by state, as well as whether the state had sued the tobacco companies by June 1998. Not surprisingly, states that already charged higher taxes to smokers were the ones filing these cases, which are then settled for yet higher taxes on smokers.

Why were the state deals structured as national taxes? First, each state would like nothing better than to get its tax revenue from the residents of other states if it could. Second, because the states demanding the damages already had high taxes, new state taxes to finance the deals would increase smuggling between states.[132] Third, a crucial difference between the individual state settlements and the resolution is that the state deals apply only to the four large firms, and not to Liggett (because of its prior settlement) or to any new entrant. If the state deals were financed exclusively by in-state damage payments, they would create a large cost advantage for Liggett and the fringe firms relative to the major companies and would enable aggressive entrants and Liggett to dominate the generic business and seriously damage the premium segment for the major companies. By basing damages on national sales the deals have given Liggett and the fringe a small, nondisruptive national advantage of a few cents a pack.

An implication is that while the four state deals were not enough to

premature deaths of smokers. They were also not allowed to argue that the state should be allowed to sue only for its part of medicaid expenses, rather than for the federal government's part as well. A reasonable case can be made (at least to an economist) that these rulings were flawed, particularly because what was really being negotiated was a tax hike on smokers, rather than liability payments by the companies. One might not want to reduce a company's liability based on the "savings" from smokers who die early, but it is quite another thing to tell smokers who are being asked to pay for the externalities they create that their shorter life expectancy should not be credited. The presiding judge was removed from the case shortly after the settlement was announced. See Associated Press, "Fitzpatrick Removed from Tobacco Case," *Minneapolis Star Tribune,* June 10, 1998, p. B3.

132. In the United Kingdom, where smuggling in contraband is relatively difficult, tobacco smuggled from foreign countries accounts for about 20 percent of cigarette consumption and about two-thirds of hand-rolled tobacco consumption. See Richard Tomkins, "Failing to Kick the Habit," *Financial Times,* June 26, 1998, p. 22; and John Willman, "Customs to Clamp Down on Smuggling," *Financial Times,* July 29, 1998, p. 8. In the United States the classic example of interstate smuggling is between New Hampshire and Massachusetts. For example, in 1996 taxes (including sales taxes) were 63 cents a pack lower in New Hampshire than in Massachusetts; per capita sales were 74.6 packs in Massachusetts and 158.0 in New Hampshire.

Table 11. State Cigarette Taxation 1996, and Propensity to Sue

Cents per pack

State	*Excise tax*	*Sales tax*	*Consumer price*	*Suing as of June 1998*
Alabama	16.5	7	167.4	No
Alaska	29	0	214.4	
Arizona	58	11	222.0	
Arkansas	31.5	8	181.3	
California	37	14	200.3	
Colorado	20	0	174.4	
Connecticut	50	13	208.5	
Delaware	24	0	171.9	No
Florida	33.9	11	182.7	
Georgia	12	5	158.9	
Hawaii	60	9	242.8	
Idaho	28	9	184.4	
Illinois	44	12	198.7	
Indiana	15.5	8	156.3	
Iowa	36	10	189.3	
Kansas	24	8	171.3	
Kentucky	3	9	145.6	No
Louisiana	20	7	166.9	
Maine	37	11	190.2	
Maryland	36	10	190.7	
Massachusetts	76	12	244.6	
Michigan	75	14	233.8	
Minnesota	48	14	216.8	
Mississippi	18	12	168.6	
Missouri	17	7	163.4	
Montana	18	0	164.9	
Nebraska	34	9	184.8	No
Nevada	35	13	198.5	
New Hampshire	25	0	176.6	
New Jersey	40	12	194.6	
New Mexico	21	9	176.0	
New York	56	9	222.5	
North Carolina	5	6	152.0	No
North Dakota	44	12	194.1	No
Ohio	24	8	166.8	
Oklahoma	23	8	172.0	
Oregon	38	0	197.6	
Pennsylvania	31	11	176.5	
Rhode Island	61	15	217.0	
South Carolina	7	8	153.9	
South Dakota	33	7	181.7	
Tennessee	13	13	161.1	No
Texas	41	12	189.8	
Utah	26.5	9	186.2	
Vermont	44	10	201.9	
Virginia	2.5	7	159.6	No
Washington	82.5	17	265.1	
West Virginia	17	10	160.9	
Wisconsin	44	10	200.7	
Wyoming	12	0	164.1	No

Sources: first 3 columns, Tobacco Institute (1997). Data are as of November 1, 1996. Data for last column from the State Tobacco Information Center Web site at *www.stic.neu.edu*.

a. The average tax in states with suits is 45 cents. The average tax in nonsuing states is 24 cents.

encourage entry, the companies could not make similar deals with all fifty states unless smaller firms and new entrants could be required to participate.[133] The companies probably settled the first four state claims to minimize bad publicity while a national deal was pending, but this concern became less salient once the McCain bill was killed.[134] Furthermore, state settlements could not provide any protection from *Castano* cases, so any deal negotiated jointly by the remaining states would have to be more modest than either the resolution or the bill.

The November Multistate Agreement

On November 23, 1998, the attorneys general of all the remaining states signed a reported $206 billion settlement of their medicaid claims against the tobacco industry. Moving in our suggested direction of reducing lump-sum payments, the deal actually consists of just $2.4 billion to be paid in proportion to the firms' market values, followed by a national cigarette tax that will ultimately settle at about 35 cents a pack.[135] Marketing restrictions are weaker than in the resolution, resembling those negotiated earlier in the individual state deals.[136] There are

133. The entry problem would be even more severe if entrants were able to buy the rights to the names of premium brands while maintaining their tax advantages. In this situation the firms might escape their liabilities by selling off their trademarks and liquidating themselves. Liggett is already structured so that its trademarks are owned by separate, wholly owned subsidiaries. Therefore it would be necessary to make transferred brands still liable for tax.

134. During this period the companies also settled the *Broin v. Philip Morris* suit concerning environmentally transmitted smoke, although the scientific evidence behind such claims is much weaker than the evidence on direct smoking. In addition to the companies' desires to avoid negative publicity, the willingness of the attorneys to accept a settlement that gave the plaintiffs no money was crucial, as was the companies' agreement not to contest the lawyers' fees at the hearing to determine the fairness of the settlement. The lawyers, a husband-and-wife team, received $49 million. See Richard Tomkins, "Justice Is Blind," *Financial Times,* July 17, 1998, p. 21.

135. See Gary Black and Jon Rooney, "AG Settlement: Less Onerous Payment Stream Could Fuel Positive Revisions. 43–45 States In." November 16, 1998. Available at www.tobacco.org.

136. The marketing restrictions include bans on billboards and transit signs, on promotional merchandise with brand logos, on product placements in movies, and on cartoons in advertising (including Joe Camel); a limit of one sports sponsorship per company per year; and a limit on the size of indoor and outdoor signage to 14 square feet. See Gary Black and Jon Rooney, "New AG Settlement: Critical Investment Question–Not When, But How Many," November 11, 1998. Available at www.tobacco.org.

no look-back provisions. At the same time, the companies receive relief only from the state cases and not from private litigation.

The artifice of describing the tax increase as ''damages'' implies that without further action, the payments would apply only to the Big Four. New entrants and smaller rivals, most prominently Liggett, would have a 40-cent advantage (including the earlier similar settlements with Florida, Minnesota, Mississippi, and Texas) on a product that costs only 20 cents to manufacture.[137] Therefore, significant sections of the agreement focus on alternately providing carrots and sticks to encourage the small companies to sign.

On one hand, a small company that voluntarily subjects itself to the tax increase will be allowed to keep for itself all tax revenues on sales up to 125 percent of 1997 levels.[138] Given current wholesale prices of about 34 cents a pack for small firm generics, this subsidy will significantly exceed current annual revenues for these firms, so their profits will exceed their current sales.[139] The deal gives Liggett alone the right to receive this subsidy on 400 million packs a year.

On the other hand, the states are to pass model statutes requiring small companies that do not sign the agreement to make alternative ''trust fund'' payments, nominally as a bond against future legal claims, designed to bankrupt any nonsignatories.[140] States that do not pass the model statute risk forfeiting their entire share of the tax revenue; any who pass the law but whose state courts declare it invalid will lose up to 65 percent. So states have a significant incentive to appoint judges who will rubber-stamp this provision of the deal.

137. By the time of the deal, the smaller rivals held a little more than 2 percent of the market. See note 5.

138. There was talk of changing the base period for the small firms' tax subsidies to 1998, which would give these firms an incentive to give away as many cigarettes as possible during the last five weeks of 1998. See Gary Black and Jon Rooney, ''Philip Morris/Liggett Deal: Has Philip Morris Re-Armed the Enemy?'' November 23, 1998. Available at www.tobacco.org.

139. See Gary Black and Jon Rooney, ''The Renegade Rift: Why RJR and B&W Will Come Back to the Table,'' August 28, 1998. Available at www.tobacco.org.

140. Payments would equal the same amount per pack as the taxes under the deal, but would be nondeductible. A payment of 35 cents a pack would require a price increase of about 55 cents a pack, putting a nonsignatory at a 20-cent price disadvantage. Furthermore, the trust fund payments would cover all packs sold rather than just those in excess of 125 percent of base sales. The approach is similar to that in the resolution; see note 33.

Liggett argued that if it became a nonsignatory, it should be exempt from the "trust fund" payments, because of its earlier settlement with the states. If Liggett had won this argument in court, it would have been tremendously damaging to the settlement. So Philip Morris agreed to pay Liggett $150 million to sign the deal, and another $150 million for three brands that were probably worth about half that amount. In addition, Liggett retained its annual tax subsidy of more than $100 million a year.[141]

Small cigarette companies are likely to flood into any state, including any of the four that are not parties to the current deal, that does not successfully enact a model statute. To insure the industry against this, the states have promised to pay the Big Four as much as $1.00 a pack a year for any market share lost to nonsignatories beyond 2 percentage points, up to 18⅔ points. The senior claims against this money will be 40 cents a pack for the companies that actually lose share (most likely, RJR and Brown and Williamson), up to $300 million per firm per year, while the remainder of the payments will be made in proportion to market share.[142]

Lawyers will be paid a total of $750 million a year for five years and then $500 million a year indefinitely.[143] The present value of the fees

141. Technically, the deal was structured as a $300 million purchase of the Chesterfield, L&M, and Lucky Strike brands (in the United States), with Liggett getting to keep $150 million if the FTC rejected the deal. Gary Black estimated the 1998 sales of the three brands at 40 million packs. Generously assuming that these declining brands earn the industry average of 35 cents a pack and are worth 5.1 to 6 times pretax earnings (see note 65), their value would be $71 million to $84 million. See Bloomberg News, "Brooke Sells 3 Brands to Philip Morris, Joins Accord (update 1)," November 22, 1998, 3:47 p.m., and Gary Black and Jon Rooney, "Philip Morris/Liggett Deal: Has Philip Morris Re-Armed the Enemy?" November 23, 1998, available at www.tobacco.org.

142. There is some reallocation between Lorillard and Philip Morris that has the effect of making the value of Lorillard's claims on the rebates proportional to its market share, assuming that its sales and market share do not rise too dramatically. Compare the 40 cents per pack promised to firms that lose share with RJR and Brown and Williamson's operating profits of about 25 and 20 cents per pack, respectively. So these firms, which are most likely to lose market share, might benefit from medium-scale entry by nonsignatories and may even be encouraged in some circumstances to raise prices as a means of losing share. Certainly, the terms of the deal would make it much easier for the industry to sustain high prices in the face of nonsignatory entry. See Section IX of the agreement.

143. Robin Topping and Harry Berkowitz, "Big Payday in Tobacco Settlement," *Newsday*, November 17, 1998, p. A52.

is about $8 billion, or six to seven times the amount of actual damages that will be paid to the fifty percent of the states that hired outside counsel.[144]

It would make much more economic sense to negotiate a deal that included the marketing restrictions and damage payments plus an agreement that the companies would not fight an increase of up to 35 cents in any state's cigarette excise tax. But taxes defined as such would sound less attractive politically and would surely require legislative approval. Furthermore, such taxes could be based only on state-by-state sales because the attorneys general and the state legislatures have no authority to pass taxes based on national sales. But on that basis, many states, particularly those that had no desire to sue the industry, like North Carolina, would not have joined the deal.[145] By imposing de facto national taxes the deal coerces these reluctant states into participating; if North Carolina did not join, its consumers would still be hit with the tax hike, so its only option is whether or not to accept its share of the revenues. Finally, the trial lawyers had a multibillion dollar incentive to promote the deceptive labeling of the payment as damages rather than as taxes.

Because of its byzantine structure, the signing of the multistate settlement represented a beginning rather than an end. There will be debates in every state over whether to pass the model statute. Some legislators may ultimately understand the economics of the whole deal and fight to have it overturned. Even if most states pass the model statute, it is likely that some will not. For example, the four states that settled earlier have no incentive to pass the statute. There may well be new companies that start by selling in states without statutes, and as they grow, they may have an incentive to fight to overturn the statutes in other states. An organization focused on consumer, but not trial

144. This estimate assumes a 7 percent discount rate and fees continuing indefinitely. Some lawyers are complaining about their treatment under the deal, See, for example, Dan Morain and Henry Weinstein, "Dispute Brewing over Private Attorneys' Fees in Tobacco Lawsuits Litigation," *Los Angeles Times*, November 22, 1998, p. A26, detailing the complaints of William Lerach, one of the country's most politically powerful trial lawyers.

145. The North Carolina state legislature voted in 1996 to prohibit a suit against the industry, but the state's attorney general, Michael Easley, was a major player in the settlement. See Bob Williams, "2 Who Forged Tobacco Accord," *Raleigh News and Observer,* November 23, 1998, p. A1.

lawyer, interests could object to the structure of the multistate settlement, as might anyone disturbed by the prospect of one or more states being able to get together to pass a national tax. And of course the deal leaves us where we were at the beginning of 1997 in terms of the class-action *Castano* suits. So very little has been truly resolved.

Radical Solutions

This paper has focused mostly on the provisions in the bill and resolution and how they could be improved. This section looks at two ideas that were not seriously considered but perhaps should have been.

A more radical approach to a tobacco deal would be for the federal government to buy the companies' domestic tobacco businesses. Applying McCain-like taxes to pay the cost, the debt incurred in a fully debt-financed purchase could be paid off in about two years.[146] Tobacco policy could then be determined without any input from tobacco executives and shareholders. The disadvantage of this option is political: there would be no more industry villains to kick around, and the government would have to take responsibility if demand failed to decrease adequately. If there is one thing that government monopolies are traditionally good at, however, it is deglamorizing their products and making them as consumer-unfriendly as possible.[147]

As another alternative, if concern over public health focuses on the amount of cigarette smoking, why not regulate quantity directly instead of price? That is, a fixed and declining number of licenses could be sold each year to cigarette makers, analogous to tradable pollution

146. Assuming a price-earnings ratio of 10 for the domestic tobacco industry ex litigation expenses, the industry would be worth about $50 billion. The resolution showed that the companies would be willing to give up at least a third of that value to settle litigation claims, and the firms' market values show that shareholders would take much less. Excluding the lump-sum payments, the McCain bill would have collected $29.8 billion in tax revenues in its first two years. Combined with the operating profits from the acquired companies (perhaps another $13 billion), this should be enough to pay off a fully debt-financed purchase.

147. One possibility might be to ask Bob Tisch, one of the brothers who controls Lorillard and a former Postmaster General, to run the monopoly and institute post-office worst-practice marketing reforms.

permits.[148] Firms would still have an incentive to market so that they could raise prices, but the marketing would have no first-order health consequences. An advantage of this approach is that it sidesteps the disputes between the government and the firms about the sales impacts of different taxes. Of course, the usual issues about quantity versus price regulation would apply. But even if setting quantity targets is desirable, it may not happen because of politics: the rhetoric has all been about reducing youth smoking while allowing adults to smoke. Setting quantity levels for overall cigarette sales (as opposed to the quantity targets for youth participation in the look-back rules) might be too difficult to defend as a youth smoking policy.

The Way Forward

It is not possible to make a deal that would satisfy both the tobacco industry and its most ardent critics. David Kessler, former head of the Food and Drug Administration, says of the companies: "I don't want to live in peace with these guys. . . . If they cared at all for the public health, they wouldn't be in this business in the first place. All this talk about it being a legal business is euphemism. They sell a deadly, addictive product. There's no reason to allow them to conduct business as usual."[149] What is possible is a deal that would sharply reduce smoking, youth smoking in particular, in return for reducing the companies' exposure to lawsuits. This was the concept behind the resolution and the early draft of the bill, and some steps in this direction are taken in the badly flawed multistate settlement. In this concluding section we summarize the main ways in which such a deal should be structured.

Cigarette taxes should be set so that firms' marginal rates are greater than or equal to their average rate, preferably greater. An easy way to do this is to exempt a small fraction of each firm's current sales from the taxes. The resolution set marginal and average rates equal; the bill set marginal rates below average.

In the context of this legislation, there is no good rationale for setting

148. The licenses could relate to tar and nicotine content as well as to number of cigarettes.

149. See Jeffrey Goldberg, "Big Tobacco's Endgame," *New York Times Magazine*, June 21, 1998.

the same tax rate on all cigarettes. One might argue that government's role is to make sure that citizens have adequate information to decide what to eat, drink, and smoke and to set taxes based on the externalities imposed on others. But if that is all, cigarette taxes should be lower than they already are. Higher taxes must be justified by assuming that smokers do not adequately internalize their risks to themselves. If so, taxes should be higher the more tar and nicotine there is in a cigarette. This approach would be consistent with the provisions in both the bill and resolution to set maximum levels of tar in cigarettes. Basing taxes on tar and nicotine would also give the companies an incentive to develop safer cigarettes. If youth smokers are attracted by heavily marketed brands, there is also a rationale for imposing ad valorem taxes. Such taxes reduce the incentive to market premium cigarettes and would discriminate against youth smoking.

We support tough marketing restrictions. Such restrictions should reduce smoking, youth smoking in particular, without proportionally reducing profits. The argument that few smokers switch brands, and therefore the reason that companies wish to continue to advertise is to attract youth smokers, is simply wrong. Companies will aggressively fight for new customers, but in doing so will dissipate much of their future profits. It is not surprising that they were willing to sacrifice Joe Camel and agree to other marketing restrictions on the first day of negotiations over the resolution.

The look-back penalties in the resolution were a useful mechanism for enforcing the marketing restrictions. The look-back penalties in the bill were simply another poorly designed tax on cigarettes, having little to do with youth smoking. Restrictions on where tobacco can be sold and increases in the minimum legal age would make more sense than look-backs as youth smoking measures. Given the bill's hand-tying marketing restrictions on the companies, the incentives for reducing underage smoking should be directed at state governments, which would be responsible for the efficacy of antismoking programs and would have the police power to enforce rules against the illegal sale and consumption of cigarettes. That said, we believe that regardless of the rhetoric, the public health community is more concerned, and appropriately so, with reducing overall smoking than with reducing youth smoking participation rates.

Whether or not the companies' past actions should make them liable

for damages, we support including protections from lawsuits in any deal. It is the one thing that can be offered to the companies to make them acquiesce to all the other provisions that will be in any legislation. Congress could pass an antismoking bill, but if there are no legal protections, it would have to be done over the vigorous opposition of the industry, which succeeded in defeating the current bill after its protections were removed.[150]

If the litigation against the companies were focused on truth seeking and a fair calculation of damages, we would be less enthusiastic about legal protections. But none of the parties seems particularly concerned about relating payments to damages. That is why the up-front damage payments were based on how deep each company's pockets were and not on its contribution to disease. Similarly, the coinsurance provisions that made it as cheap for a company to give a plaintiff $5 million as it would be to spend $1 million fighting off an invalid claim hardly seem designed to push the legal system to get at the truth. We do not advocate lump-sum payments made in proportion to market value, nor do we advocate the coinsurance scheme.[151]

We have enormous problems with the individual state settlements. The collusive nature of these agreements, which effectively impose national excise taxes on the industry to settle the claims of an individual state, will set a terrible precedent for other litigation if the agreements are allowed to stand without explicit congressional approval. These settlements also create a common pool problem; each state now has the incentive to pass laws making it easier to sue tobacco and other industries as a way to tax consumers in other states.

The flaws in the multistate agreement illustrate how inaccurately describing taxes as damages generates huge windfalls for special interests, including trial lawyers and smaller companies.

In the end, whether a comprehensive deal occurs may depend on how important it is to the antitobacco forces to punish the companies. The companies can be bargained into accepting higher taxes and marketing bans and paying some money. They cannot be bargained into bankruptcy. Without a full national settlement they may be forced to

150. Furthermore, the marketing restrictions and look-back penalties were likely to be challenged in court if Congress passed a bill without industry acquiescence.

151. We would not object so much to lump-sum payments made in rough proportion to a company's responsibility for damages.

pay more money, maybe even forced into bankruptcy. But bankruptcy would not make the cigarette industry disappear, and the restructured companies that arose from chapter 11 would be less vulnerable to lawsuits than the current firms. If the goal is to cut smoking and to do it quickly, a deal makes sense.

Appendix A: Fixed-Revenue Taxation versus Specific Taxes

This appendix shows that relative to specific taxes, fixed-revenue taxation results in lower pass-through and yields more dispersed market shares.

Let firms $i = 1,\ldots,N$ have marginal costs c_i, and choose outputs q_i. Let $Q = \sum_{i=1}^{N} q_i$, and assume a conventional tobacco demand specification $\ln Q = a - bp$, or equivalently $p = \alpha - \beta \ln Q$, in which p is the industry price.

Assuming Cournot behavior and a specific tax of t, each firm, i, sets $c_i + t = \frac{d}{dq_i}(pq_i) = \alpha - \beta \ln Q - \beta s_i = p - \beta s_i$, in which s_i is i's market share. Aggregating over all N firms yields $Np - \beta = \sum_{i=1}^{N} c_i + Nt$, which implies $p = c^* + \beta/N + t$, in which c^* is the (unweighted) average cost of the firms.

However, a fixed-revenue tax $T = tQ$, allocated in proportion to market share, implies that the individual firm's first-order condition becomes $c_i + (1 - s_i)t = \frac{d}{dq_i}(pq_i) = p - \beta s_i$, and aggregating over the N firms yields $p = c^* + \frac{\beta}{N} + \frac{N-1}{N}t$.

This result, that the derivative of price with respect to the average tax is only $(N - 1)/N$ as great with a fixed-revenue tax, is independent of the specification of demand, but it does depend on the Cournot assumption. We chose the log-linear distribution to illustrate because it is commonly used to estimate cigarette demand.

Log-linear demand also has the nice feature that specific tax increases

are passed on dollar for dollar with no changes in industry market shares. With the fixed-revenue tax, solving for market share yields $s_i = \frac{1}{N} + \frac{c^* - c_i}{\beta - t}$, which has the intuitive implication that market shares will become more dispersed if a fixed-revenue tax is instituted, because the largest firms will face the smallest incremental marginal costs from the tax.

Again, it is not too hard, although algebraically messier, to check that the result that a firm with costs below (above) c^* has a larger (smaller) market share under fixed-revenue than under specific taxation is independent of the specification of demand.

The results are qualitatively the same but not as strong outside the Cournot model. In a Cournot model, a firm's actions do not affect its competitors' sales. In the extreme where industry demand is completely inelastic, a firm's marginal tax rate under fixed-revenue taxation will be equal to the average rate of t. If activity that leads to one extra sale for the firm leads to an increase of δ in industry sales, then the effective marginal tax rate under fixed-revenue taxation is $t(1 - \delta s_i)$, and the projected pass-through rate is $\frac{N - \delta}{N}$ times the pass-through rate of a specific tax.

Appendix B: The Value of the Youth Market: Price Competition

This appendix describes a simple model of price competition in which the inability to price-discriminate between old and young consumers does not affect the value of the youth market, and the value of young consumers is small because the profits earned from them after they have developed brand loyalty are dissipated by competition for those profits.

Begin with a single-period N-firm market in which each firm i has a privately known marginal cost c_i independently drawn from a common distribution $F(\cdot)$.[152] Each firm has $\left(\frac{n}{N}\right)$ "old" brand-loyal customers

152. This assumption allows us to analyze the effects of asymmetries in firms' costs while maintaining a symmetric model structure.

who have reservation price R for consuming its brand, but a high cost of switching to any other brand.[153] There are also m "youth" consumers who have reservation price R for consuming *any* brand and so will buy the cheapest brand.[154] Firms are risk neutral and independently and noncooperatively choose prices p_i.

To analyze this model let $d_i = R - p_i$ be the "discount" below the reservation price that firm i offers. Think of the firm that offers the highest discount as the winner of a prize worth $m(R - c_i)$, that is, the low-price firm wins the youth market, which is worth $m(R - c_i)$ to it before accounting for the discount. The winning firm pays $\left(\frac{n}{N} + m\right)d_i$ in discounts while nonwinners pay $\left(\frac{n}{N}\right)d_i$ in discount costs.[155] It now follows from the Revenue Equivalence Theorem that the expected profits of the firms in this "discount auction" equal their expected profits if they were bidders in any standard auction mechanism that allocates the same prize.[156] But if an auctioneer simply ran an ascending auction for the prize, raising the asking price until just one bidder remained, the winning bidder would be the lowest-cost firm and would pay the price at which the second-lowest-cost firm (call its actual cost c_2) quits,

153. We assume this "switching cost" is so high that no firm finds it profitable to price low enough to sell to other firms' old customers. Obviously, we do not intend this model to be taken literally. See Klemperer (1987a) for discussion.

154. An alternative model would have these consumers buying from the best-advertised brand. The results would be similar. It is trivial to relax the assumption that the youth consumers have the same reservation prices as the older ones.

155. All firms additionally make profits of $\left(\frac{n}{N}\right)(R - c_i)$ on their old customers.

156. The Revenue Equivalence Theorem states that if each of N risk-neutral potential buyers has a privately known value, v_i, independently drawn from a common, strictly increasing, and atomless distribution for a prize, then any mechanism in which the object always goes to the buyer with the highest value and any bidder with the lowest-possible valuation expects zero surplus yields the same expected revenue to the auctioneer and results in a buyer with value v_i making the same expected surplus. Here, $v_i \equiv m(R - c_i)$. We assume the assumptions of the theorem hold and note that a bidder with the highest possible cost sets $d_i = 0$, so earns zero surplus from the competition to serve the youth market. For other examples of using the Revenue Equivalence Theorem to efficiently analyze situations that are not obviously auctions, see Bulow and Klemperer (1994, 1999). See Klemperer (forthcoming a, b) for further discussion.

$m(R - c_2)$. That is, since each firm has the lowest costs, say c_1, with probability $\frac{1}{N}$, its expected profits from the auction are $\left(\frac{m}{N}\right)E(c_2 - c_1)$, and its expected total profits are $\left(\frac{m}{N}\right)E(c_2 - c_1) + \left(\frac{n}{N}\right)E(R - c_i)$.[157]

But if firms could price discriminate, each firm would make the same expected profits, $\left(\frac{m}{N}\right)E(c_2 - c_1)$, from Bertrand competition for the youth market, and $\left(\frac{n}{N}\right)E(R - c_i)$ from its old customers.

Of course, the youth consumers of today become old customers tomorrow: let the market last for M periods, demand in the first period remain as above, and consumers always repeat-purchase from their previous suppliers in all subsequent periods. To keep things simple, assume there are no new consumers after the first period. Then all firms' prices after period one will be R, so the prize of winning the youth customers in the first period equals $Mm(R - c_i)$, that is, M times larger than in the single-period model, before accounting for the discounts. So firms will discount their first-period prices M times further below R, and expected profits from the "auction" and total profits are just M times larger than previously. As before, the incremental value to the firms of the youth consumers is exactly their value in a model of (re-

157. To compute the expected market price without price discrimination, use the Revenue Equivalence Theorem to observe that the auctioneer's expected receipts from the ascending auction, $E[m(R-c_2)]$, equal his expected receipts from the "discount auction,"

$$E\left[\left(\frac{n}{N} + m\right)d_1 + \sum_{j=2}^{N}\left(\frac{n}{N}\right)d_j\right],$$

in which d_1 is the highest discount actually offered. Note that the former expression equals $E[(n + m)\bar{d}]$ in which $\bar{d}$ is the firms' average actual discount weighted by their sales. This equals $(n+m)(R-\bar{p})$ in which $\bar{p}$ is the expected average price in the market weighted by sales. Reorganizing yields

$$\bar{p} = \frac{nR + mE(c_2)}{n + m}$$

which, as expected, varies continuously from $E(c_2)$ for a pure youth market, to R for a market with no youth segment.

peated) Bertrand competition without brand loyalty; the monopoly profits they generate after the first period are dissipated by the correspondingly low prices that are set in period one to attract them.

A full model of many periods in which youth consumers enter in every period raises many more technical issues but yields the same messages. Although from an accountant's perspective youth smokers pay the same prices as anyone else, they are responsible for older customers paying less than they otherwise would. The value attributable to current and future youth smokers approximates their present value *absent* brand loyalty effects, while the value of old smokers is their value taking their brand loyalty into account.[158]

Computing the share of market value attributable to youth smokers requires assumptions about the nature of competition absent brand loyalty effects. Our simple model assumed winner-take-all Bertrand competition (and monopoly pricing for old consumers) and so implies a particularly low relative value of the youth market.[159] The advertising model in Appendix C involves less cut-throat competition (as would a model with Cournot competition or with some exogenous product differentiation) and yields a somewhat higher value of the youth segment.[160]

The truth probably includes elements of both these models and lies

158. In such a model, firms set prices that trade off their conflicting desires to capture new consumers and exploit old consumers in every period, and in symmetric steady state the price is the same in every period and for every consumer. The richest available model of multiperiod competition in which brand loyalty is developed endogenously is perhaps the model with switching costs in Beggs and Klemperer (1992). See also Farrell and Shapiro (1988) and Padilla (1995) for other multiperiod models, and Klemperer (1987a, 1987b) for simple two-period models with switching costs. The effects that these models demonstrate suggest this discussion may have *slightly* underestimated the value of the youth market, but the magnitude of the necessary correction is probably not large, and even its sign is ambiguous. See Klemperer (1995) for more discussion.

159. A figure of perhaps 2 percent of the present value of the whole market is obtained, making the assumptions in note 72, using a generous estimate of the profitability of Bertrand competition with differing costs (say 5 cents a pack), a conservative estimate of the current value of the old customers to a monopolist (say $35 billion, which is consistent with linear demand and a demand elasticity of -0.4) and assuming 10 percent of smokers switch every year (and then act like new consumers).

160. See appendix C. Also observe that our calculations are really valuing current nonsmokers, who include some above-age future smokers but exclude underage smokers who are already hooked. But the value of the underage segment cannot be very different.

somewhere between them and the case without brand-loyalty effects.[161] So although future smokers may account for a sixth of the present value of future revenues, their contribution to future profits is much lower. If industry executives seem to value the youth segment, it is probably due more to concern for their own future jobs than concern for their shareholders.

Appendix C: The Value of the Youth Market: Advertising Competition

This appendix describes a very simple model of advertising competition in which, although firms may advertise heavily to attract young consumers, the value to them of being able to do so may be small; and the more sensitive to advertising young consumers are, the larger the fraction of the future revenue from these consumers that is dissipated.

Assume firms $i = 1,\ldots,N$ independently choose marketing expenditures A_i that generate a flow of new consumers into the industry, $y = \left(\sum_{j=1}^{N} A_j\right)^{\eta}$, normalized so that the mass of current smokers is 1. Firms' shares of new smokers are proportional to their shares of current advertising expenditures, and smokers stick with their original firm until they quit the market at rate λ. Assuming a discount rate r, and that each consumer generates profits at rate $Xe^{-\beta\tau}$ at time τ for the company from which he buys (representing a constant real profit per pack and a secular decline of 100β percent in consumption per smoker), the present value of profits from a youth smoker is $X/(r+\lambda+\beta)$.

Firm i thus maximizes

$$\left[\frac{A_i}{\sum_{j=1}^{N} A_j}\left(\sum_{j=1}^{N} A_j\right)^{\eta}\frac{X}{r+\lambda+\beta}\right] - A_i,$$

161. For the latter case, which yields a value of the youth market at most equal to one-sixth of the value of the whole market, see the main text.

taking other firms' advertising levels as given, so in equilibrium

$$NA_i = y\left(\frac{N - 1 + \eta}{N}\right)\frac{X}{r + \lambda + \beta}.$$ [162]

So fraction $(N - 1 + \eta)/N$ of the future profits from youth smoking is dissipated in advertising costs. This fraction is increasing in the elasticity, η, of youth consumption with respect to advertising expenditures.

Current industry profits are X without advertising, and $X - NA_i$ with advertising; the market value of the industry is $X/(r + \lambda + \beta)$ without advertising, and $(X - NA_i)/(r + \lambda + \beta - y)$ with advertising. To take a simple example, if $y = 0.02$, $\beta = 0.01$, $\lambda = 0.025$, $r = 0.085$ (which are all consistent with the data in note 72), and $\eta = \frac{1}{2}$, then current profits rise by 7/41, and the industry's present value falls by only 1/41 if advertising, and hence youth smoking, is eliminated.[163] Extending the model to allow some brand switching would increase the value of the youth market because firms would spend less money trying to attract customers who might later be diverted to another firm.

162. We assume symmetric Markov-perfect equilibrium, thus ruling out "punishment strategies" which might allow more "collusive" equilibria to be supported in this dynamic game.

163. For example, if current pretax profits were $8.2 billion, marketing expenditures would be $1.4 billion. Eliminating those expenditures would increase short-run profits to $9.6 billion. But the gradual erosion of the customer base would mean that, assuming a 40 percent tax rate, the market value of the domestic tobacco industry would fall from $49.2 billion to $48 billion.

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