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# SAVING SMOKERS FROM THEMSELVES: THE PATERNALISTIC USE OF CIGARETTE TAXES

Gary Lucas, Jr.\*

## INTRODUCTION

Governments at all levels are increasingly relying on cigarette taxes to satisfy revenue needs.<sup>1</sup> These taxes affect a shrinking minority and burden an activity that many view as sinful. So legislators can increase these taxes at relatively low political cost.<sup>2</sup> It comes as no surprise then that most states have increased their cigarette tax in recent years, with many doing so multiple times.<sup>3</sup> As a result, cigarette tax revenue is substantial, exceeding \$32 billion in 2010.<sup>4</sup> To put that figure in perspective, the federal government anticipates that gift and estate tax revenue will total less than \$26 billion for 2011 and 2012 combined.<sup>5</sup>

Additionally, the tax burden on smokers is significant. The federal tax is \$1.01 per pack and the average state tax is \$1.17 per pack.<sup>6</sup> The highest combined federal, state, and local tax is \$6.86 per pack in New York City, where a pack-a-day smoker pays over \$2,500 per year in cigarette taxes.<sup>7</sup>

Antismoking advocates often argue that taxing cigarettes is both an effective way to raise revenue and to force smokers to internalize the costs that smoking imposes on others.<sup>8</sup> But a compelling case can be

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1. See, e.g., Eleanor Maag & David Merriman, *Tax Policy Responses to Revenue Shortfalls*, 29 ST. TAX NOTES 363, 367–72 (2003).

2. *Id.* at 367–72; W. Kip Viscusi, *Cigarette Taxation and the Social Consequences of Smoking*, in 9 TAX POLICY AND THE ECONOMY 51, 52 (James Poterba, ed., 1995) [hereinafter Viscusi, *Social Consequences*].

3. 45 ORZECZOWSKI & WALKER, *THE TAX BURDEN ON TOBACCO* 9–10 (2010). Between January 1, 2009 and January 1, 2011, 21 states and the federal government increased cigarette taxes. *Id.*

4. *Id.* at iv. This figure includes federal, state, and local excise taxes for the fiscal year ending June 30, 2010. *Id.*

5. Office of Mgmt. & Budget, *Historical Tables, Table 2.5: Composition of "Other Receipts," 1940–2016*, WHITE HOUSE, <http://www.whitehouse.gov/omb/budget/Historicals> (last visited Aug. 27, 2012).

6. ORZECZOWSKI & WALKER, *supra* note 3, at iv.

7. See CAMPAIGN FOR TOBACCO-FREE KIDS, *TOP COMBINED STATE-LOCAL CIGARETTE TAX RATES* (2010), available at <http://tobaccofreekids.org/research/factsheets/pdf/0267.pdf>. The combined tax is composed of the federal tax of \$1.01 per pack, the state tax of \$4.35 per pack, and the city tax of \$1.50 per pack. The \$2,500 figure assumes that the smoker actually buys her cigarettes in New York City.

8. E.g., CAMPAIGN FOR TOBACCO-FREE KIDS, *TOBACCO TAX INCREASES ARE A RELIABLE*

made that neither of these rationales supports the large tax burden currently placed on tobacco. Using cigarette taxes to raise revenue is problematic because smokers are disproportionately poor. As a result, cigarette taxes are highly regressive.<sup>9</sup> Moreover, several studies have concluded that the current average tax per pack more than covers any external costs borne by nonsmokers.<sup>10</sup>

If external costs and the need for revenue do not justify higher cigarette taxes, then proponents of cigarette tax increases must rely on paternalism, i.e., the idea that the government should save smokers from themselves.<sup>11</sup> Paternalism is highly controversial. It involves interfering with individual autonomy despite the absence of harm to third parties. This gives rise to the accusation that paternalistic intervention unjustifiably forces paternalists' values and beliefs onto others.

Historically, economists and economically oriented legal scholars have been particularly skeptical of paternalistic smoking regulations.<sup>12</sup> Standard economic models generally assume that people are rational, which means, among other things, that we accurately weigh costs and benefits so as to make choices that maximize our utility (or well-being).<sup>13</sup> At least partly as a result of their faith in people's decision-making abilities, economists often advocate consumer sovereignty. This is the principle that the government should respect people's choices regarding what products to consume and should interfere with those

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SOURCE OF SUBSTANTIAL NEW STATE REVENUE 1-2 (2008) [hereinafter CAMPAIGN FOR TOBACCO-FREE KIDS, RELIABLE SOURCE], available at <http://www.tobaccofreekids.org/research/factsheets/pdf/0303.pdf>; *Hearing Before the House Comm. on Ways and Means on the Financing Provisions of the Administration's Health Security Act*, 103d Cong. (1993) (statement of Jeffrey Harris).

9. See *infra* Part IV.D.

10. See *infra* Part I.B.2.

11. For purposes of this Article, I define paternalism broadly as interference by the government with a person's self-regarding decisions, where the government's intent is to further that person's welfare. Cf. Bill New, *Paternalism and Public Policy*, 15 *ECON. & PHIL.* 63, 65-71 (1999) (using a similar definition).

12. W. KIP VISCUSI, *SMOKING: MAKING THE RISKY DECISION* 144-46 (1992) [hereinafter VISCUSI, *RISKY DECISION*]; ROBERT D. TOLLISON & RICHARD E. WAGNER, *THE ECONOMICS OF SMOKING* ix-xi, 162-64 (1992); see also Thomas A. Lambert, *The Case Against Smoking Bans*, 13 *MO. ENVTL. L. & POL'Y REV.* 94, 103 (2006) (arguing that since smokers "appear to believe that the benefits that they experience from the activity outweigh the costs [it is] not at all clear that eliminating smoking will enhance social welfare"); Jonathan Gruber & Botond Köszegi, *Is Addiction "Rational"? Theory and Evidence*, 116 *Q.J. ECON.* 1261, 1285-86 (2001) [hereinafter Gruber & Köszegi, *Is Addiction Rational?*] (explaining but rejecting the model of smoking that has led some economists to criticize paternalistic regulation).

13. See N. GREGORY MANKIW, *PRINCIPLES OF MICROECONOMICS* 496 (4th ed. 2007); Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism"*, 151 *U. PA. L. REV.* 1211, 1214-15 (2003).

choices only to prevent harm to others.<sup>14</sup>

To many non-economists, consumer sovereignty seems inappropriate in the case of cigarettes, which are addictive and cause health damage. But some economists argue that people can rationally choose to consume addictive goods.<sup>15</sup> If so, then it is not obvious why the government should treat the decision to smoke any differently than other consumption decisions. Indeed, government efforts to reduce smoking would harm smokers instead of helping them.

But there are alternative theories of smoking consistent with a role for paternalism. One theory is that smokers are incapacitated by addiction. Some physicians and public health advocates believe that addiction constitutes a disease that effectively deprives the addict of free will.<sup>16</sup> If people smoke because they are incapacitated by addiction, then arguably smoking has no social value and the government's goal should be to eliminate it.

Another group of theories recognizes smoking as a choice but suggests that the choice is flawed—the product of smokers' imperfect rationality.<sup>17</sup> These theories stem from a more general critique of the rational actor model—a critique spearheaded by an increasingly influential group of paternalistic economists and legal scholars.<sup>18</sup> These

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14. See Paul Calcott, *Paternalism and Public Choice*, 17 VICTORIA ECON. COMMENT. 39, 39–41 (2000); JOSEPH E. STIGLITZ, *ECONOMICS OF THE PUBLIC SECTOR* 59, 86–88 (1999).

15. See Gary S. Becker & Kevin M. Murphy, *A Theory of Rational Addiction*, 86 J. POL. ECON. 675, 694–95 (1988).

16. E.g., U.S. DEP'T HEALTH & HUMAN SERVS., TREATING TOBACCO USE DEPENDENCE: 2008 UPDATE 6 (2008) (“Tobacco dependence is a chronic disease.”); DENNIS L. THOMBS, INTRODUCTION TO ADDICTIVE BEHAVIORS 3–5 (1994) (describing the disease model of addiction); Jacob Sullum, *Blowing Smoke about Addiction, Ability to Quit*, HOUS. CHRON., Mar. 25, 1997, at A23 (quoting David Kessler, a former commissioner of the Food and Drug Administration, who said, “Once they have started smoking regularly, most smokers are in effect deprived of the choice to stop smoking.”).

17. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285–86; Jon D. Hanson & Kyle D. Logue, *The Costs of Cigarettes: The Economic Case for Ex-Post Incentive-Based Regulation*, 107 YALE L.J. 1163, 1181–1223 (1998).

18. See generally Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism Is Not an Oxymoron*, 70 U. CHI. L. REV. 1159 (2003); Camerer et al., *supra* note 13; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12; Jonathan Gruber & Botond Köszegi, *Tax Incidence When Individuals Are Time-Inconsistent: The Case of Cigarette Excise Taxes*, 88 J. PUB. ECON. 1959, 1980 (2004) [hereinafter Gruber & Köszegi, *Tax Incidence*]; JONATHAN GRUBER & BOTOND KÖSZEGLI, A MODERN ECONOMIC VIEW OF TOBACCO TAXATION 17 (2008) [hereinafter GRUBER & KÖSZEGLI, MODERN VIEW]; Jonathan Gruber, *Government Policy Toward Smoking: A View from Economics*, 3 YALE J. HEALTH POL'Y L. & ETHICS 119, 120 (2002); Hanson & Logue, *supra* note 17; Ted O'Donoghue & Matthew Rabin, *Optimal Sin Taxes*, 90 J. PUB. ECON. 1825 (2006) [hereinafter O'Donoghue & Rabin, *Optimal Sin Taxes*]; Ted O'Donoghue & Matthew Rabin, *Studying Optimal Paternalism, Illustrated by a Model of Sin Taxes*, 93 AM. ECON. REV. 186 (2003). Mario Rizzo and Glen Whitman have challenged the claim that failures of rationality justify paternalism. Although they devote some attention to smoking, their subject is paternalistic regulation generally, and they discuss cigarette taxes only tangentially. As a result, they do not address many of the issues on which this Article focuses. See generally Mario J. Rizzo & D. Glen Whitman, *The Knowledge Problem of New*

scholars rely on evidence from psychology and behavioral economics, which shows that people are not perfectly rational. Instead, people suffer from self-control problems as well as cognitive limitations and biases.<sup>19</sup> These scholars argue that if people are imperfectly rational, then we may make mistakes that reduce our utility. In theory, government intervention can avoid or correct these mistakes.<sup>20</sup> Moreover, unlike traditional paternalistic measures, this type of intervention would purportedly make us better off as judged by our own internal standards, not those of the paternalists who advocate the regulation. In other words, the government could help us make the choices that we would make ourselves if we were perfectly rational.<sup>21</sup>

In the smoking context, economists and legal scholars use evidence of imperfect rationality to challenge the claim that smoking is a welfare-maximizing choice.<sup>22</sup> For example, Jonathan Gruber and Botond Köszegi argue that many smokers would like to give up smoking but lack the self-control<sup>23</sup> to do so.<sup>24</sup> Gruber and Köszegi conclude that a paternalistic tax on cigarettes would make smokers better off by giving them an additional incentive to quit, in effect compensating for their lack of self-control.<sup>25</sup>

If smoking results from incapacitation or imperfect rationality, then perhaps the government should intervene on smokers' behalf. But this Article challenges the claim that the government should use cigarette taxes for that purpose. While there is evidence that smoking can be a rational choice, this Article does not claim that all smokers are acting rationally. Instead, this Article argues that even if some smokers are

*Paternalism*, 2009 BYU L. REV. 905 (2009) [hereinafter Rizzo & Whitman, *Knowledge Problem*]; Mario Rizzo & D. Glen Whitman, *Little Brother Is Watching You: New Paternalism on the Slippery Slopes*, 51 ARIZ. L. REV. 685 (2009) [hereinafter Rizzo & Whitman, *Slippery Slopes*]; D. Glen Whitman, *Against the New Paternalism: Internalities and the Economics of Self-Control*, POL'Y ANALYSIS NO. 563 (2006).

19. E.g., Sunstein & Thaler, *supra* note 18, at 1159–70; Camerer et al., *supra* note 13, at 1211–19; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285–86.

20. E.g., Sunstein & Thaler, *supra* note 18, at 1162; Camerer et al., *supra* note 13, at 1218.

21. E.g., Sunstein & Thaler, *supra* note 18, at 1162 (“[I]t is legitimate for private and public institutions to attempt to influence people’s behavior even when third-party effects are absent” because “in some cases individuals make inferior decisions in terms of their own welfare—decisions that they would change if they had complete information, unlimited cognitive abilities, and no lack of self-control.”).

22. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285–86; Hanson & Logue, *supra* note 17, at 1181–1223.

23. For purposes of this Article, self-control simply refers to the inability of an individual to carry out the consumption plan that she deems best. For a discussion of the issues involved in defining willpower, which is sometimes used as a synonym for self-control, see Lee Anne Fennell, *Willpower Taxes*, 99 GEO. L.J. 1371, 1376–80 (2011) [hereinafter Fennell, *Willpower Taxes*].

24. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1261.

25. See *id.* at 1263.

acting irrationally, a number of reasons exist to be skeptical of paternalistic cigarette taxes.

Part I explains the theory that smoking is a rational choice and discusses evidence consistent with this theory. If smoking is rational, then paternalistic taxes are difficult to justify.

Part II discusses evidence that, according to paternalists, shows that smoking is not a rational choice. This evidence gives rise to the theory that smokers are incapacitated by addiction and to theories based on imperfect rationality.

Part III argues that incapacitation does not justify paternalistic taxes. First, incapacitation does not appear to drive all or even most smoking behavior. Incapacitation is inconsistent with the fact that tens of millions of people have quit smoking.<sup>26</sup> Second, even if we assume that some smokers simply cannot quit, cigarette taxes are not an appropriate response. Taxes effectively punish these smokers by increasing the price of a product that they find difficult or impossible to live without.

Similarly, Part IV argues that imperfect rationality does not justify paternalistic taxes. There are several reasons for this. The first is heterogeneity. Some people may smoke due to failures of rationality, in which case cigarette taxes have the potential to make them better off by encouraging them to quit. But for others, smoking may be a rational choice. For example, a large percentage of smokers quit early enough that they virtually eliminate their risk of premature death.<sup>27</sup> In other words, they smoke as young adults and then quit before the risk becomes very high. This suggests rational behavior.

If smokers are heterogeneous with respect to rationality, cigarette taxes are ill-suited as a paternalistic tool. Taxes are a one-size-fits-all solution that will harm rational smokers. And this harm must be offset against (and may exceed) any benefit to those who are helped.

The second reason is that paternalistic taxes create a significant potential for government failure. Even if some smoking is caused by imperfect rationality, government intervention can harm smokers more than it helps them. Government failure may occur for several reasons, including lack of control over smokers' responses to taxation. Many smokers respond to cigarette taxes in harmful ways, e.g., they smoke fewer cigarettes but switch to cigarettes higher in tar and nicotine.<sup>28</sup> These responses can undermine the goal of improving public health.

The third reason is regressivity. Low-income smokers respond to cigarette taxes by reducing spending on necessities, e.g., housing, which

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26. CTRS. FOR DISEASE CONTROL & PREVENTION, SUMMARY HEALTH STATISTICS FOR U.S. ADULTS: 2009 NATIONAL HEALTH INTERVIEW SURVEY 10, 85 (2010) [hereinafter CDC].

27. See *infra* Part I.A.2.

28. See *infra* Part IV.B.3.

adversely affects low-income families.<sup>29</sup>

The fourth reason is that potentially superior alternatives exist for helping smokers who suffer from imperfect rationality. These include the commitment contract for smoking cessation and the smoking license.<sup>30</sup> These solutions address failures of rationality while reducing the possibility of government failure and avoiding the problems caused by heterogeneity. These solutions are also more consistent with individual autonomy and do not impose a large burden on the poor.

Part V discusses whether the goal of reducing youth smoking justifies paternalistic taxes. Part V also argues that since the cigarette tax is a blunt tool for achieving this goal, the government should consider more narrowly targeted options, e.g., raising the minimum age for legal sale of cigarettes to twenty-one.

## I. SMOKING AS A RATIONAL CHOICE

Given the enormous risks involved, why do people smoke? According to some economists, the answer may be that smoking is a rational choice. Subpart A discusses rational addiction theory and evidence that supports the theory. Subpart B describes the theory's implications for cigarette tax policy. For purposes of this Article, the most important of these implications is that paternalistic taxes are unjustified.

### A. Theory and Evidence

Standard economic models generally assume that people are rational.<sup>31</sup> This means that we are informed and forward looking, and we accurately weigh the costs and benefits of our actions to maximize our own utility given our preferences, which are generally assumed to be stable.<sup>32</sup>

It may seem impossible for this model to explain smoking because unlike many consumer goods, cigarettes are addictive and can cause

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29. Susan H. Busch et al., *Burning a Hole in the Budget: Tobacco Spending and its Crowd-Out of Other Goods*, 3 APPLIED HEALTH ECON. & HEALTH POL'Y 263, 267–71 (2004).

30. Lee Anne Fennell, *Revealing Options*, 118 HARV. L. REV. 1399, 1482–85 (2005) [hereinafter Fennell, *Revealing Options*]; see generally Xavier Gine et al., *Put Your Money Where Your Butt Is: A Commitment Savings Account for Smoking Cessation*, 2 AM. ECON. J.: APPLIED ECON. 213 (2010); Jay Bhattacharya & Darius Lakdawalla, *Time-Inconsistency and Welfare* (Nat'l Bureau of Econ. Research, Working Paper No. 10345, 2004).

31. E.g., Gruber, *supra* note 18, at 120; MANKIW, *supra* note 13, at 496; Camerer et al., *supra* note 13, at 1214–15.

32. E.g., Gruber, *supra* note 18, at 120; MANKIW, *supra* note 13, at 496; Camerer et al., *supra* note 13, at 1214–15; Becker & Murphy, *supra* note 15, at 675.

health damage. But Nobel Prize-winning economist Gary Becker and coauthor Kevin Murphy have shown that addiction does not necessarily rule out the standard model.<sup>33</sup> Rather, addiction simply complicates the cost–benefit calculation. Instead of weighing the costs and benefits of smoking a single cigarette, a person must account for the possibility of addiction.<sup>34</sup> Addiction means that smoking today increases the desire to smoke in the future. And future smoking increases both monetary costs (through additional cigarette expenditures) and health damage. A rational smoker considers smoking’s current and future costs, taking addiction and health damage into account. In other words, a smoker might know that she could become addicted and harm her health, but still choose to smoke anyway because she has rationally determined that smoking is worth the risk.

Several types of evidence are consistent with the notion that smoking may result from rational calculation. The first is evidence that smoking produces certain benefits. The second is evidence that people consider potential costs in deciding whether to smoke or to continue smoking. And the third is evidence that smoking may have a lower subjective price for smokers than for nonsmokers.

### 1. Possible Benefits of Smoking

People may smoke because smoking produces benefits apart from avoiding the pain of withdrawal associated with quitting. Some people may simply enjoy the taste of cigarettes.<sup>35</sup> Others smoke because they believe (with some evidentiary support) that smoking has a number of positive effects, including reducing stress, depression, and anxiety, aiding in concentration and memory, preventing weight gain,<sup>36</sup> and facilitating social interaction.<sup>37</sup> Nicotine is an unusual drug that can

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33. Becker & Murphy, *supra* note 15, at 675.

34. *Id.* at 675–82; GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 4; Gruber, *supra* note 18, at 120.

35. Frank A. Sloan & Yang Wang, *Economic Theory and Evidence on Smoking Behavior of Adults*, 103 *ADDICTION* 1777, 1779 (2008).

36. For a discussion of whether quitting smoking leads to weight gain, see *infra* Part IV.B.3.

37. Stephen Heishman, a scientist at the National Institute on Drug Abuse, and his colleagues recently published a meta-analysis of 41 studies of the effects of nicotine on both smokers and nonsmokers. Stephen J. Heishman et al., *Meta-Analysis of the Acute Effects of Nicotine and Smoking on Human Performance*, 210 *PSYCHOPHARMACOLOGY* 453, 453 (2010). The study finds “significant positive effect sizes of nicotine on motor abilities, attention, and memory, which likely represent true performance facilitation.” *Id.* at 464. Because the study finds significant positive effects for nonsmokers as well as smokers, Heishman concludes that “nicotine’s performance enhancing effects might be one reason people decide to start smoking.” *Id.*; see also Cynthia Pomerleau, *Co-Factors for Smoking and Evolutionary Psychobiology*, 92 *ADDICTION* 397, 400–01 (1997); Naomi Breslau et al., *Nicotine Dependence, Major Depression, and Anxiety in Young Adults*, 48 *ARCHIVES GEN. PSYCHIATRY* 1069, 1071–73 (1991). In a survey of smokers aged 50–70, 41% reported that they had relapsed after



both calm a nervous person and stimulate a sluggish one.<sup>38</sup>

Moreover, just as tastes for other consumer goods may differ, tastes for smoking may differ. In particular, smoking may deliver a larger benefit to people who are especially stressed, anxious, or depressed, which could explain why some people smoke and others do not.<sup>39</sup>

Because of the risks involved, it may seem distasteful to discuss the potential benefits of smoking. And the fact that smoking may yield certain benefits certainly does not mean that smokers should ignore the consequences to their health. But it does mean that smoking is not obviously irrational. Some people might decide that the risk is worth it in the same way that people rationally decide to engage in other risky activities, e.g., driving on busy highways or skiing.<sup>40</sup>

## 2. Accounting for Smoking's Costs

There is substantial evidence that people consider potential costs in making smoking decisions. For example, many smokers respond to cigarette price increases by cutting back or quitting altogether. Although findings vary, a typical estimate of the price elasticity of cigarettes among adults is roughly -0.3 to -0.5.<sup>41</sup> This means that a 10% increase in price leads to a 3%–5% reduction in smoking, due to some smokers quitting and others cutting back.<sup>42</sup> Moreover, although the issue is controversial, a recent study finds that even older smokers (those who are presumably the most addicted) respond to higher cigarette prices by quitting smoking.<sup>43</sup> The price elasticity studies establish that people generally do consider the immediate financial costs of smoking.

People are also forward-looking and take into account future costs, e.g., possible health damage. In 1964, the Surgeon General issued a report announcing that smoking significantly increases the risk of lung

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quitting due to stress. Only 14% reported relapse due to habit or physical addiction. Ahmed Khwaja et al., *Time Preference, Time Discounting, and Smoking Decisions*, 26 J. HEALTH ECON. 927, 930 (2007) [hereinafter Khwaja et al., *Time Preference*].

38. Robert S. Goldfarb et al., *Are Rival Theories of Smoking Underdetermined?*, 8 J. ECON. METHODOLOGY 229, 232 (2001); see also Pomerleau, *supra* note 37, at 400.

39. See Pomerleau, *supra* note 37, at 397–401.

40. Cf. Khwaja et al., *Time Preference*, *supra* note 37, at 930 (“Judging from the reasons that people give for quitting and relapsing, more is at work than simple physical addiction.”).

41. FRANK A. SLOAN ET AL., *THE PRICE OF SMOKING* 9 (2004).

42. *Id.*

43. Philip DeCicca & Logan McLeod, *Cigarette Taxes and Older Adult Smoking: Evidence from Recent Large Tax Increases*, 27 J. HEALTH ECON. 918, 928 (2008) [hereinafter DeCicca, *Older Adult Smoking*] (finding “that a \$1 increase [in the cigarette tax] results in a 6–8% reduction in smoking participation among individuals aged 45–59”). A number of earlier studies find very little responsiveness among older smokers. For a review of this literature, see *id.* at 919–20.

cancer and certain other illnesses, as well as premature death.<sup>44</sup> Since then, the dangers of smoking have been well publicized, and the fact that smoking is dangerous is now common knowledge.<sup>45</sup> Changes in the perceived risks of smoking have no doubt played a large role in the dramatic decline in the adult smoking rate, which fell from about 42% in 1965 to just under 21% in 2009.<sup>46</sup> This suggests rational, forward-looking behavior.<sup>47</sup>

Another compelling piece of evidence that smokers account for health risks is the fact that so many people have quit smoking. In the United States, there are as many former smokers as current smokers.<sup>48</sup> And many former smokers quit to improve their health.<sup>49</sup> Research has confirmed the dramatic health benefits of quitting smoking, even during old age.<sup>50</sup> Quitting can substantially reduce the risk of smoking-related illness and can significantly prolong life.<sup>51</sup>

Not only have many smokers quit, smoking duration (i.e., the period of time a smoker smokes before quitting) is also on the decline.<sup>52</sup> In other words, smokers are quitting at younger ages today than in the past.

A study by John Pierce and Elizabeth Gilpin estimates the median cessation age of successive cohorts of smokers.<sup>53</sup> (The median cessation age is the age by which 50% of smokers from a particular cohort quit smoking.)<sup>54</sup> The estimated median cessation age for smokers born between 1900 and 1904 is age 66 for white males and age 70 for white

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44. U.S. SURGEON GEN., *SMOKING AND HEALTH*, 31–32 (1964).

45. VISCUSI, *RISKY DECISION*, *supra* note 12, at 78 (citing a survey in which 99% of respondents “had heard that cigarettes shorten life, and all of the respondents had heard that cigarettes are dangerous to one’s health”).

46. See RONALD WILSON, *CIGARETTE SMOKING AND HEALTH CHARACTERISTICS 1* (1967); CDC, *supra* note 26, at 88.

47. See Becker & Murphy, *supra* note 15, at 687 (noting that the decline in the smoking rate after 1964 “blatantly contradicts the view that the majority of smokers were myopic and would not respond to information about future consequences because they discounted the future heavily”).

48. CDC, *supra* note 26, at 10, 85. A current smoker is “someone who has smoked at least 100 cigarettes in their lifetimes and still currently smokes,” and former smokers consist of people “who have smoked at least 100 cigarettes in their lifetime but currently do not smoke at all.” CDC, *supra* note 26, at 86.

49. Lynn C. Larabie, *To What Extent Do Smokers Plan Quit Attempts?*, 14 *TOBACCO CONTROL* 425, 426 (2005); Khwaja et al., *Time Preference*, *supra* note 37, at 930.

50. Donald H. Taylor, Jr. et al., *Benefits of Smoking Cessation for Longevity*, 92 *AM. J. PUB. HEALTH* 990, 994 (2002); U.S. SURGEON GEN., *THE HEALTH BENEFITS OF SMOKING CESSATION* vi–vii, 8 (1990) [hereinafter 1990 SURGEON GEN.’S REPORT].

51. Taylor et al., *supra* note 50, at 994; 1990 SURGEON GEN.’S REPORT, *supra* note 50, at vi–vii, 8.

52. John P. Pierce & Elizabeth Gilpin, *How Long Will Today’s New Adolescent Smoker Be Addicted to Cigarettes?*, 86 *AM. J. PUB. HEALTH* 253, 253–54 (1996).

53. *Id.* at 253–54.

54. See *id.* at 253–54.

females.<sup>55</sup> By contrast, the estimated median cessation age for smokers born between 1975 and 1979 is age 33 for white males and age 36 for white females.<sup>56</sup> In other words, as many as half of smokers born between 1975 and 1979 will quit smoking by their mid-30s.<sup>57</sup>

This is important because according to a Surgeon General's report on the benefits of smoking cessation, "After 10 to 15 years of abstinence, the risk of all-cause mortality returns nearly to that of persons who never smoked."<sup>58</sup> Similarly, a recent study finds that "[m]ost of the excess mortality from smoking could be avoided by quitting smoking at age 35 years."<sup>59</sup>

Moreover, early quitting does not simply lead to more years lived in a poor state of health. Rather, it results in additional years of healthy life.<sup>60</sup> After fifteen years of abstinence, former smokers have the same number of healthy years remaining as never smokers.<sup>61</sup>

So it appears that many smokers smoke while they are young and then quit before smoking significantly reduces their life expectancy. Moreover, among those who do not quit in their mid-30s, many quit in middle age, which allows them to avoid much of the health damage they would otherwise sustain.<sup>62</sup> Again, early quitting is consistent with rational, forward-looking decision making.

### 3. Differences in the Subjective Price of Smoking

The claim that smoking is a rational choice also finds support in evidence that the subjective price of smoking (which includes non-pecuniary costs specific to the individual) is less for smokers than for nonsmokers. If so, then smokers might rationally find smoking more attractive than do nonsmokers, which could explain why some people

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55. *Id.* at 254.

56. *Id.* at 253–54.

57. Compare the findings of Philip DeCicca and his colleagues, who use longitudinal data that allow them to track the smoking status of a large sample of people from 1992, when most of the sample members were high school seniors, to 2000, when most of the sample members were around 26-years old. Philip DeCicca et al., *Cigarette Taxes and the Transition from Youth to Adult Smoking: Smoking Initiation, Cessation, and Participation*, 27 J. HEALTH ECON. 904, 904 (2008) [hereinafter DeCicca et al., *Transition*]. DeCicca and his colleagues find that of those who were smokers in 1992, 34% had quit by 2000. *Id.* at 911.

58. 1990 SURGEON GEN.'S REPORT, *supra* note 50, at 9.

59. Taylor et al., *supra* note 50, at 994.

60. Truls Ostbye & Donald Taylor, *The Effects of Smoking on Years of Healthy Life (YHL) Lost Among Middle-Aged and Older Americans*, 39 HEALTH SERVICES RESEARCH 531, 354 (2004).

61. *Id.*

62. Pierce & Gilpin, *supra* note 52, at 254; SLOAN ET AL., *supra* note 41, at 79 ("Virtually all the excess mortality from smoking could be avoided by quitting smoking at age 35, and most of it by stopping smoking in middle age.").

smoke and others do not.

*a. Preference Heterogeneity*

One reason that the subjective price of smoking may vary is preference heterogeneity. Smokers may have preferences that cause them to conclude that the nonmonetary costs of smoking are less than they appear to nonsmokers.<sup>63</sup>

First, smokers may value health and longevity less than nonsmokers. A recent study finds that smokers place substantially less value than do nonsmokers on the non-pecuniary costs, e.g., health and inconvenience costs, associated with chronic obstructive pulmonary disease (COPD).<sup>64</sup> COPD is a highly debilitating disease that can be caused by smoking but that has other causes as well, e.g., exposure to chemicals and outdoor pollution.<sup>65</sup> The study finds that smokers would be less willing than nonsmokers to pay a higher cost of living in order to live in a less polluted area where the risk of COPD is lower.<sup>66</sup> Also, smokers would be less willing to undergo surgery to cure COPD if the surgery posed a risk of death.<sup>67</sup> These findings suggest that smokers are more willing than nonsmokers to cope with COPD and other smoking-related illnesses, which would reduce the subjective health costs of smoking.<sup>68</sup>

Consistent with these findings are several studies that show that smokers demand a much smaller wage premium in exchange for undertaking employment that exposes them to a high risk of injury.<sup>69</sup> If smokers place less value on health and longevity than do nonsmokers,

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63. See, e.g., VISCUSI, *RISKY DECISION*, *supra* note 12, at 109–10.

64. Ahmed Khwaja et al., *Do Smokers Value Their Health and Longevity Less?*, 52 J.L. & ECON. 171, 191 (2009) [hereinafter Khwaja et al., *Health and Longevity*]. But see Ahmed Khwaja et al., *Evidence on Preferences and Subjective Beliefs of Risk Takers: The Case of Smokers*, 24 INT'L J. INDUS. ORG. 667, 678–81 (2006) [hereinafter Khwaja et al., *Evidence on Preferences*] (noting that answers did not vary by smoking status in a survey asking respondents to choose how much they would be willing to pay to have guaranteed perfect health for 10 years, for a pill that was completely effective at preventing Alzheimer's disease, and for a pill that was completely effective at preventing cancer).

65. Khwaja et al., *Health and Longevity*, *supra* note 64, at 171–73.

66. *Id.* at 174–77.

67. *Id.* at 177–80.

68. *Id.* at 191. Khwaja considers the possibility that causality runs in the other direction, i.e., smoking causes smokers to place a lower value on health. *Id.* at 192. He suggests that this is not the case. *Id.* at 192. First, many older smokers quit for health reasons so that every smoker could not have convinced herself that good health is not valuable. *Id.* at 192. Second, several studies show that smokers are overly pessimistic about their future health. *Id.* at 192–93. Khwaja also points out that even if smoking changes attitudes toward health, it is not clear why policy makers should ignore the stated preferences of adult smokers, once those preferences have formed. *Id.* at 193.

69. Joni Hersch & W. Kip Viscusi, *Smoking and Other Risky Behaviors*, 28 J. DRUG ISSUES 645, 657–59 (1998) [hereinafter Hersch & Viscusi, *Smoking*]; Joni Hersch & W. Kip Viscusi, *Cigarette Smoking, Seatbelt Use, and Differences in Wage-Risk Tradeoffs*, 25 J. HUMAN RESOURCES 202, 225 (1990) [hereinafter Hersch & Viscusi, *Wage-Risk Tradeoffs*].

they should require less compensation for risking injury at work. And that is exactly what the evidence indicates.<sup>70</sup>

Second, smokers may discount the future at a higher rate than nonsmokers. Those with high (impatient) discount rates should find smoking more attractive because they would place a lower present value on the associated health costs, the most serious of which generally occur late in life.<sup>71</sup> But the evidence on this point is mixed. Some studies surprisingly find either no relationship between smoking and discount rates or find that smokers have lower discount rates than nonsmokers.<sup>72</sup>

But other studies reach a different conclusion.<sup>73</sup> For example, Robert Scharff and W. Kip Viscusi use data on wages and job fatality risks to estimate discount rates for smokers and nonsmokers implicit in decisions regarding risky employment.<sup>74</sup> Scharff and Viscusi find that even after controlling for confounding variables, smokers' occupational choices suggest that they have substantially higher discount rates than nonsmokers.<sup>75</sup> In other words, even in areas of life unrelated to smoking, smokers place less weight on future costs. A broad pattern among smokers of discounting the future at a higher rate than nonsmokers could reflect differences in tastes, rather than merely irrational myopia among smokers with respect to the smoking decision.

Third, smokers may generally have greater tolerance for risk than do nonsmokers, even regarding risks not directly related to smoking.<sup>76</sup> A penchant for risky behavior may simply be a function of the two preferences previously discussed. If smokers value health and longevity less and have a higher discount rate than nonsmokers, then they would

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70. See VISCUSI, *RISKY DECISION*, *supra* note 12, at 109–15.

71. Robert L. Scharff & W. Kip Viscusi, *Heterogeneous Rates of Time Preference and the Decision to Smoke* 19–20 (Vanderbilt L. & Econ., Working Paper No. 08-31, 2008) (“Given the latency period before many of the most severe smoking risks are manifested, people with greater individual rates of time preference will be influenced less by the discounted value of the health losses and will be more likely to be smokers.”); SLOAN ET AL., *supra* note 41, at 16 (“[M]ost adverse health effects from smoking, including excess mortality, occurs [sic] after age 50.”).

72. E.g., Harrell Chesson & W. Kip Viscusi, *The Heterogeneity of Time-Risk Tradeoffs*, 13 J. BEHAVIORAL DECISION MAKING 251, 251 (2000); Khwaja et al., *Time Preference*, *supra* note 37, at 927.

73. Scharff & Viscusi, *supra* note 71, at 19–20; Glenn W. Harrison et al., *Individual Discount Rates and Smoking: Evidence from a Field Experiment in Denmark*, 29 J. HEALTH ECON. 708, 717 (2010) (finding that among Danish adults, male smokers have a higher discount rate than male nonsmokers, but failing to rule out the possibility that female smokers have the same discount rate as female nonsmokers).

74. Scharff & Viscusi, *supra* note 71, at 19–20.

75. *Id.* at 19–20.

76. Jahn K. Hakes & W. Kip Viscusi, *Automobile Seatbelt Usage and the Value of a Statistical Life*, 73 S. ECON. J. 659, 670 (2007); Hersch & Viscusi, *Smoking*, *supra* note 69, at 659; Robert B. Barsky et al., *Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study*, 112 Q.J. ECON. 537, 551–54 (1997); Hersch & Viscusi, *Wage-Risk Tradeoffs*, *supra* note 69, at 225.

be more likely to take risks across many domains, given that risk taking often involves trading off the possibility of injury or future health damage in exchange for current rewards.<sup>77</sup> But another possibility is that tolerance for risk is a distinct characteristic that generally influences behavior.<sup>78</sup> Either way, if smokers are generally prone to greater risk taking, that suggests a lower subjective price of smoking.

A growing body of research suggests that smokers take more risks than nonsmokers and that this greater risk taking reflects a broad pattern of behavior not limited to the decision to smoke.<sup>79</sup> Even after controlling for age, education, and other demographic characteristics, smokers are less likely to take precautions against health risks, specifically by wearing a seat belt, flossing, and regularly checking their blood pressure.<sup>80</sup> Smokers are also more likely to report that they take more risks than the average person.<sup>81</sup> Even after controlling for demographic characteristics, smokers are more likely to work in industries in which the risk of injury is high.<sup>82</sup> Additionally, as already noted, smokers demand less of a wage premium than nonsmokers for undertaking risky employment.<sup>83</sup> And even after controlling for industry risk, smokers are more likely to get injured on the job.<sup>84</sup> Smokers are also more likely to get injured at home, which again suggests a high degree of risk taking.<sup>85</sup>

### *b. Differences in Risk Perceptions*

A second reason that the subjective price of smoking may vary is that smokers' perceptions of the risks of smoking may be lower than those of nonsmokers.<sup>86</sup> As discussed below, many people, including smokers, substantially overestimate the health risks associated with smoking.<sup>87</sup> But smokers' estimates generally are somewhat lower (i.e., closer to

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77. Hersch & Viscusi, *Smoking*, *supra* note 69, at 648.

78. Barsky et al., *supra* note 76, at 550–51.

79. *See sources cited supra* note 76.

80. Hakes & Viscusi, *supra* note 76, at 670; Hersch & Viscusi, *Smoking*, *supra* note 69, at 659.

81. Hersch & Viscusi, *Smoking*, *supra* note 69, at 653; *see also* Barsky et al., *supra* note 76, at 551–54 (using survey questions to measure risk tolerance and finding that smokers are more risk tolerant than nonsmokers); Khwaja et al., *Evidence on Preferences supra* note 64, at 673, 676–78 (same).

82. Hersch & Viscusi, *Smoking*, *supra* note 69, at 653–57.

83. *Id.* at 657–59; Hersch & Viscusi, *Wage-Risk Tradeoffs*, *supra* note 69, at 225.

84. Hersch & Viscusi, *Smoking*, *supra* note 69, at 659.

85. *Id.*

86. W. Kip Viscusi & Jahn K. Hakes, *Risk Beliefs and Smoking Behavior*, 46 *ECON. INQUIRY* 45, 53–58 (2008); VISCUSI, *RISKY DECISION*, *supra* note 12, at 78.

87. *See infra* Part I.B.3.

accurate) than those of former and never smokers.<sup>88</sup> Lower risk beliefs reduce the perceived costs of smoking.

*c. Differences in Life Lost*

A third reason that the subjective price of smoking may vary is that the years of life lost due to smoking may vary. Jérôme Adda and Valerie Lechene find that people who are otherwise healthy have more to lose by smoking than people who would have poor health even if they did not smoke.<sup>89</sup>

Adda and Lechene separate smokers into two groups.<sup>90</sup> The first group consists of those who, if they did not smoke, would be in relatively good health because they do not suffer from illnesses unrelated to smoking. The second group consists of those who would have relatively poor health even if they did not smoke because they suffer from illnesses that are not smoking related. Adda and Lechene find that on average, smokers in the first group (the otherwise healthy smokers) lose 1.5 more years of life than smokers in the second group (the otherwise unhealthy smokers) as a result of smoking.<sup>91</sup>

Importantly, the difference in years of life lost appears to influence who decides to smoke. Adda and Lechene find that people who would not be healthy even if they did not smoke are more likely to smoke. They are also more likely to smoke heavily and are less likely to quit.<sup>92</sup> These findings make sense if people who are otherwise in poor health are attracted to smoking because they have less to lose in terms of years of life than those who are otherwise healthy.<sup>93</sup>

*B. The Role of Cigarette Taxes if Smoking Is a Rational Choice*

The theory of rational addiction has important implications for government regulation of smoking. In particular, if smoking is a rational choice, cigarette tax policy should be based on raising revenue and forcing smokers to internalize smoking's external costs. Rational

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88. Viscusi & Hakes, *supra* note 86, at 53–58; VISCUSI, RISKY DECISION, *supra* note 12, at 78.

89. Jérôme Adda & Valerie Lechene, *On the Identification of the Effect of Smoking on Mortality*, Working Paper 34 (Ctr. for Microdata Methods & Practice, Working Paper 13/04, 2004).

90. *Id.* at 21.

91. *Id.* at 32 (“Poor health smokers lose on average 3 years, as compared to poor health non smokers, and 5.5 years if they are poor health heavy smokers. For individuals whose health is good independently from smoking, the losses are greater: 4.5 years from being a smoker, and 6.8 from being a heavy smoker. The loss from smoking is greater for individuals whose life expectancy is greater if they do not smoke.”).

92. *Id.* at 23–30.

93. *See id.* at 38.

addiction theory does not suggest a role for paternalistic taxes.<sup>94</sup> If smokers are rationally maximizing their utility, using taxes to reduce smoking adversely affects their welfare.

This begs the question: does the need to raise revenue and internalize external costs justify high cigarette taxes? Sections 1 and 2 suggest that the answer to this question may be no, in which case paternalism takes center stage in the debate over cigarette tax increases. Section 3 contains a brief note on information failures.

### 1. Raising Revenue

Antismoking advocates often cite the need to raise revenue in support of proposals for higher cigarette taxes.<sup>95</sup> Even if smoking is a rational choice, cigarette taxes might be justified if they are an efficient and fair way to fund government.

With respect to efficiency, tax policy scholars generally accept the Ramsey rule. This rule states that commodity taxes (of which cigarette taxes are an example) should vary inversely with the price elasticity of demand for products.<sup>96</sup> The idea is that to the extent a tax causes consumers to reduce consumption of the taxed good, then the tax is inefficient. It distorts behavior, creating an excess burden, without producing revenue. To minimize distortions, the government should tax inelastic goods more heavily.<sup>97</sup>

As noted above, many estimates place the price elasticity of cigarettes between -0.3 and -0.5. This means that although the demand for cigarettes is not extremely price sensitive, it may not be less price sensitive than the demand for many other products, including chicken, apples, theatre and opera, legal services, and automobile repair.<sup>98</sup> Smokers and potential smokers respond to higher taxes by quitting, cutting back, or never starting, which reduces the revenue raised. As a result, cigarettes would not top the list of products to be taxed if the goal is to minimize distortions.<sup>99</sup>

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94. Gruber, *supra* note 18, at 120; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285 (“A key implication of the rational addiction framework for modeling addiction is that government regulatory policy toward addictive goods should depend only on their interpersonal externalities.”).

95. *E.g.*, *Federal Tobacco Taxes: A Win-Win-Win Solution*, CAMPAIGN FOR TOBACCO FREE KIDS, [http://www.tobaccofreekids.org/what\\_we\\_do/federal\\_issues/federal\\_tobacco\\_taxes](http://www.tobaccofreekids.org/what_we_do/federal_issues/federal_tobacco_taxes) [last visited Aug. 28, 2012].

96. HARVEY S. ROSEN & TED GAYER, *PUBLIC FINANCE* 354–57 (8th ed. 2008). This ignores the issue of external costs, which is addressed in the text *infra* Part I.B.2.

97. *Id.* at 357.

98. W. Kip Viscusi, *Principles of Cigarette Taxation* 72–73, in *EXCISE TAX POLICY AND ADMINISTRATION IN SOUTH AFRICAN COUNTRIES* (Sijbren Cnossen ed. 2006) [hereinafter, Viscusi, *Principles*].

99. *Id.* at 73.



Even if they were efficient, cigarette taxes are arguably unfair. Tax scholars often cite two competing views when discussing tax equity—the benefit principle and the ability-to-pay principle.<sup>100</sup> According to the benefit principle, taxation should be based on benefits received from the government.<sup>101</sup> In other words, taxes are like user fees, and those receiving greater services should pay higher fees. Applying this principle, smokers should not bear a larger tax burden than nonsmokers unless smokers receive more benefits from government. As discussed in section 2, it is not clear that the additional government benefits that smokers receive (e.g., in the form of government-financed health care) justify the current level of cigarette taxes.

Those who accept the ability-to-pay principle, on the other hand, argue that taxation should be based on ability to pay, which is generally thought to increase with income.<sup>102</sup> Contrary to this principle, cigarette taxes are very regressive, imposing a substantial and disproportionate burden on low-income smokers and their families.<sup>103</sup>

## 2. Internalizing External Costs

The social costs of smoking include the private costs to the smoker and the external costs to everyone else, i.e., smoking's negative externalities. Most of the costs of smoking are private.<sup>104</sup> Nonetheless, smokers do impose costs on others. These costs include smoking-related medical expenses paid for by nonsmokers and health damage caused by environmental tobacco smoke (ETS). If smokers ignore smoking's external costs, then (even assuming smokers are rational) they will smoke more than the socially optimal amount. Cigarette taxes can potentially correct this problem by forcing smokers to internalize external costs. In theory, the optimal corrective tax equals the external cost per pack.<sup>105</sup>

Economists have studied smoking's externalities extensively over the past twenty-five years. Surprisingly, several studies conclude that the net external costs of smoking are not large.<sup>106</sup> In fact, Jonathan Gruber,

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100. E.g., JOEL SLEMROD & JON BAKIJA, *TAXING OURSELVES: A CITIZEN'S GUIDE TO THE DEBATE OVER TAXES* 62–66 (4th ed. 2008).

101. *Id.* at 62.

102. *Id.* at 64–66.

103. See *infra* Part IV.D.

104. SLOAN ET AL., *supra* note 41, at 251–56.

105. For a discussion of these issues, see Viscusi, *Principles*, *supra* note 98, at 73–77.

106. W. KIP VISCUSI, *SMOKE-FILLED ROOMS: A POSTMORTEM ON THE TOBACCO DEAL* 73 (2002) [hereinafter, VISCUSI, *SMOKE-FILLED ROOMS*]; Willard, G. Manning et al., *The Taxes of Sin: Do Smokers and Drinkers Pay Their Way?*, 261 J. AM. MED. ASS'N 1604, 1604–09 (1989); WILLARD G. MANNING ET AL., *THE COSTS OF POOR HEALTH HABITS* 62–85 (1991); Viscusi, *Social Consequences*,

an economist who supports higher cigarette taxes on paternalistic grounds, concedes that "there is a fairly strong consensus [among economists] that the net externalities are small, on the order of forty cents per pack or less."<sup>107</sup> There are three primary reasons for this.

The first reason is that the externality associated with smokers' medical expenses is not very large.<sup>108</sup> It is true that nonsmokers will pay part of the cost of smokers' medical treatment if private health insurers do not base premiums on smoking status or if the treatment is paid for by government programs (particularly Medicaid and Medicare). But many smokers quit early in life and avoid serious health problems.<sup>109</sup> In addition, while inveterate smokers use more health care resources earlier in life, they also die sooner, which significantly reduces medical expenses during old age and saves money for the Medicare program.<sup>110</sup> Premature death also reduces the external costs associated with nursing home care.<sup>111</sup>

The second reason is that smoking actually benefits nonsmokers through its effects on Social Security and private pensions.<sup>112</sup> Smokers contribute to Social Security during their working lives, but because they have a shorter life span, they receive substantially fewer benefits than nonsmokers.<sup>113</sup> Similarly, smokers receive fewer benefits from private employers' defined benefit pension plans, which in many respects operate like Social Security.<sup>114</sup> As a result, smoking actually saves money for Social Security and defined benefit plans, resulting in a subsidy to nonsmokers.<sup>115</sup> This substantially offsets the external costs of smoking and reduces the need for any corrective tax.

Accounting for pension and medical savings due to premature death is generally accepted by economists, but has generated significant controversy outside the economics profession.<sup>116</sup> Some argue that acknowledging these savings is immoral and implies that smokers' premature deaths are socially desirable.<sup>117</sup> The problem with this position is that many antismoking advocates claim that smokers are not

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supra note 2, at 92–93.

107. Gruber, *supra* note 18, at 120.

108. *E.g.*, VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 73.

109. Kenneth E. Warner et al., *Criteria for Determining an Optimal Cigarette Tax: An Economist's Perspective*, 4 TOBACCO CONTROL 380, 382 (1995).

110. VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 67–68, 73.

111. *Id.* at 73–74.

112. *Id.* at 73–74.

113. Viscusi, *Social Consequences*, *supra* note 2, at 72.

114. *Id.*

115. VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 73.

116. *E.g.*, Hanson & Logue, *supra* note 17, at 1255–60.

117. *Id.* at 1255–60.

paying their own way. This claim necessitates calculating smoking's external costs. Including the savings to government due to smokers' premature deaths is simply a necessary step in the calculation.<sup>118</sup> Government economist Jane Gravelle defends the practice as follows:

The fact of savings from government transfers due to premature death does not imply that there is a social gain from premature death; there is clearly a loss that accrues to the smoker who is part of society. Nevertheless, in a straight-forward accounting for costs, the government in its role as provider of certain services will experience financial savings from premature death, which must be considered in determining how different parties fare because of smoking. This observation does not mean that it is desirable that people die early; rather it means that in compensating relevant parties financially, if that is the justification for a payment, a correct measure of the loss will only be calculated if the effects of premature death are taken into account.<sup>119</sup>

The third reason that smoking's external costs may be low is that the externality associated with ETS is arguably small. A number of studies find that prolonged exposure to ETS increases the risk of various illnesses, including lung cancer and heart disease.<sup>120</sup> But a strong case can be made that most of the effects of ETS should be ignored for purposes of cigarette tax policy. Restrictions on smoking in enclosed spaces are now common in the United States, and these restrictions substantially reduce prolonged, involuntary ETS exposure for those who do not live with smokers.<sup>121</sup> Moreover, these restrictions better target the ETS externality than cigarette taxes, which affect even those who smoke in isolation.<sup>122</sup>

What about exposure to ETS within smokers' households? Since smokers care about their families, they may take these costs into account in deciding whether to smoke.<sup>123</sup> And as the dangers of ETS have become better known, smokers often take steps to protect their spouses and children, e.g., by quitting or by not smoking in the house or car.<sup>124</sup>

Additionally, household costs may be internalized via explicit or implicit bargaining.<sup>125</sup> For example, spouses may agree that if the

118. E.g., Viscusi, *Social Consequences*, *supra* note 2, at 72.

119. JANE GRAVELLE, CONG. RESEARCH SERV., 97-1053 E, THE PROPOSED TOBACCO SETTLEMENT: WHO PAYS FOR THE HEALTH COSTS OF SMOKING? 3 (1998).

120. See SLOAN ET AL., *supra* note 41, at 223-31 (reviewing the literature); VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 104-21 (same).

121. See VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 101.

122. Viscusi, *Principles*, *supra* note 98, at 82.

123. SLOAN ET AL., *supra* note 41, at 219-21.

124. See, e.g., Viscusi & Hakes, *supra* note 86, at 55-57 (finding that married smokers are more likely to quit); Viscusi, *Principles*, *supra* note 98, at 82.

125. SLOAN ET AL., *supra* note 41, at 219-21.

smoking spouse continues to smoke, the nonsmoking spouse may treat himself or herself to certain indulgences. In the extreme case, the nonsmoking spouse may threaten divorce. This type of argument is less convincing with respect to costs imposed on children, who are not in a good position to bargain for themselves.<sup>126</sup> But most of the costs of ETS are imposed on the smoker's spouse,<sup>127</sup> and a strong case exists for treating these costs as private.

Largely because of the three reasons just cited, several economic studies estimate the net external costs of smoking at significantly less than the current nationwide average tax of \$2.18 per pack.<sup>128</sup> As already noted, these estimates are somewhat controversial, but my goal is not to resolve the controversy. Rather, my point is simply that a strong case can be made that externalities do not justify further cigarette tax increases. If that is true, then advocates of higher cigarette taxes must rely on paternalism.

### 3. Note on Information Failures

A person contemplating smoking (or quitting smoking) must be well informed in order to make a rational decision. This does not mean that she must be omniscient. Out of necessity, she faces the uncertainties associated with smoking, e.g., the risk of lung cancer. But a rational person will accurately perceive these risks given the information available.

So even if smokers are otherwise rational, it is crucial that they have accurate information about smoking. For example, if smokers underestimate the health risks involved, they might choose to smoke even though they would not do so if they had better information. In that

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126. See SLOAN ET AL., *supra* note 41, at 219–21; Warner et al., *supra* note 109, at 383 (“Although most economists would accept treatment of the health of spouses as an internal cost, many would be reluctant to apply it universally to fetuses and children.”).

127. SLOAN ET AL., *supra* note 41, at 254.

128. See sources cited *supra* note 106. In a recent book-length discussion of the social costs of smoking, Frank Sloan and his colleagues conclude that the external costs are \$2.20 per pack (stated in 2000 dollars and ignoring the costs to smokers' families). SLOAN ET AL., *supra* note 41, at 255. But this figure arguably exceeds the optimal corrective tax. Among other issues, the figure is based largely on the externality stemming from the cross-subsidization of life insurance premiums. See *id.* If life insurance companies fail to impose a surcharge on smokers, then nonsmokers will subsidize smokers' life insurance via higher premium payments. *Id.* at 181–84. Sloan finds that this subsidy is large, amounting to \$1.78 per pack. *Id.* at 255. Yet he expresses reservations with the conclusion that cigarette taxes should reflect this figure. *Id.* at 193–94, 256. He notes that this finding is based on historical data, which may reflect life insurers' traditional practice of not basing premiums on smoking status. *Id.* at 194. Surcharging has become increasingly common, so cross-subsidies in the life insurance market may be “an artifact of our history.” *Id.* at 193. And even if surcharging were not common, increased cigarette taxes would not be the best response. *Id.* at 280 n.6. A better-targeted solution (assuming any problem exists) would simply be to require surcharging. *Id.* at 193.

case, government intervention might be warranted.

Do smokers underestimate the health risks? The evidence is somewhat mixed, but for most smokers, the answer is no. W. Kip Viscusi has conducted several surveys that find that the average smoker *overestimates* the risk of lung cancer, the overall risk of dying from all smoking-related causes, and the number of years of life lost due to smoking.<sup>129</sup> Viscusi's findings are consistent with evidence that people tend to overestimate highly publicized risks.<sup>130</sup>

Interestingly, Viscusi also finds that less-educated people have higher risk beliefs than better-educated people, and blue-collar workers have higher risk beliefs than white-collar workers.<sup>131</sup> In other words, those whom we might expect to be ill-informed about smoking do in fact perceive the risks less accurately. But in this case, that means that they are more prone toward overestimating those risks. This finding conflicts with the theory that the higher smoking rate among the poor results from failure to appreciate the risks involved.<sup>132</sup>

In contrast to Viscusi, Michael Schoenbaum finds that some smokers underestimate their risk of premature death.<sup>133</sup> Specifically, Schoenbaum asked people ranging from ages 50 to 62 to estimate their chances of surviving to age 75.<sup>134</sup> He then compared these estimates to actuarial predictions. The predictions of never smokers, former smokers, and light smokers were quite accurate.<sup>135</sup> But heavy smokers (more than twenty-five cigarettes daily) overestimated their survival chances.<sup>136</sup>

Paternalists frequently cite this finding,<sup>137</sup> but it is important to keep it in perspective. Even Schoenbaum finds that older smokers who are light smokers (68% of the smokers in his sample) either accurately

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129. Viscusi & Hakes, *supra* note 86, at 47-49; VISCUSI, RISKY DECISION, *supra* note 12, at 68-79. Viscusi estimates the true lung cancer risk level at 6%-13%, while the mean risk level perceived by smokers in his 1997 national survey was 40%. Viscusi & Hakes, *supra* note 86, at 47-48. Similarly, Viscusi estimates the true total smoking mortality risk level at 13%-36%, while the mean risk level perceived by smokers in the 1997 survey was 44%. *Id.* at 48. Viscusi estimates the true life-expectancy loss at 3.6 to 8 years, while smokers in the 1997 survey estimated the loss at 10.2 years. *Id.* at 48-49. The results of Viscusi's other surveys are similar. *Id.* at 47-49; VISCUSI, RISKY DECISION, *supra* note 12, at 68-79.

130. VISCUSI, RISKY DECISION, *supra* note 12, at 70; BARUCH FISCHHOFF ET AL., ACCEPTABLE RISK 29 (1981).

131. Viscusi & Hakes, *supra* note 86, at 51-52.

132. *Id.* at 52.

133. Michael Schoenbaum, *Do Smokers Understand the Mortality Effects of Smoking? Evidence from the Health and Retirement System*, 87 AM. J. PUB. HEALTH 755, 757 (1997).

134. *Id.* at 756.

135. *Id.* at 757.

136. *Id.*

137. *E.g.*, Hanson & Logue, *supra* note 17, at 1187-88.

estimate or overestimate the risk of premature death.<sup>138</sup> Moreover, a more recent study of older smokers by Ahmed Khwaja and his colleagues finds that smokers are “quite accurate on average about the probability of surviving to age 75.”<sup>139</sup> Khwaja concludes that “[t]he lack of association between smoking and optimism in risk perceptions casts doubt on the idea that continued smoking can be attributed to a rosy view of future risks.”

Additionally, even if we accept Schoenbaum’s study at face value, cigarette taxes are not the best tool for correcting inaccurate risk perceptions. Taxes are overbroad in that they reduce smoking even among those who are well informed. A better-targeted approach is to collect and disseminate accurate information, including information about the benefits of quitting.

To summarize, a rational smoker decides whether to smoke in an informed and forward-looking manner, weighing the costs and benefits, including the risk of addiction and premature death. Substantial evidence supports the claim that smoking may be a rational choice. If it is, cigarette taxes arguably should not be increased above their current level.

## II. EVIDENCE THAT PURPORTEDLY SHOWS THAT SMOKING IS NOT A RATIONAL CHOICE

Part I presents evidence consistent with the claim that smoking is a rational choice. This Part describes facts that, according to paternalists, contradict this claim. This evidence has motivated the development of alternative theories of smoking that are often used to justify paternalistic regulation.

### *A. Failed Quit Attempts and Commitment Devices*

That many people quit smoking does not, by itself, imply that the decision to start is irrational. Given that quitting can significantly reduce the risk of premature death, it could be rational to smoke early in life but to stop when the health benefits of quitting outweigh the costs in

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138. See Schoenbaum, *supra* note 133, at 757; Goldfarb et al., *supra* note 38, at 237 (making the same point about Schoenbaum’s findings).

139. Ahmed Khwaja et al., *Are Mature Smokers Misinformed?*, 28 J. HEALTH ECON. 385, 396 (2009) [hereinafter Khwaja et al., *Mature Smokers*]. Despite accurately perceiving their chances of survival, older smokers substantially *overestimate* the risk of smoking-related illnesses. *Id.* In an earlier study using different data, Khwaja and his colleagues found that in general, smokers are overly optimistic in their assessment of their mortality. Ahmed Khwaja et al., *The Relationship between Individual Expectations and Behaviors: Mortality Expectations and Smoking Decisions*, 35 J. RISK & UNCERTAINTY 179, 197 (2007).

terms of forgone pleasure from continuing to smoke. But the fact that smokers often make several failed attempts to quit calls into question the claim that smoking is a rational choice.<sup>140</sup>

Failed attempts to quit present a problem for the rational addiction model because it assumes stable preferences. The model does not account for self-control problems, i.e., the inability of a consumer to carry out the consumption plan that she deems best.<sup>141</sup> A rational smoker who decides to quit would not later change her mind in a moment of weakness. Moreover, addiction by itself would not prevent her from quitting once her plan to do so is in place. She would take addiction into account before deciding to quit. But once she determines that quitting is worth the cost, she would be able to suffer through any withdrawal symptoms in order to carry out her plan.

It is possible that smokers are otherwise rational, but they do not possess information about the best method or time for quitting. If so, a particular smoker might have to experiment with several quitting strategies until she discovers the one that works for her.<sup>142</sup> Or if she fails to quit because an unforeseen, stressful event triggers relapse, she may try again when her stress level subsides.

Consistent with this hypothesis, many smokers do eventually succeed in quitting, demonstrating that they are not incapacitated by addiction.<sup>143</sup> About half of all Americans who have ever smoked have successfully quit.<sup>144</sup> But to the extent that some smokers repeatedly fail to quit, that is evidence that for them at least, smoking is not a rational choice.

A related issue is the use of commitment devices by smokers who are trying to quit. Commitment devices can help with quitting by reducing temptation or increasing the cost of smoking.<sup>145</sup> For example, a smoker might avoid keeping cigarettes in her house. Or she might tell her friends and family that she is quitting, knowing that she will be embarrassed if she relapses. Commitment devices like these are easy to explain if smokers are aware that they lack self-control. But these devices are hard to understand if smokers are rational. A rational smoker who decides to quit might take steps to reduce the pain of withdrawal, e.g., by using nicotine gum.<sup>146</sup> But she would have no need

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140. Over 40% of smokers report having attempted to quit in the past year, and 4%-7% of those attempts are successful. U.S. DEPT. OF HEALTH & HUMAN SERV., *supra* note 16, at 15.

141. See Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1277-79; Becker & Murphy, *supra* note 15, at 675.

142. Becker & Murphy, *supra* note 15, at 693.

143. See Goldfarb et al., *supra* note 38, at 236.

144. CDC, *supra* note 26, at 10, 85.

145. For a discussion of the use of commitment devices by smokers, see Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1278.

146. *Id.*

to use commitment devices that limit her choices or that make relapse more costly.<sup>147</sup> Since she has complete self-control, she has no reason to fear that she will deviate from her desired plan.

### B. Regret and the Desire to Quit

Smokers often express regret about smoking and claim that they would like to quit.<sup>148</sup> Paternalists interpret this as evidence that smokers recognize that smoking is a mistake.<sup>149</sup>

But regret and expressed intentions to quit do not necessarily prove that smoking is irrational. Some smokers may claim that they regret smoking and would like to quit, not because they truly do, but because in a society that frowns upon smoking, this is what they are expected to say.<sup>150</sup> They may also simply mean that they would prefer it if they could smoke without risk.<sup>151</sup>

There is evidence that although many smokers want to quit eventually, they are not serious about quitting anytime in the near future. A national survey of daily smokers finds that approximately 60% report that they do not intend to quit in the next six months.<sup>152</sup> And presumably, only a fraction of the remaining 40% sincerely plans to quit during that period. In another study, only 41% of smokers expressed interest in taking advantage of a smoking cessation clinic.<sup>153</sup> More importantly, only about 1% of the smokers participating in the study actually followed through and used the clinic that was made available to them.<sup>154</sup>

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147. *Id.*

148. *See, e.g.*, U.S. DEPT. OF HEALTH & HUMAN SERV., *supra* note 16, at 15 (“Epidemiologic data suggest that more than 70 percent of the 45 million smokers in the United States today report that they want to quit, and approximately 44 percent report that they try to quit each year.”).

149. *E.g.*, Hanson & Logue, *supra* note 17, at 1193–1209.

150. W. Kip Viscusi, *The New Cigarette Paternalism*, 25 REG. 58, 58 (2002) [hereinafter Viscusi, *Paternalism*].

151. VISCUSI, RISKY DECISION, *supra* note 12, at 120. Viscusi points out that people often express dissatisfaction with some attribute of a particular product or activity. *Id.* For example, nearly a third of blue-collar workers claim that they would like to leave their jobs. *Id.* Their failure to actually quit does not prove irrationality. *Cf.* Becker & Murphy, *supra* note 15, at 693 (stating that the claims of smokers that they want to quit are “no different from the claims of single persons that they want to but are unable to marry or from the claims of disorganized persons that they want to become better organized”).

152. Mary Ellen Wewers et al., *Distribution of Daily Smokers by Stage of Change: Current Population Survey Results*, 36 PREVENTATIVE MED. 710, 714 (2003). Only 15% of smokers plan to quit in the next 30 days. Gregory Colman & Dahlia Remler, *Vertical Equity Consequences of Very High Cigarette Tax Increases: If the Poor Are the Ones Smoking, How Could Cigarette Tax Increases Be Progressive?*, 27 J. POL’Y ANALYSIS & MGMT. 376, 396 (2008).

153. Viscusi, *Paternalism*, *supra* note 150, at 58.

154. *Id.*



This type of evidence is not conclusive. It could be interpreted to mean that although they really want to quit, most smokers have given up on the possibility. But such widespread pessimism would be unwarranted given that so many smokers have quit and that cessation medications make quitting easier today than it was in the past. The more plausible interpretation is that despite statements to the contrary, many smokers simply do not want to quit.

Additionally, because smoking is a form of front-loaded consumption (i.e., the benefits are realized immediately and the costs occur in the future), regret would not be surprising even among rational smokers. Robert Goldfarb and his colleagues explain this point as follows:

If smokers mean “I wish I didn’t smoke,” this is not inconsistent with rational choice. It means only that current choices are unpleasant. The pain of quitting can be seen as part of the cost paid for the pleasures enjoyed along the way, analogous to being overweight or hung over, or in debt. One can clearly regret that the bill has come due, but this regret does not demonstrate a non-rational choice (in life-time terms); it just implies that much of the benefits are sunk.<sup>155</sup>

### III. INCAPACITATION AND PATERNALISTIC TAXES

By calling into question the claim that smoking is a rational choice, the evidence presented in Part II suggests a potential role for paternalism. This Part and Part IV discuss alternative theories of smoking and whether those theories justify paternalistic cigarette taxes. This Part addresses the theory that smoking results from incapacitation.

Some doctors and public health advocates believe that once addicted, smokers do not choose to smoke but are instead incapacitated by addiction, which is sometimes viewed as a disease.<sup>156</sup> If smoking results from incapacitation, then arguably, the government should try to eliminate it, and cigarette taxes might assist in this effort.

But there are reasons to believe that incapacitation does not explain all or even most smoking behavior. While quitting is difficult, about half of all Americans who have ever smoked (tens of millions of people) have succeeded in giving up cigarettes.<sup>157</sup> In fact, antismoking advocates often argue that increasing cigarette taxes causes smokers to quit,<sup>158</sup> a position that is inconsistent with incapacitation. Moreover, as discussed in Part I, smokers are now quitting much earlier in life than

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155. Goldfarb et al., *supra* note 38, at 235.

156. See sources cited *supra* note 16.

157. CDC, *supra* note 26, at 10, 85.

158. CAMPAIGN FOR TOBACCO-FREE KIDS, INCREASING THE FEDERAL CIGARETTE TAX REDUCES SMOKING (AND THE CIGARETTE COMPANIES KNOW IT) 1-4 (2009).

they did in the past, a development likely attributable to better information about the benefits of quitting. Again, this suggests that many smokers are not incapacitated by addiction and can quit if they wish to do so.

In addition, even if we assume that some smokers are incapacitated by addiction, it is not clear that cigarette taxes are an appropriate response. To the extent that smokers cannot quit, the taxes effectively punish them for their dependence, which raises fairness concerns.<sup>159</sup> These concerns are especially serious given that smokers are disproportionately poor so that cigarette taxes impose a heavy financial burden on them.<sup>160</sup>

So for those who take incapacitation seriously, the argument for cigarette taxes appears to rest on the belief that they will deter people from starting to smoke. But the evidence for incapacitation is arguably not strong enough to justify interfering with the smoking decisions of informed adults. And to the extent that the goal is to prevent children from taking up smoking, taxes are a blunt tool. Better-targeted alternatives exist, including raising the minimum age for legal sale of cigarettes to twenty-one—an approach considered in more detail in Part V.

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159. Cf. Robert L. Rabin & Stephen D. Sugarman, *Perspectives on Policy: Introduction, in REGULATING TOBACCO* 3, 5 (Robert L. Rabin & Stephen D. Sugarman eds., 2001) (“[T]he greater weight one attaches to the power of addiction, the stronger the equitable argument that tobacco taxation is a form of punishment for those who simply cannot quit.”).

160. Setting aside issues of fairness, whether it would be efficient to impose a tax on smokers who are incapacitated by addiction depends on what the government does with the revenue. Conventional analysis assumes that the social cost of taxation stems from the excess burden created when taxpayers alter their behavior to avoid the tax. If a taxpayer does not alter her behavior but chooses instead to simply pay the tax, the tax that she pays involves a private cost to her but does not represent a social cost. The reason is that the government (directly or indirectly) transfers the money to other persons. Simply put, it is not obvious that a social loss occurs when the government takes a dollar from A and gives it to B. (Note however that aggregate welfare would decline if the utility that A would have derived from spending the dollar exceeds that derived by B, which might be the case, e.g., if B is richer than A.) According to this view, the tax revenue collected from smokers does not represent a social cost, even if the smokers have no choice but to pay it owing to their addiction. For a discussion of the conventional analysis, see ROSEN & GAYER, *supra* note 96, at 331–38; MANKIW, *supra* note 13, at 159–72.

An alternative view has been proposed by public choice scholars. See, e.g., GORDON TULLOCK, *THE ECONOMICS OF SPECIAL PRIVILEGE AND RENT SEEKING* 11–25, 73–77 (1989). They argue that government spending can involve social costs apart from the excess burden arising from taxpayer attempts to avoid taxes. One reason is resources spent on rent seeking. *Id.* at 73–77. Another is that the government often does not directly transfer money from taxpayers to favored groups. Rather, for political reasons, the transfers frequently must be disguised in the form of inefficient projects or subsidies, the costs of which may substantially outweigh the benefits. *Id.* at 11–25, 76–77. The end result is that the cost to taxpayers of government transfers may exceed the benefit to the recipients of those transfers, which entails a social cost.

## IV. IMPERFECT RATIONALITY AND PATERNALISTIC TAXES

As discussed in Part I, the standard approach in economics is to assume that consumers behave rationally to maximize their own utility. So it is not surprising that conventional economists and economically oriented legal scholars typically emphasize consumer sovereignty and are skeptical of paternalism.<sup>161</sup> But this skepticism has been questioned in recent years. A number of economists and legal scholars use evidence from psychology and behavioral economics to argue that people suffer from self-control problems, cognitive limitations, and cognitive biases, all of which can prevent rational utility maximization.<sup>162</sup> And some scholars argue that these failures of rationality drive smoking behavior.<sup>163</sup>

Theories based on imperfect rationality differ from the notion that smokers are incapacitated by addiction. The proponents of these theories do not deny that smoking is a choice. They claim instead that the choice is flawed. In that sense, the use of imperfect rationality to explain smoking represents a less radical departure from rational addiction theory. Yet imperfect rationality still provides a basis for paternalism.

Nevertheless, this Part argues that imperfect rationality does not justify paternalistic cigarette taxes. The primary reason is heterogeneity. Some smokers may smoke because of failures of rationality, but for others, smoking appears to be a rational choice. For example, as discussed in Part I, nearly half of modern smokers quit early enough to avoid serious health damage, including premature death.<sup>164</sup> And given current trends, that figure is likely to increase in the future.<sup>165</sup> Many people smoke as young adults and then quit before the risk becomes high, which suggests rational calculation. If smokers are in fact heterogeneous, then the government must trade off the welfare of those who might benefit from paternalistic taxes (i.e., those who smoke because they are imperfectly rational) against the welfare of those who will be burdened (i.e., those who smoke as a rational choice).

In addition to heterogeneity, government failure creates an obstacle to effective paternalistic taxes. In particular, the government faces important information constraints, including a lack of information about

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161. *E.g.*, Calcott, *supra* note 14, at 39–41; STIGLITZ, *supra* note 14, at 86–88.

162. *See* sources cited *supra* note 18.

163. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285–86; Hanson & Logue, *supra* note 17, at 1181–1223.

164. Michel Grignon has noted the importance of this fact to the debate over paternalistic smoking regulations. Michel Grignon, *An Empirical Investigation of Heterogeneity in Time Preferences and Smoking Behaviors*, 38 J. SOCIO-ECON. 739, 739–40 (2009).

165. Pierce & Gilpin, *supra* note 52, at 253–54.

the extent to which imperfect rationality causes people to smoke. The government also lacks control over smokers' responses to taxation, which are often harmful to the smokers themselves.

To better explain why heterogeneity and government failure make paternalistic taxes undesirable, subparts A and B focus on the model of smoking developed by Jonathan Gruber and Botond Köszegi. Gruber and Köszegi argue that smoking is suboptimal because smokers have self-control problems that prevent them from quitting.<sup>166</sup>

I concentrate on the Gruber–Köszegi model because it is well developed and is prominent in both the legal and economic literature. Additionally, Gruber and Köszegi have used this model to advocate large cigarette taxes.<sup>167</sup> But I recognize that other scholars have proposed alternative theories of smoking that are based on different failures of rationality.<sup>168</sup> And while this Article does not address all of these theories in detail, the problems posed by heterogeneity and government failure are relevant to them as well. To illustrate this point, subpart C discusses the claim that smoking results from optimism bias among smokers.

Another significant drawback of paternalistic taxes is their regressivity. Even if the taxes benefit some smokers by forcing them to quit, they place a substantial burden on the many low-income persons who continue to smoke. Subpart D elaborates on this point.

Given the problems with paternalistic taxes, it is beneficial to consider alternatives that are more suitable for a heterogeneous population, that pose a lower risk of government failure, and that do not burden the poor. Subpart E discusses several products and policies that meet these criteria.

### *A. The Gruber–Köszegi Self-Control Tax*

A rational smoker has no problem with self-control. In other words, she carries out her desired consumption plan without difficulty. So if she decides to quit smoking, she is able to do so, her addiction notwithstanding.

But as discussed in Part II, smokers sometimes have trouble quitting and seek the aid of commitment devices that make smoking difficult or expensive. These devices are hard to explain if smokers are rational but make sense for smokers who lack sufficient self-control to quit without

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166. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1285–94.

167. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 17 (noting that the optimal cigarette tax could be as high as \$14 per pack).

168. For a discussion of several of these theories, see Hanson & Logue, *supra* note 17, at 1186–1209.

them.

In addition to evidence regarding the use of commitment devices, several studies support the claim that at least some smokers have self-control problems. For example, Joni Hersch finds that smokers who are currently trying to quit after having previously failed are more likely to support smoking restrictions in public areas than smokers who are trying to quit for the first time.<sup>169</sup> She interprets this as evidence that smokers who have tried unsuccessfully to quit in the past are aware that they lack self-control and wish to use smoking restrictions as a commitment device that reduces their opportunity to smoke.<sup>170</sup>

Similarly, Gruber and Sendhil Mullainathan find evidence that higher cigarette taxes reduce self-reported unhappiness among those with a propensity to smoke.<sup>171</sup> Although some scholars question the significance of this finding,<sup>172</sup> Gruber and Mullainathan emphasize that it is consistent with the claim that smokers lack self-control and benefit from commitment devices that reduce smoking, including cigarette taxes.<sup>173</sup>

Gruber and Botond Köszegi have used this and similar evidence to argue in favor of paternalistic cigarette taxes.<sup>174</sup> They argue that smokers have time-inconsistent preferences, which result in self-control problems.<sup>175</sup> Simply put, a smoker might plan to quit tomorrow, but when tomorrow comes, she changes her mind and continues smoking. Gruber and Köszegi claim that self-control problems result from hyperbolic discounting, which causes smokers to be present-biased and to place too little weight on smoking's long-term health

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169. Joni Hersch, *Smoking Restrictions as a Self-Control Mechanism*, 31 J. RISK & UNCERTAINTY 5, 6 (2005). For example, based on a series of surveys conducted periodically from 1991–2002, Hersch finds that among daily smokers who have tried to quit in the past and who are planning another quit attempt, 24.4% support a ban on smoking in restaurants, compared to only 21.4% of those planning to quit for the first time. *Id.* at 15. Controlling for demographics and other factors has only a minor effect on this gap. *Id.* at 19.

170. *Id.*

171. Jonathan H. Gruber & Sendhil Mullainathan, *Do Cigarette Taxes Make Smokers Happier?*, 5 ADVANCES ECON. ANALYSIS & POL'Y 1, 2 (2005).

172. B. Douglas Bernheim, *Behavioral Welfare Economics* 26 (Nat'l Bureau of Econ. Research, Working Paper No. 14622, 2008) (criticizing the claim that self-reported happiness measures internal well-being and concluding that Gruber and Mullainathan's "finding that higher cigarette tax rates lead to greater reported happiness among smokers proves nothing about smokers' well-being"); Faruk Gul & Wolfgang Pesendorfer, *Harmful Addiction*, 74 REV. ECON. STUD. 147, 151 (2007) (noting that increases in self-reported happiness after a cigarette tax is adopted do not necessarily show that the tax makes smokers better off in lifetime terms because ex post happiness does not reflect quitting costs).

173. Gruber & Mullainathan, *supra* note 171, at 21–22.

174. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 17; Gruber, *supra* note 18, at 124–25; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1292.

175. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1293.

consequences.<sup>176</sup>

Gruber and Köszegi develop a model of smoking that incorporates hyperbolic discounting.<sup>177</sup> From that model, they derive a formula for the optimal self-control tax on cigarettes.<sup>178</sup> Subpart B discusses the problems with using this formula to guide cigarette tax policy. This subpart explains the model from which the formula is derived.

Standard economic models usually assume that people place greater weight on the present than the future and that each person has a discount factor<sup>179</sup> that she uses to discount future costs and benefits.<sup>180</sup> For example, a person with a discount factor of 0.9 would be indifferent between receiving \$100 in a year or \$90 today.<sup>181</sup> Discount factors may vary from person to person, reflecting the fact that some people are more patient than others. But economists generally treat the discount factor as a matter of individual preference and do not treat discounting as irrational.<sup>182</sup>

Standard models, including the rational addiction model, also assume that people discount exponentially. Exponential discounting means that a single discount factor applies to two equidistant periods no matter how close to the present those periods are.<sup>183</sup> Exponential discounting results in preferences that are consistent over time. An exponential discounter who considers \$100 in two years to be equivalent to \$90 in one year would also consider \$100 in a year to be equivalent to \$90 today.

But certain findings in behavioral economics appear inconsistent with exponential discounting. For example, a number of studies have shown that if you offer people a choice between \$100 in two years and \$90 in one year, many will choose the former, larger amount, demonstrating patience.<sup>184</sup> But if you offer a choice between \$100 in a year and \$90 today, some of those same people will choose the latter, smaller amount, demonstrating impatience.

A possible explanation for these disparate results is that people engage in hyperbolic rather than exponential discounting. With

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176. *Id.* at 1279–93.

177. *Id.* at 1279–82.

178. *Id.* at 1286–89.

179. The discount rate ( $r$ ), which may be more familiar to lawyers, is related to the discount factor ( $\delta$ ) as follows:  $r = (1 - \delta) / \delta$ . Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 913 n.23.

180. For a discussion of the role of discount factors in standard economic models and models involving hyperbolic discounting, see Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 913–14.

181. This example is based on the example found in Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 913.

182. *Id.*; Hersch & Viscusi, *Smoking*, *supra* note 69, at 648.

183. *Id.*

184. Shane Frederick et al., *Time Discounting and Time Preference: A Critical Review*, 40 J. ECON. LIT. 351, 360–61 (2002) (discussing these studies).

hyperbolic discounting, the discount factor becomes smaller the closer the period in question is to the present.<sup>185</sup> In other words, the person is patient when planning for the future, but impatient in making decisions in the present.

Hyperbolic discounting could cause time-inconsistent preferences or preference reversals.<sup>186</sup> For example, a person might say today that she prefers \$100 in two years to \$90 in one year, implying a (relatively patient) discount factor higher than 0.9. But a year from now, if offered a choice between \$90 immediately and \$100 in a year, she might reverse course and take the \$90, implying a (relatively impatient) discount factor of 0.9 or lower.

Gruber and Köszegi assert that smokers are hyperbolic discounters.<sup>187</sup> If that is the case, then the rational addiction model requires revision.

In the standard model, a person maximizes utility at time  $t$  according to a utility function that takes the following form:<sup>188</sup>

$$\sum_{i=0}^{T-t} \delta^i U_{t+i}$$

The term  $U_{t+i}$  denotes the instantaneous utilities and  $\delta$  is the discount factor.

Intuitively, the idea is that people make choices (such as the decision to smoke) in order to maximize the sum of current and future utility.<sup>189</sup> But because people care more about the present than the future, future utility is discounted according to  $\delta$ . Again, in the standard model, people discount exponentially. Also, a particular individual's  $\delta$  could range from zero to one. The closer it is to one, the greater the weight she places on her future utility.

Gruber and Köszegi modify the standard model to incorporate hyperbolic discounting. According to their model, the utility function takes the following form:<sup>190</sup>

$$U_t + \beta \sum_{i=1}^{T-t} \delta^i U_{t+i}$$

$\delta$  is a long-term discount factor and is the analogue of the discount factor from the standard model.  $\beta$  is a short-term discount factor. Both  $\delta$  and  $\beta$  are assumed to be between zero and one.

185. *Id.* at 360.

186. *Id.* at 360–61.

187. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1280.

188. *Id.*

189. See GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 4.

190. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1280.

The key distinction between the standard model and the Gruber–Köszegi model is that the former contains only one discount factor, whereas the latter contains two. In the Gruber–Köszegi model,  $\delta$  is the discount factor between consecutive future periods.<sup>191</sup> Between consecutive future periods, the person discounts exponentially, just as in the standard model. The difference is that in the Gruber–Köszegi model, the person has an additional short-term discount factor ( $\beta$ ) that applies only between the present and the immediate future.

If  $\beta$  is less than one, as it would be for a hyperbolic discounter, then the discount factor between consecutive future periods ( $\delta$ ) will be larger than the discount factor between the current period and the next one ( $\beta\delta$ ).<sup>192</sup> This means that the person “is ‘impatient’ when faced with a choice between today and tomorrow, but she would like to ‘become patient’ in the future.”<sup>193</sup>

If a person discounts more heavily in the short-run than in the long-run, her preferences will be inconsistent at different points in time, making her prone to preference reversals. For example, at time  $t$ , a smoker might plan to quit at time  $t + 1$ . She makes this decision because in discounting the health consequences of smoking, which will occur at time  $t + 2$ , she uses  $\delta$ . This causes her to give health consequences significant weight. But when it comes time to quit (i.e., time  $t + 1$  arrives), she places less weight ( $\beta\delta$ ) on the future health consequences and decides to continue smoking.<sup>194</sup>

Gruber and Köszegi interpret preference reversals of this type as evidence of a conflict between a person’s multiple selves.<sup>195</sup> The planning self assigns great weight to future utility and plans to stop smoking.<sup>196</sup> But the acting self is present-biased, gives less weight to the future, and fails to follow through on the plan. Moreover, as  $\beta$  moves closer to zero, the acting self becomes more present-biased and more prone to this type of preference reversal. In other words, a low  $\beta$  implies a severe lack of self-control.

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191. *Id.*

192. *Id.*

193. Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1965.

194. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 10.

195. *Id.* at 10; Gruber, *supra* note 18, at 122.

196. In discussing time-inconsistent preferences, Gruber refers to a conflict between the current self and the future self. Gruber, *supra* note 18, at 122. This terminology can be confusing because as time passes, the future self becomes the current self. To reduce confusion, I refer to the conflict as involving the planning self and the acting self. Differences in terminology aside, what matters is that a conflict occurs because when a smoker is planning for the future, she places great weight on the future health consequences and plans to quit. But when she is deciding how to act today, she places less weight on the future and continues to smoke. So the smoker’s opinion about quitting depends on whether she is making future plans (the planning self) or deciding how to act in the present (the acting self).



Gruber and Köszegi argue that welfare ought to be determined with respect to the wishes of the planning self, and the wishes of the acting self should be ignored.<sup>197</sup> In other words, they claim that  $\delta$  is the normatively appropriate discount factor. By using  $\beta$ , the acting self “underweights” the future costs of smoking and smokes despite the fact that the planning self would like to quit.<sup>198</sup> As a result, the acting self inflicts harm on the smoker, creating an “internality,” or *intrapersonal externality*.<sup>199</sup> And just as a corrective tax is appropriate in the presence of interpersonal externalities, a self-control tax is appropriate in the presence of internalities.<sup>200</sup>

Gruber and Köszegi point out that if a smoker is aware of her self-control problem, her planning self will demand commitment devices that restrain the acting self, making quitting easier.<sup>201</sup> They argue that a self-control tax can serve as a commitment device.<sup>202</sup>

Moreover, unlike traditional paternalism, in which paternalists use government to force their values onto others, Gruber and Köszegi claim that the paternalistic tax that they advocate simply allows the smoker to achieve the planning self’s goal of quitting. In other words, a self-control tax carries out the wishes of the smoker’s planning self rather than the wishes of antismoking paternalists.

Gruber and Köszegi use their model to derive the following formula for the optimal self-control tax on cigarettes ( $t^*$ ):<sup>203</sup>

$$t^* = (1 - \beta) \delta h.$$

In the formula,  $h$  equals the dollar value of smoking-related health damage, which would include the dollar value of any years of life lost due to smoking.<sup>204</sup>

197. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 10.

198. *Id.* at 12–13.

199. Gruber, *supra* note 18, at 124–25; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1263.

200. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 12–13; Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1263.

201. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1278.

202. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 9.

203. *Id.* at 12. The formula that Gruber and Köszegi derive includes a variable to account for interpersonal externalities. *Id.* Since interpersonal externalities are not my focus, I omit that variable. Additionally, Gruber and Köszegi originally developed their model in an academic article. See Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1279–93. They subsequently produced a report suitable for a more general audience, which describes their model and its implications in less-formal terms, stripping away much of the mathematical complexity. See GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 9–12. For the sake of simplicity, my discussion focuses primarily on the formula that Gruber and Köszegi discuss in their less-formal paper. This formula is simpler than the formula they derive in their earlier article. But my critique of the simplified formula applies with equal force to the more complex formula.

204. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 10, 16–17.

Notice that if  $\beta$  is one, then the optimal self-control tax is zero. This is because if  $\beta$  is one, then the person is an exponential discounter, so her acting self and planning self use the same discount factor ( $\delta$ ). In other words, the acting self and planning self agree, and no self-control problem exists.

But if  $\beta$  is less than one, the optimal self-control tax is positive as long as  $h$  is positive and  $\delta$  is greater than zero. If  $\beta$  is less than one, the acting self ignores health costs that the planning self would like for her to take into account. Again, this occurs because the planning self discounts future health costs using only  $\delta$ , while the acting self further discounts those costs using  $\beta$ .<sup>205</sup> The self-control tax remedies this problem by effectively canceling out the influence of  $\beta$ , thereby forcing the acting self to make decisions consistent with the wishes of the planning self.<sup>206</sup>

It is important to understand that Gruber and Köszegi do not argue that the self-control tax on cigarettes should be infinitely high. Nor do they claim that all smoking is a mistake and that smoking should be eliminated. Instead, they argue that for hyperbolic discounters, the acting self does not give sufficient weight to the future costs of smoking. And a tax can correct this mistake. With the tax in place, even a hyperbolic discounter would rationally decide to smoke if the benefits of doing so outweigh the costs, including the tax.<sup>207</sup>

From a policy perspective, this means that the government's goal should be to adopt the optimal tax. According to Gruber and Köszegi, the optimal tax is the tax that causes the acting self to give the same weight to the health consequences of smoking as the planning self. This is the tax that will produce exactly the right amount of smoking.

But, as the next subpart will demonstrate, estimating the optimal tax with any precision is likely impossible. Antismoking advocates may respond by simply assuming that cigarette taxes should be very high. But within the Gruber-Köszegi framework, a self-control tax that is too high can be worse than one that is too low.<sup>208</sup> It would deter people from smoking even though they would otherwise rationally choose to do

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205. *Id.* at 12–13.

206. *Id.* at 12–13.

207. Another way to think about this is to recognize that hyperbolic discounting only leads to “mistakes” to the extent it causes a person to make different decisions than the ones she would make if she gave appropriate weight to future consequences. Cf. Lee Anne Fennell, *Willpower and Legal Policy*, 5 ANN. REV. L. SOC. SCI. 91, 96 n.5 (2009) [hereinafter Fennell, *Willpower and Legal Policy*] (citing sources that stand for the proposition that “[e]xternalities only produce inefficient results when they lead actors to make different decisions than the ones they would have reached after taking external costs and benefits into account, which will not always be the case”).

208. Cf. Rizzo & Whitman, *Slippery Slopes*, *supra* note 18, at 735–35 (making a similar point with respect to sin taxes generally).

so. In other words, unless we are confident that the government will identify and adopt the optimal self-control tax, there is no guarantee that such a tax will increase social welfare.

### *B. Objections to the Self-Control Tax*

Gruber and Köszegi derive a seemingly simple formula to guide policy makers in determining the appropriate tax rate. But this apparent simplicity disappears upon consideration of various factors that the formula either conceals or ignores.<sup>209</sup> Specifically, heterogeneity and government failure complicate matters and cause the self-control tax to lose its attractiveness. Fortunately, as discussed in subpart E, alternatives exist for helping smokers who have self-control problems.

#### 1. Heterogeneity

Even if we assume that self-control problems explain why some people smoke, Gruber and Köszegi ignore the complications posed by heterogeneity. If smokers are heterogeneous, the appropriate self-control tax will vary from person to person and may be zero for some smokers. Unfortunately, the government can select only one tax rate.

The most general evidence of heterogeneity is evidence that smokers differ with respect to their desire to quit. If a smoker does not want to quit, that suggests that her smoking is not due to a lack of self-control. In other words, no conflict exists between her planning self and acting self.

As evidence that many smokers do not want to quit, consider the survey discussed in Part II, which found that approximately 60% of smokers reported that they do not plan to give up smoking in the near future. Consider also the fact that smokers generally do not support smoking regulations. Gruber and Köszegi argue that smokers who would like to quit will demand commitment devices if they believe that they lack sufficient self-control to accomplish their objective.<sup>210</sup> So we would expect these smokers to support policies that make smoking expensive or that effectively place it off limits.<sup>211</sup> Cigarette taxes, public smoking restrictions, and even a ban on cigarettes should appeal to the

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209. As discussed *supra* note 203, the formula discussed in the text is a simplified version of the formula derived in Gruber and Köszegi's initial article. But even their more complex formula ignores the many complications created by heterogeneity and government failure.

210. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1278.

211. It is possible that a smoker would favor government-imposed restraints because they protect her from herself, but would still choose not to support smoking regulations because she believes that others should be free to smoke. But it seems unlikely that additional respect among smokers for others' autonomy explains the large gap in support for antismoking policies between smokers and nonsmokers.

planning self (who would like to quit) because these policies constrain the acting self (who wants to smoke), effectively solving the self-control problem.<sup>212</sup> Consistent with this hypothesis, some smokers who are planning to quit do support smoking regulations.<sup>213</sup> Yet in general, smokers are much less likely than nonsmokers to favor cigarette taxes and other restrictions on smoking.<sup>214</sup> This is consistent with the view that many smokers do not want to quit and do not wish for the government to assist them in doing so.<sup>215</sup>

The desire to quit is not the only source of heterogeneity among smokers. In fact, smokers are likely heterogeneous with respect to each of the variables in the self-control tax formula.

First, people are heterogeneous with respect to the dollar value of health damage that they sustain from smoking ( $h$ ). Gruber and Köszegi ignore this by focusing on the “typical” or average smoker.<sup>216</sup> In calculating the optimal tax, they assign a value to  $h$  based on their estimate of the years of life lost due to smoking (six years) and their estimate of the dollar value of a life (\$6.8 million).<sup>217</sup> Gruber and

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212. See Hersch, *supra* note 169, at 6 (“If smokers are seeking to quit smoking, smoking regulations can serve as a means of fostering their own self-control.”).

213. *Id.* at 20. For example, a series of surveys conducted periodically from 1991–2002 finds that among daily smokers who report that they plan to quit in the next 6 months, over 21% support a ban on smoking in restaurants, compared to only 12% of those not planning to quit. *Id.* at 15. But it is important to note that even smokers who say that they are planning to quit are far less supportive of smoking regulations than never smokers. For example, support among never smokers for a ban on smoking in restaurants ranged from 57% in 1991–92 to nearly 70% in 2001–02. *Id.* at 14. Though it is not conclusive, the relative lack of support for smoking regulations even among those who claim that they are planning to quit is difficult to reconcile with the position that most smokers are in search of a commitment device that will help them overcome their self-control problems.

214. For example, among those surveyed in 2001–02, nearly 70% of never smokers supported a ban on smoking in restaurants, while that figure was only 26% among smokers. See, e.g., *id.* at 14. Among Connecticut voters surveyed in 2002, 66% of smokers opposed a proposed cigarette tax increase, while 78% of nonsmokers supported it. Gul & Pesendorfer, *supra* note 172, at 151. While it might seem inconsistent with the rational smoker model for any smoker to support public smoking bans and cigarette taxes, that is not necessarily the case. For example, a smoker may believe that nonsmokers (particularly the smoker’s family and friends) should not be subjected to ETS involuntarily, or she may think that cigarette taxes are a fair and efficient way to fund the government.

215. Cf. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1294 (stating that “we have not proved time inconsistency in smoking decisions”). A paternalist might respond by arguing that smokers do not support government regulation of smoking because they are naive about their self-control problems. See *id.* at 1281 (discussing naive hyperbolic discounters). They want to quit but do not understand that they need the government’s help. But this argument is difficult to prove or refute. So it opens the paternalist up to the charge that she is attempting to impose her values on smokers rather than using government regulation to help smokers achieve their own goals. In addition, paternalists often point to smokers’ use of commitment devices as strong evidence that self-control problems are pervasive among smokers. Given this, it is inconsistent to simply dismiss the fact that many smokers oppose cigarette taxes or other smoking regulations that could serve as a strong commitment device.

216. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 10, 16–17.

217. *Id.* at 16.

Köszegi conclude that  $h$  is \$35.64 per pack.<sup>218</sup> In other words, they assume that each pack of cigarettes smoked does the same amount of health damage in dollar terms. In fact, the dollar amount of health damage from smoking varies significantly from person to person.

There are at least three reasons for this. The first reason is that the health damage from smoking results from smoking over a long period, not from smoking a single cigarette or pack of cigarettes. As discussed in Part I, smokers who quit by age 35 (which describes a large number of modern-day smokers) have virtually the same life expectancy as those who have never smoked. So these smokers avoid most or all of the health consequences, which implies that  $h$  is at or near zero, and no reason exists to impose a self-control tax. The second reason is that even among those who suffer premature death, the number of years of life lost due to smoking varies significantly.<sup>219</sup> The third reason is that people may differ in terms of the value that they place on good health and long life. In particular, smokers may place a lower value on health and longevity than do nonsmokers, which could explain why they choose to smoke in the first place.<sup>220</sup>

Second, people are likely heterogeneous with respect to the short-term discount factor ( $\beta$ ). The short-term discount factor determines the degree to which preferences are inconsistent over time. In other words, it measures the smoker's self-control problem. And experience suggests that people differ with respect to self-control.

More concretely, a number of studies suggest that hyperbolic discounting is not a universal phenomenon. For example, Jesus Fernandez-Villaverde and Arijit Mukherji present evidence that hyperbolic discounting is much less prevalent than is sometimes claimed.<sup>221</sup> Additionally, in a study of smokers, Michel Grignon concludes that "there is a considerable amount of individual heterogeneity in the probability to state present biased time preferences."<sup>222</sup> Moreover, Glenn Harrison and his colleagues find that smokers are not significantly more likely to exhibit time-inconsistent preferences than nonsmokers.<sup>223</sup>

Given these findings, it is possible that some or many people have a  $\beta$

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218. *Id.* at 17.

219. For example, as discussed in Part I, Jérôme Adda and Valerie Lechene find that on average, people who have long life expectancies (because they do not have illnesses unrelated to smoking) lose 1.5 more years of life by smoking than people who have short life expectancies (because they have illnesses not caused by smoking). Adda & Lechene, *supra* note 89, at 32.

220. See *supra* Part I.A.3.a.

221. Jesus Fernandez-Villaverde & Arijit Mukherji, Can We Really Observe Hyperbolic Discounting? 1 (Mar. 18, 2006) (unpublished manuscript) (on file with author).

222. Grignon, *supra* note 164, at 745.

223. Harrison et al., *supra* note 73, at 717–18 (2010).

at or near one. Recall that for anyone with a  $\beta$  of one, the optimal self-control tax is zero because the person discounts exponentially. Moreover, even among hyperbolic discounters,  $\beta$  likely varies a great deal from person to person.

Finally, people are likely heterogeneous with respect to the long-term discount factor ( $\delta$ ). The long-term discount factor reflects the degree of patience exercised by the planning self. It seems likely that some people are more patient than others. In fact, several studies find wide variation in discounting among individuals.<sup>224</sup> In particular, as discussed in Part I, the typical smoker may discount the future more heavily than the typical nonsmoker.<sup>225</sup> That is important because if a person has a low  $\delta$ , then even that person's planning self greatly discounts the health costs of smoking. This could cause the planning self to want to smoke so that the planning self and acting self are in agreement.

Again, if people are heterogeneous, then the appropriate self-control tax will vary from person to person and may be zero for some people. The problem is that the tax is a one-size-fits-all solution that the government cannot tailor to each individual.<sup>226</sup>

As a result, if the goal is to maximize social welfare, heterogeneity forces the government to select a tax rate that minimizes the cost of two types of errors—under-consumption and over-consumption.<sup>227</sup> If the rate that the government selects is too high for a particular smoker, she might quit when she would otherwise rationally choose to smoke. But if the rate is too low, she may continue to smoke even though she would quit if she were perfectly rational.

In this latter case, the smoker may face a “double-cost” problem.<sup>228</sup> She pays the self-control tax, which forces her acting self to internalize smoking's long-term costs. But because the tax is too low, she continues to smoke and still suffers the health damage that the tax is designed to help her avoid. In effect, she pays the same costs twice.

Because of heterogeneity, the government needs extensive information to ensure that the tax rate that it selects will enhance welfare

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224. Glenn W. Harrison et al., *Estimating Individual Discount Rates in Denmark: A Field Experiment*, 92 AM. ECON. REV. 1606, 1614–17 (2002) (finding variation based on demographic characteristics); see also studies cited *supra* note 73 (finding that smokers have higher discount rates than nonsmokers).

225. See studies cited *supra* note 73.

226. See Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 962–63 (discussing this problem in the context of a tax on potato chips).

227. See *id.* at 962 (discussing this problem in the context of a tax on potato chips); O'Donoghue & Rabin, *Optimal Sin Taxes*, *supra* note 18, at 1835 (same).

228. See Jeff Strnad, *Conceptualizing the “Fat Tax”: The Role of Food Taxes in Developed Economies*, 78 S. CAL. L. REV. 1221, 1254–55 (2005) (discussing a similar problem in the context of food taxes); Fennell, *Willpower Taxes*, *supra* note 23, at 1412 (noting that this is a problem with self-control taxes generally).

relative to the no-tax baseline. In particular, the government needs to know the distribution (the population heterogeneity) of the degree of self-control problems and of smoking-related health costs.<sup>229</sup> Unfortunately, the government does not have (and is unlikely to obtain) this information.

In addition, the problems created by heterogeneity will be exacerbated if smokers who have self-control problems are significantly less responsive to cigarette taxes than those who do not.<sup>230</sup> In that case, the taxes will simply burden rational smokers without benefitting smokers who lack self-control. On this point, Jason Fletcher and his colleagues find evidence that younger smokers who have low self-control and high discount rates are not very responsive to cigarette taxes.<sup>231</sup> Fletcher concludes that “[t]hose who have the least willpower may need the most help in quitting but are unresponsive to taxes.”<sup>232</sup>

## 2. Imperfect Information

Government failure also creates problems for the self-control tax. The first source of failure is the government’s lack of complete information.<sup>233</sup> The government lacks the information necessary to estimate the variables in the self-control tax formula with adequate precision. It also lacks information about factors that are relevant to determining the optimal self-control tax but that are not accounted for in the formula. Obtaining the necessary information would be challenging even if smokers were homogeneous, but the fact that smokers are heterogeneous worsens the problem.

The first variable about which the government needs information is the dollar value of the health damage resulting from smoking ( $h$ ). This variable depends in large part on the value assigned to the years of life that smokers lose due to smoking. Valuing life is not easy, so estimating  $h$  would be difficult even if smokers were homogeneous. But, as already discussed,  $h$  varies from smoker to smoker and is at or near zero for those smokers who avoid premature death by quitting early in life. Again, Gruber and Köszegi deal with this fact by focusing on the typical smoker in their calculations.<sup>234</sup> Unfortunately, this approach

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229. Cf. Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 963 (discussing the information required to determine the optimal potato chip tax if the population is heterogeneous).

230. See O’Donoghue & Rabin, *Optimal Sin Taxes*, *supra* note 18, at 1835.

231. Jason Fletcher et al., *Tobacco Use, Taxation and Self-Control in Adolescence* 12 (June 25, 2009) (unpublished manuscript) (on file with author).

232. *Id.* at 1.

233. For a discussion of the information required to allow the government to correct various failures of rationality, see generally Rizzo & Whitman, *Knowledge Problem*, *supra* note 18.

234. See GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 10, 16–17 (stating that their

produces a tax rate that is far too high for the many smokers who experience significantly less than average health damage.

The next two variables about which the government needs information are the short-term discount rate ( $\beta$ ) and the long-term discount rate ( $\delta$ ). Recall that these variables are designed to measure the smoker's self-control problem ( $\beta$ ) and long-run level of patience ( $\delta$ ). We might expect that placing a value on traits like self-control and patience would be difficult. So it comes as no surprise that economists have had trouble estimating discount rates. In a review of the literature, Shane Frederick and his colleagues find "tremendous variability in the estimates" from one study to the next.<sup>235</sup> The estimated annual discount rates "range from -6 percent to infinity."<sup>236</sup> Moreover, "[T]here is no evidence of methodological progress; the range of estimates is not shrinking over time."<sup>237</sup>

Even if the government could accurately estimate  $h$ ,  $\beta$ , and  $\delta$ , its work would not be finished. The formula presented above is a simplified version that ignores addiction. Gruber and Köszegi derive another, more complex formula that incorporates addiction.<sup>238</sup> This second formula contains even more variables, and while they note that the optimal tax is "quite sensitive" to these additional variables, Gruber and Köszegi concede that their values are not clear.<sup>239</sup> As a result, they present various estimates of the optimal tax based on a range of values.<sup>240</sup>

The government's inability to estimate with precision the variables in the self-control tax formula is problematic because the optimal tax rate is very sensitive to these variables. To illustrate, consider the effects of varying only  $\beta$ . Gruber and Köszegi admit that a precise measure of  $\beta$  is

calculations "use the fact that smokers die on average six years earlier").

235. Frederick et al., *supra* note 184, at 377.

236. *Id.*

237. *Id.* To compound the problem, contrary to the Gruber-Köszegi model, a hyperbolic discounter does not have only two discount factors. The model is misleading because by assuming only two discount factors it reflects "quasi-hyperbolic" discounting. Economists sometimes assume quasi-hyperbolic discounting, not because empirical evidence suggests that people are quasi-hyperbolic discounters, but because it is easier to model than true hyperbolic discounting. A true hyperbolic discounter has many discount factors because discount rates (which determine the discount factor) steadily decrease with distance from the present. For example, Richard Thaler estimated three annual discount rates varying with time horizon—345% over a one-month horizon, 120% over a one-year horizon, and 19% over a ten-year horizon. Richard Thaler, *Some Empirical Evidence on Dynamic Inconsistency*, 8 *ECON. LETTERS* 201, 204 (1981). If people are hyperbolic discounters, then the government has to estimate not just two discount factors, but many. For further discussion of this issue, see Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 925–27.

238. Gruber and Köszegi derive this formula in their initial article. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1279–92.

239. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1291.

240. *Id.*



unavailable so they provide a range of estimates of the optimal self-control tax depending on various values of  $\beta$ .<sup>241</sup> If  $\beta$  equals one, then the optimal tax is zero (because people are exponential discounters).<sup>242</sup> But if  $\beta$  equals 0.6, then, according to Gruber and Köszegi, the optimal tax is \$14.26 per pack.<sup>243</sup>

These calculations show that even if the government knew the appropriate values for the variables other than  $\beta$  (which it does not), it would still be difficult to determine the optimal self-control tax with any precision. Moreover, simply adopting the highest estimate (e.g., on the grounds that a higher tax will reduce smoking more) is inappropriate. That estimate may be far too high, in which case the tax would reduce smoking well below the optimal amount. In other words, taxes of over \$14 per pack might cause some people to quit smoking even though, for them at least, smoking is a rational choice.

To make matters worse, even the expanded formula that Gruber and Köszegi develop (the formula that accounts for addiction) ignores factors relevant to the optimal tax calculation. In particular, Gruber and Köszegi assume that if a smoker suffers from a self-control problem, a tax that corrects that problem will make her better off. This assumption is not necessarily true. Gregory Besharov demonstrates that departures from rationality do not always lead to suboptimal choices.<sup>244</sup> Instead, one failure of rationality may offset another.<sup>245</sup> For example, if a smoker suffers from cognitive biases as well as a self-control problem, the two may counteract one another. This means that correcting the self-control problem without correcting the cognitive biases has ambiguous effects on welfare. It could actually decrease welfare by moving the smoker's cigarette consumption further away from the optimum.

To illustrate, consider the finding that people overestimate highly publicized risks.<sup>246</sup> Consistent with this finding, many people overestimate the risks of smoking. This has the effect of reducing smoking from the level that would otherwise prevail.<sup>247</sup> The bias that leads people to overestimate smoking's risks may partially, fully, or

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241. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 10, 17.

242. *Id.* Gruber and Köszegi's optimal tax estimates include a tax of \$.40 per pack to reflect smoking's interpersonal externalities. *Id.* Since my focus is on the self-control component of the tax, the estimates presented in the text ignore this amount.

243. *Id.*

244. Gregory Besharov, *Second-Best Considerations in Correcting Cognitive Biases*, 71 S. ECON. J. 12, 15–19 (2004).

245. *Id.* at 15–19.

246. FISCHHOFF ET AL., *supra* note 130, at 29.

247. VISCUSI, *RISKY DECISION*, *supra* note 12, at 99–100 (concluding that the smoking rate would be significantly higher if people did not overestimate the risk of lung cancer).

more than fully offset any excessive smoking resulting from self-control problems. So correcting self-control problems without considering the tendency to overestimate smoking's risks could reduce welfare relative to the no-tax baseline.<sup>248</sup> Gruber and Köszegi do not account for this possibility.

Gruber and Köszegi may also overstate the need for government intervention. People often can overcome self-control problems on their own.<sup>249</sup> One way they do this is by exercising willpower or taking steps to avoid temptation.<sup>250</sup> Another tool, already discussed, is a private commitment device.<sup>251</sup> Willpower and other self-management techniques may reduce the government's potential role.

### 3. Lack of Control over Smokers' Responses to Taxation

The second source of government failure is lack of control over smokers' responses to taxation. A growing body of research shows that many smokers respond to cigarette taxes in dangerous ways, and the resulting harm at least partially offsets any health benefits from reduced smoking. Gruber and Köszegi ignore this problem.

The first undesirable response involves switching to more harmful cigarettes and smoking cigarettes in more dangerous ways. If smokers want a particular level of tar and nicotine, we would expect them to respond to cigarette taxes by finding ways to extract more tar and nicotine per cigarette smoked.<sup>252</sup> In fact, that appears to be the case.<sup>253</sup>

Matthew Farrelly and his colleagues find that many smokers respond to cigarette taxes not only by cutting back on daily consumption, but also by switching to cigarettes that are higher in tar and nicotine.<sup>254</sup> As a result, Farrelly concludes that "cigarette excise taxes appear to have no

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248. Rizzo and Whitman make this point. Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 953; *cf.* VISCUSI, *SMOKE-FILLED ROOMS*, *supra* note 106, at 61 (noting that if smokers overestimate smoking's risks, that would tend to offset any excessive smoking resulting from ignoring future health costs).

249. For a discussion of self-regulation and self-debiasing, see Rizzo & Whitman, *Knowledge Problem*, *supra* note 18, at 943–46.

250. For a discussion of willpower, see generally Fennell, *Willpower Taxes*, *supra* note 23; Fennell, *Willpower and Legal Policy*, *supra* note 207; Mark Muraven & Roy F. Baumeister, *Self-Regulation and Depletion of Limited Resources: Does Self-Control Resemble a Muscle?*, 126 *PSYCH. BULLETIN* 247 (2000).

251. As discussed in subpart E of this Part, a recent experiment testing a commitment contract designed to facilitate smoking cessation demonstrates that private commitment devices can be effective.

252. Matthew C. Farrelly et al., *The Effects of Higher Cigarette Prices on Tar and Nicotine Consumption in a Cohort of Adult Smokers*, 13 *HEALTH ECON.* 49, 56 (2004).

253. The way in which people respond to cigarette taxes is similar to how they respond to safety measures (e.g., mandatory seat belt laws). They increase risk taking (e.g., by driving faster) in a way that tends to undermine the policy goal. See VISCUSI, *SMOKE-FILLED ROOMS*, *supra* note 106, at 66.

254. Farrelly et al., *supra* note 252, at 54.

effect on total tar consumption,” and “the health benefits of [cigarette price] increases are negated by a corresponding increase in tar—the cancer-causing agent in cigarettes.”<sup>255</sup>

Similarly, Jérôme Adda and Francesca Cornaglia find that smokers respond to cigarette taxes by smoking more intensely.<sup>256</sup> As cigarettes become more expensive, smokers inhale more deeply, increase the number of puffs, use their fingers to cover the side air vents, and smoke down to the filter.<sup>257</sup> From a public health perspective, this type of compensating behavior is regrettable because it increases the health risks involved.<sup>258</sup>

The second undesirable response is weight gain. Quitting smoking might increase weight for a number of reasons. These include the fact that smoking speeds up the metabolism and acts as an appetite suppressant, and that quitting frees up income to be used for food.<sup>259</sup> Empirical research on the relationship between quitting smoking and weight gain has produced mixed results.<sup>260</sup> But a number of recent studies have concluded that cigarette taxes increase obesity, perhaps significantly.<sup>261</sup> If cigarette taxes contribute to obesity, that mutes the health benefits because obesity is itself linked to illness and premature death.<sup>262</sup>

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255. *Id.* at 55–56.

256. Jérôme Adda & Francesca Cornaglia, *Taxes, Cigarette Consumption, and Smoking Intensity*, AM. ECON. REV. 1013, 1013 (2006).

257. For a discussion of the literature on the various ways smokers regulate the amount of nicotine they extract from cigarettes, see *id.* at 1013–14, 1025.

258. *Id.* at 1014.

259. Charles L. Baum, *The Effects of Cigarette Taxes on BMI and Obesity*, 18 HEALTH ECON. 3, 4 (2009); Anindya Sen et al., *Obesity, Smoking, and Cigarette Taxes: Evidence from the Canadian Community Health Surveys*, 97 HEALTH POL’Y 180, 181 (2010).

260. A number of studies find that cigarette taxes contribute to obesity. Baum, *supra* note 259, at 5; Sen et al., *supra* note 259, at 186; Philip DeCicca, *Are Obese Smokers an Unintended Consequence of Higher Cigarette Taxes?* 19 (June 2008) (unpublished manuscript) (on file with author); Shin-Yi Chou et al., *An Economic Analysis of Adult Obesity: Results from the Behavioral Risk Factor Surveillance System*, 23 J. HEALTH ECON. 565, 585 (2004). But Jonathan Gruber and Michael Frakes find that “there is no evidence of a large weight effect from smoking cessation.” Jonathan Gruber & Michael Frakes, *Does Falling Smoking Lead to Rising Obesity?*, 25 J. HEALTH ECON. 183, 196 (2006). Similarly, James Nonnemaker and his colleagues find that cigarette taxes cause only “modest” weight gain among former smokers. James Nonnemaker et al., *Have Efforts to Reduce Smoking Really Contributed to the Obesity Epidemic?*, 47 ECON. INQUIRY 366, 376 (2009).

261. Sen et al., *supra* note 259, at 186 (using data from Canada and finding “a statistically significant correlation between higher cigarette taxes and a more obese population”); Baum, *supra* note 259, at 5 (concluding that cigarette taxes “significantly increase . . . obesity and overweight”); DeCicca, *supra* note 260, at 19, 22 (finding that cigarette taxes increase obesity among women and older men); Chou et al., *supra* note 260, at 585 (finding that increases in cigarette taxes have “contributed to the upward trend in obesity”).

262. Baum, *supra* note 259, at 4.

#### 4. Flaws in the Political Process

The third source of government failure is flaws in the political process. It seems unlikely that most legislators care whether a proposed cigarette tax increase is optimal within Gruber and Köszegi's analytical framework. Instead, legislators view cigarette taxes as a way to raise revenue at low political cost.<sup>263</sup> The tax burden falls on a shrinking minority and on a product viewed by nonsmokers with disdain.<sup>264</sup> As a result, legislators can increase cigarette taxes with relatively little resistance from voters.<sup>265</sup> In fact, organized antismoking advocates actively lobby for higher cigarette taxes.<sup>266</sup> So at a time when governments are desperate for revenue, pressure exists to raise cigarette taxes, even if doing so decreases social welfare.

Widespread acceptance of the need for a self-control tax would likely exacerbate this problem, leading us down a slippery slope to ever-increasing taxes. The literature on slippery slope arguments suggests that the slide down the slope is more likely to occur when "the absence of a sharp line between different cases eases the process of moving from one to another."<sup>267</sup> This usually results from a key term that is vague.<sup>268</sup> In our context, the notion of an optimal self-control tax is vague because imperfect information makes it impossible to identify the optimal tax rate with any precision. This means that antismoking advocates (many of whom favor tax increases not because they are welfare-enhancing but simply because they will reduce smoking) are free to use the Gruber-Köszegi model as intellectual cover to argue for one tax increase after another.<sup>269</sup>

One way to resist this type of slippery slope is to follow bright-line rules.<sup>270</sup> For example, an appropriate rule might be that cigarette taxes should be based only on external costs (i.e., harm to others), not on

263. VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 61.

264. As evidence of nonsmokers dislike for smoking, consider that nonsmokers overwhelmingly support restricting smoking in various public places, including restaurants, malls, and indoor sporting events. Hersch, *supra* note 169, at 14.

265. For example, in a survey of Connecticut voters, 78% of nonsmokers supported a proposed cigarette tax increase, which Connecticut ultimately adopted. Gul & Pesendorfer, *supra* note 172, at 151.

266. *E.g.*, CAMPAIGN FOR TOBACCO-FREE KIDS, RELIABLE SOURCE, *supra* note 8, at 1-2.

267. Rizzo & Whitman, *Slippery Slopes*, *supra* note 18, at 691.

268. *Id.*

269. The slippery slope phenomenon seems to be at work in Gruber and Köszegi's own writings on the self-control tax. In their initial article, Gruber and Köszegi argue that their model supports a self-control tax of at least \$1 per pack, which they suggest is a conservative estimate. Gruber & Köszegi, *Is Addiction Rational?*, *supra* note 12, at 1292. But in a subsequent paper, they suggest that the tax should be much higher, perhaps as high as \$14 per pack. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 17.

270. Rizzo & Whitman, *Slippery Slopes*, *supra* note 18, at 738.

paternalism.

To summarize, the government should not adopt a self-control tax on cigarettes. Smokers are likely heterogeneous with respect to all of the variables in the self-control tax formula. Heterogeneity means that there is not a single tax rate that is appropriate for all smokers. Ideally, the government would tailor the tax to the needs of each individual smoker, but that is not possible. Also, the government does not possess (and is not able to obtain) the information required to estimate the optimal tax rate. Any estimates are unlikely to be scientific and will instead involve little more than guesswork.

Moreover, many smokers react to cigarette taxes in dangerous ways. The government cannot control or fully predict these responses, which mute the desired health benefits.

Finally, if the need for a self-control tax is widely accepted, the government's inability to estimate the optimal tax rate with precision, when combined with flaws in the political process, is likely to create a slippery slope. Cigarette taxes will continue to increase even if the tax increases are not welfare enhancing.

### C. Optimism Bias

While it is important, the Gruber-Köszegi model is only one of several theories of smoking that incorporate imperfect rationality.<sup>271</sup> To show that heterogeneity and government failure pose problems for paternalistic taxes no matter what theory is used to justify them, this subpart discusses the claim that smokers suffer from optimism bias.

As discussed in Part I, survey evidence indicates that many smokers overestimate the risks of smoking. But some scholars argue that this evidence is misleading. They claim that although smokers may overestimate the risk that smoking imposes on others, they underestimate the risk to themselves.<sup>272</sup> In other words, people smoke even though they are aware of the risks because they do not believe that these risks apply to them personally. If "optimism bias" causes smokers to believe that they are immune from the risks that others face, then providing smokers with additional information or warnings will not work. In that case, cigarette taxes might correct the problem by reducing smoking to the level that would prevail if smokers were rational about risks.

But the evidence of optimism bias among smokers is not very convincing. A number of studies do find that in general people often

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271. For a discussion of several of these theories, see Hanson & Logue, *supra* note 17, at 1181-1223.

272. *Id.* at 1186-88.

claim that their own abilities are above average and that the risk that they face for various hazards is less than the risk that the average person faces.<sup>273</sup> For example, most people claim that they are better drivers than the average person.<sup>274</sup> And far more people claim that they are at below-average risk for contracting pneumonia than at above-average risk.<sup>275</sup> But evidence of optimism bias specific to smoking consists primarily of the study by Michael Schoenbaum discussed in Part I. Recall that Schoenbaum surveyed older adults and found that heavy smokers overestimate their chances of surviving to age 75.<sup>276</sup>

Nevertheless, there are reasons to be cautious in accepting this study as proof of widespread optimism bias among smokers. First, as already noted, even Schoenbaum finds that older smokers who are light smokers (68% of the smokers in his sample) either accurately estimate or overestimate *their own* risk of premature death.<sup>277</sup> Second, a more recent study by Ahmed Khwaja and his colleagues finds that older smokers are “quite accurate on average” in assessing their chances of surviving to age 75.<sup>278</sup> Third, a 1993 Gallup poll finds that 65% of smokers believe that smoking has already harmed their health and 78% believe that they are either likely or very likely to suffer serious health problems if they do not quit smoking.<sup>279</sup> Fourth, many smokers who quit cite health concerns as the reason, which is evidence that smokers know that they are not invulnerable.<sup>280</sup> Finally, the optimism bias hypothesis is difficult to reconcile with the fact that better information about health risks has led to a dramatic decline in both the smoking rate and the median cessation age.<sup>281</sup>

At most, the existing evidence supports the conclusion that a small percentage of smokers might be excessively optimistic in predicting their survival chances. Moreover, it is not even clear whether this excessive optimism results from incorrigible optimism bias or whether it could be corrected by providing these smokers with better information about smoking’s effects on mortality.

So what does this all mean for cigarette tax policy? It means that the evidence related to optimism bias provides no more support for a paternalistic tax than does the evidence related to self-control problems.

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273. Neil D. Weinstein, *Optimistic Biases about Personal Risks*, 246 *SCI.* 1232, 1232 (1989).

274. Viscusi, *Paternalism*, *supra* note 150, at 60.

275. Weinstein, *supra* note 273, at 1232.

276. Schoenbaum, *supra* note 133, at 757.

277. Goldfarb et al., *supra* note 38, at 237 (making this point).

278. Khwaja et al., *Mature Smokers*, *supra* note 139, at 396.

279. Viscusi, *Paternalism*, *supra* note 150, at 60.

280. Larabic, *supra* note 49, at 426; Khwaja et al., *Time Preference*, *supra* note 37, at 930.

281. *See supra* Part I.A.2.

All that can be said is that smokers appear to be heterogeneous, with most accurately perceiving the risks to themselves (or overestimating those risks), but with some underestimating the risks (perhaps due to optimism bias). Again, heterogeneity is problematic because a paternalistic tax is a one-size-fits-all solution. It may help those who suffer from optimism bias, but it will harm those who do not.

In addition, the government lacks the information necessary to determine the optimal tax rate. To correct optimism bias, the government would need to set the tax to reflect the health costs that smokers ignore because of their excessive optimism. These health costs include fewer years of life. So the government needs to know the extent to which smokers who suffer from optimism bias underestimate their personal risk of premature death. Do they completely ignore the risk? Do they believe that their personal risk is 20% of the risk to others? Do they differ with respect to the degree of optimism bias? This type of information is not easy to obtain. In the end, policy makers simply have to guess about the optimal amount of the tax. And there is no way to know whether the tax rate that the government selects will increase social welfare, especially since political considerations are likely to drive the rate-selection process.

#### *D. Regressivity*

Many tax scholars believe that the government should base taxation on the ability to pay, which increases with income.<sup>282</sup> Those who accept this principle view regressivity as unfair. A regressive tax is one that imposes a greater burden on the poor than the rich. More specifically, the traditional definition of a regressive tax is one for which the average tax rate decreases as income increases.<sup>283</sup> This definition focuses on tax expenditures. It assumes that the burden of a tax is measured by taxes paid as a percentage of income.

By this measure, cigarette taxes are extremely regressive.<sup>284</sup> There are two reasons for this.<sup>285</sup> First, most taxes imposed on the sale of goods are regressive simply because the poor spend a larger percentage of their incomes than the rich, who are able to save more.<sup>286</sup> Second,

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282. *E.g.*, Slemrod & Bakija, *supra* note 100, at 64–66.

283. *Id.* at 60.

284. *E.g.*, Viscusi, *Principles*, *supra* note 98, at 82; Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1962 (“Cigarette expenditures as a share of income are 3.2% in the bottom quartile of the income distribution, but are only 0.4% of income in the top quartile.”).

285. Dahlia K. Remler, *Poor Smokers, Poor Quitters, and Cigarette Tax Regressivity*, 94 AM. J. PUB. HEALTH 225, 225 (2004).

286. *Id.* This might not be the case for taxes on luxury items, which are disproportionately consumed by the rich. *Id.*

cigarette taxes are particularly regressive because the smoking rate is much higher among the poor.<sup>287</sup> In 2009, the smoking rate for adults living below the federal poverty level was 30.6%, while it was only 12.1% for adults with family income of \$100,000 or more.<sup>288</sup> As a result, cigarette taxes impose a large and disproportionate burden on the poor.<sup>289</sup>

Until recently, cigarette tax regressivity was not that important because cigarette taxes were so low. But today, the average combined federal and state tax is \$2.18 per pack, which amounts to nearly \$800 per year for a pack-a-day smoker.<sup>290</sup> Moreover, the tax burden is much greater in many states and cities. And while cigarette taxes do cause some low-income smokers to quit, others continue to smoke while reducing spending on necessities, e.g., housing.<sup>291</sup> So cigarette taxes burden not only low-income smokers but also their families as well.

But as part of their effort to encourage cigarette tax increases, Jonathan Gruber and Botond Köszegi argue that cigarette taxes are not as regressive as the traditional expenditure-based measure of regressivity implies.<sup>292</sup> Gruber and Köszegi argue instead for a more comprehensive welfare-based measure.

Gruber and Köszegi point out that the true burden resulting from cigarette taxes depends on how the taxes affect utility.<sup>293</sup> This happens in two ways. The first effect is the reduction in utility for those who continue to smoke, but must now pay a higher price.<sup>294</sup> The traditional expenditure-based measure of regressivity captures this effect. The

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287. *Id.*

288. CDC, *supra* note 26, at 88.

289. The traditional measure of regressivity focuses on annual income. But regressivity persists (though it is somewhat reduced) if we use measures, e.g., consumption, that some argue better reflect lifetime income. Remler, *supra* note 285, at 226; Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1962.

290. See ORZECZOWSKI & WALKER, *supra* note 3, at iv.

291. Busch et al., *supra* note 29, at 266–71. Busch finds that low-income households that include a smoker spend significantly less on housing than low-income households that do not. *Id.* at 266. Among the poor, smoking households also devote a smaller share of their budgets to food and apparel. *Id.* at 267. Busch also finds evidence that as cigarette prices increase, low-income households spend less on housing. *Id.* at 269. Taken together, these findings suggest that cigarette expenditures crowd out spending on other goods, including necessities.

A problem with Busch's study is that her data reveal a price elasticity for tobacco of -0.986, which differs substantially from the consensus estimate of -0.3 to -0.5. *Id.* at 270. In other words, other studies suggest that smokers are much less responsive to price than Busch's elasticity estimate implies. This means that Busch's study may understate the magnitude by which smokers' expenditures on cigarettes increase when the government increases cigarette taxes. If that is the case, then the crowd-out effect of cigarette taxes will be even larger than Busch estimates (perhaps substantially larger).

292. Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1980.

293. *Id.* at 1960.

294. GRUBER & KÖSZEGI, MODERN VIEW, *supra* note 18, at 14; Remler, *supra* note 285, at 227.



second effect, which the traditional measure does not capture, occurs if some smokers quit or cut back in response to taxes.<sup>295</sup>

This second effect could involve an increase or decrease in utility. If smoking is a rational choice, utility decreases because some smokers no longer consume a product the benefits of which outweigh the pretax costs (according to smokers' own rational calculations).<sup>296</sup> This reduction in utility increases the tax burden. But if smoking is suboptimal, smokers who respond to a tax by quitting or cutting back are better off, which decreases the tax burden in utility terms.<sup>297</sup> The tax simply encourages these smokers to do something that they should have done already.

As discussed in subpart A, Gruber and Köszegi believe that smoking is suboptimal; many smokers would quit if they had sufficient self-control. As a result, Gruber and Köszegi argue that by forcing smokers to quit or cut back, cigarette taxes produce a significant benefit that the traditional definition of regressivity ignores. Moreover, this benefit increases the more responsive smokers are to cigarette tax increases.<sup>298</sup> In other words, taxes are more effective at reducing over-consumption for smokers who are especially sensitive to price.<sup>299</sup> Gruber and Köszegi claim that low-income smokers are much more price sensitive than high-income smokers.<sup>300</sup> So low-income smokers receive a greater benefit in the form of quitting or cutting back, which may significantly reduce regressivity (or even cause cigarette taxes to be progressive).<sup>301</sup>

This argument is subject to at least two criticisms. First, as discussed in subpart B, Gruber and Köszegi may overstate the problem posed by suboptimal smoking. In their model, the benefit of using taxes to force smokers to quit depends on the degree of smokers' self-control problems and on smoking's health costs.<sup>302</sup> The more severe a smoker's self-control problem, the more her acting self underweights the long-term health consequences and the more likely she will be to smoke even though her planning self would like for her to quit. Additionally, the

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295. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 14; Remler, *supra* note 285, at 227.

296. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 14; Remler, *supra* note 285, at 227.

297. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 14; Remler, *supra* note 285, at 227-28; & Köszegi, *Tax Incidence*, *supra* note 18, at 1961 (noting that "a price-induced decrease in consumption may be good for the agent, because it softens the overconsumption due to the desire for immediate gratification").

298. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 15; Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1970, 1977.

299. Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1970.

300. Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1975-76.

301. *Id.* at 1977-78.

302. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 15; Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1974-78.

greater the long-term health costs, the more damaging the acting self's mistake.<sup>303</sup> But we have seen that the extent to which self-control problems cause smoking is far from clear. Also, the health costs of smoking are much lower for those who quit early in life, which is much more common now than in the past.

If suboptimal smoking is not as serious a problem as Gruber and Köszegi claim, then using cigarette taxes to compel smokers to quit will not produce large utility gains among the poor. So shifting from an expenditure-based measure to a welfare-based measure will not significantly reduce regressivity.

Second, Gruber and Köszegi may also overstate how sensitive low-income smokers are to cigarette tax increases. Even if we accept that smoking reduces utility, cigarette taxes benefit smokers only if they respond by quitting or cutting back significantly. Unless they cut back significantly, those who continue to smoke bear a greater burden than before because they must pay a higher price. Gruber and Köszegi claim that low-income smokers are very sensitive to cigarette taxes. More specifically, they find a price elasticity of nearly -1.1 for smokers in the bottom income quartile.<sup>304</sup> This suggests that a 10% increase in cigarette price leads to an 11% reduction in smoking, which is a relatively large response.

But this finding is highly controversial. As an initial matter, it is difficult to reconcile with the fact that the smoking rate among the poor remains high. In fact, despite significant cigarette tax increases during the period, the smoking rate among adults below the federal poverty level fell only slightly between 1997 (when it was 33.3%) and 2009 (when it was 30.6%).

In addition, a number of price elasticity studies suggest that while low-income smokers do respond to cigarette taxes, they are not nearly as price sensitive as Gruber and Köszegi claim.<sup>305</sup> For example, Gregory Colman and Dahlia Remler find a price elasticity of -0.37 among low-income groups.<sup>306</sup> Matthew Farrelly and his colleagues find an elasticity of -0.43 for the bottom half of the income distribution.<sup>307</sup> Similarly,

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303. GRUBER & KÖSZEGI, *MODERN VIEW*, *supra* note 18, at 15.

304. Gruber & Köszegi, *Tax Incidence*, *supra* note 18, at 1976. By contrast, Gruber and Köszegi find an elasticity of -0.39 for smokers in the top income quartile. *Id.*

305. *But see* DeCicca et al., *Older Adult Smoking*, *supra* note 43, at 926–27 (finding that older, low-income smokers are very sensitive to cigarette taxes and stating that their findings are “consistent with Gruber and Köszegi”).

306. Colman & Remler, *supra* note 152, at 376. This compares to an elasticity of -0.20 among high-income groups. *Id.*

307. Matthew C. Farrelly et al., *Response by Adults to Increases in Cigarette Prices by Sociodemographic Characteristics*, 68 S. ECON. J. 156, 162 (2001). This compares to an elasticity of -0.10 for the top half. *Id.* at 161.

William Evans and his colleagues find an elasticity of -0.32 for the bottom half of the income distribution.<sup>308</sup> Finally, Nicolay Gospodinov and Ian Irvine find an elasticity among smokers with less than a high school education of -0.22.<sup>309</sup>

At any rate, it is clear that widespread smoking among the poor persists despite high cigarette taxes throughout the past decade. So regressivity remains a serious concern.

### *E. Alternatives to Cigarette Taxes*

We have seen that paternalistic cigarette taxes pose a number of problems. First, cigarette taxes are a one-size-fits-all solution for addressing imperfect rationality. The taxes do not accommodate heterogeneity, and because they significantly interfere with individual autonomy, cigarette taxes harm rational smokers. Second, using cigarette taxes for paternalistic purposes poses a high risk of government failure. The government may adopt taxes that are too high and that reduce social welfare. Finally, cigarette taxes are regressive and place a large burden on low-income families that include a smoker.

Given these problems, those concerned about the dangers of smoking should consider alternative products and policies. This subpart discusses four such alternatives. These alternatives are potentially superior to cigarette taxes in that they are more suitable for a heterogeneous population, they pose a lower risk of government failure, and they do not place a large burden on the poor. The purpose of this subpart is not to commit to a particular proposal. Rather, the point is that those who want to improve smokers' health do not necessarily have to resort to cigarette taxes. Alternatives exist for achieving this objective while also avoiding the problems that cigarette taxes entail.

#### 1. The Commitment Contract for Smoking Cessation

Xavier Gine and his colleagues have proposed and tested the idea of a commitment contract for smoking cessation.<sup>310</sup> The commitment contract is designed to help smokers who have self-control problems. In

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308. William N. Evans et al., *Tobacco Taxes and Public Policy to Discourage Smoking* 36, in 13 TAX POLICY AND THE ECONOMY 1 (James Poterba ed., 1999). This compares to -0.17 for the top half. *Id.*

309. Nicolay Gaspodinov & Ian Irvine, *Tobacco Taxes and Regressivity*, 28 J. HEALTH ECON. 375, 380, 83 (2009) (using Canadian data and concluding "that there is little to suggest from our data that the traditional regressivity perspective on tobacco taxes can be overturned, and that there is therefore little hope that such tax increases may really benefit low socioeconomic groups"). The elasticity for high school and college graduates is approximately -0.3. *Id.* at 380.

310. See generally Gine et al., *supra* note 30.

Gine's experiment, a bank offered smokers a voluntary product to help them stop smoking.<sup>311</sup> Those who accepted the offer placed money in a savings account for six months, after which time they submitted to a urine test to determine whether they had successfully quit.<sup>312</sup> If they had, the bank returned their money.<sup>313</sup> If they had not, they forfeited the money to charity.<sup>314</sup> In other words, the contract with the bank served as a commitment device that increased the cost of failing to quit.

The results of the experiment show that smokers are open to trying this type of product and that it can significantly reduce smoking. About 11% of smokers who were offered the product signed a contract.<sup>315</sup> This take-up rate compares favorably with that of nicotine replacement therapy and is particularly impressive considering that Gine's product is new and unfamiliar.<sup>316</sup> Moreover, those smokers who were offered the product were 35% more likely than smokers in the control group to be nonsmokers after one year (as measured by a surprise follow-up urine test).<sup>317</sup> These results also compare favorably with those produced by nicotine replacement therapy.<sup>318</sup>

The primary advantage of the commitment contract vis-a-vis the cigarette tax is that it is voluntary. Rather than taking a compulsory, one-size-fits-all approach, a commitment contract allows smokers who want to quit and who have self-control problems to identify themselves. This eliminates concerns about heterogeneity and interfering with autonomy.<sup>319</sup> The commitment contract also reduces concerns about regressivity since it does not involve an involuntary tax on low-income smokers. Moreover, the commitment contract could potentially be a profitable product offered by private businesses, reducing the need for government involvement.<sup>320</sup>

## 2. The Smoking License

Another approach for addressing self-control problems—one that would involve the government—is the smoking license.<sup>321</sup> The

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311. *Id.* at 214.

312. *Id.*

313. *Id.*

314. *Id.*

315. *Id.*

316. *Id.* at 228.

317. *Id.* at 215.

318. *Id.* at 216.

319. See Fennell, *Willpower Taxes*, *supra* note 23, at 1416–17 (discussing commitment devices).

320. See Gine et al., *supra* note 30, at 228.

321. Fennell, *Revealing Options*, *supra* note 30, at 1482–85; see generally Bhattacharya & Lakdawalla, *supra* note 30.

government could establish a generally applicable cigarette tax that would reflect only interpersonal externalities. Although the tax would not contain a paternalistic element, smokers would also have to obtain a license in order to buy cigarettes. The license would be accompanied by a smart card to be swiped at the point of sale.<sup>322</sup> A smoker who wished to do so could establish an additional tax that would apply only to her and that would be added to her purchase when she swiped her card.<sup>323</sup> In this way, smokers who have self-control problems could use the tax as a commitment device to help them quit. A smoker could increase the tax at any time, but any tax reductions would take effect only after a long delay, which would facilitate the scheme's effectiveness.<sup>324</sup> In one version of the proposal, the collected tax would be deposited in an escrow account.<sup>325</sup> The smoker would receive the funds in the account if she quit smoking and surrendered her license.<sup>326</sup>

As with the commitment contract, the advantage of the smoking license is that the additional tax that it makes possible is voluntary. A smoker who does not have a self-control problem or who does not want to quit would pay only the generally applicable tax reflecting smoking's external costs.

### 3. Providing Information Regarding Cessation Aids

Another way that the government could help smokers quit is to collect and disseminate (or facilitate the collection and dissemination of) information regarding cessation aids, e.g., varenicline, nicotine gum, and the nicotine patch.<sup>327</sup> These products reduce non-pecuniary quitting costs and can be very effective at facilitating successful quit attempts. For example, the estimated abstinence rate six months after quitting is 25.4%–33.2% for varenicline (depending on dosage) and 19%–26.1% for nicotine gum (depending on duration of use).<sup>328</sup> This compares to only 13.8% for placebo treatment.<sup>329</sup> Abstinence rates are even higher for certain combination therapies, e.g., nicotine gum and the nicotine patch.<sup>330</sup> As a result, the medical community strongly supports cessation aids and generally recommends their use in connection with all

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322. Fennell, *Revealing Options*, *supra* note 30, at 1484.

323. *Id.*

324. *Id.*

325. *Id.*

326. The smoker might also be permitted to withdrawal amounts to pay smoking-related medical expenses. *Id.* At death, any balance in the account would revert to the state. *Id.* at 1484 n.314.

327. Given that this program would benefit smokers, it should be paid for using cigarette taxes.

328. U.S. DEP'T HEALTH & HUMAN SERV., *supra* note 16, at 109.

329. *Id.*

330. *Id.*

quit attempts.<sup>331</sup>

But smokers do not appear to have received the message. One study finds that fewer than 22% of current smokers who attempted to quit for at least one day in the preceding year used medication.<sup>332</sup> This suggests that smokers may be uninformed about cessation aids and are unnecessarily setting themselves up for failure.

#### 4. Promoting Harm Reduction

For those smokers not willing to give up cigarettes or nicotine completely, significant potential exists for reducing the harm associated with smoking. But the predominant attitude toward smoking among public health advocates is “just say no.”<sup>333</sup> This abstinence-only approach reflects the fear that reducing the risks involved will encourage some people to smoke.<sup>334</sup> But despite decades of deterrence efforts, over 20% of American adults are smokers.<sup>335</sup> So even modest progress toward harm reduction would potentially prolong the lives of tens of millions of people, which makes the abstinence-only approach extremely difficult to justify.

Various methods exist for reducing the risks posed by smoking.<sup>336</sup> These include substituting safer nicotine-delivery systems (e.g., long-term use of nicotine gum), smoking fewer cigarettes, and switching to less dangerous tobacco products (e.g., smokeless tobacco).<sup>337</sup>

But because smokers seem to enjoy various aspects of cigarettes and not just their capacity to deliver nicotine, the most promising technologies are safer cigarettes and pseudo-cigarettes.<sup>338</sup> Tobacco companies are experimenting with the composition of cigarettes to make them less harmful.<sup>339</sup> Tobacco companies are also developing cigarette-like devices that mimic many of the features of cigarettes but contain fewer toxins.<sup>340</sup>

So what can the government do to promote harm reduction? W. Kip

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331. *Id.* at 106 (“Clinicians should encourage all patients attempting to quit to use effective medications for tobacco dependence treatment, except where contraindicated or for specific populations for which there is insufficient evidence of effectiveness.”).

332. *Id.* at 12.

333. Kenneth E. Warner, *Reducing Harm to Smokers: Methods, Their Effectiveness, and the Role of Policy*, in *REGULATING TOBACCO* 111, 113 (Robert L. Rabin & Stephen D. Sugarman eds., 2001).

334. *Id.* at 121–23.

335. CDC, *supra* note 26, at 88.

336. For a discussion of harm-reduction methods, see Warner, *supra* note 333, at 117–25.

337. *Id.* at 117–25.

338. For a discussion of safer cigarettes and pseudo-cigarettes, see *id.* at 119–23.

339. *Id.* at 119–23.

340. *Id.* at 119–23.

Viscusi argues that the government should encourage the development of safer cigarettes and pseudo-cigarettes by creating a comprehensive rating system that would allow smokers to compare the risks posed by these products to those posed by traditional cigarettes.<sup>341</sup>

A government rating system would have two significant benefits. First, it would allow consumers to select the cigarettes that match their risk preferences.<sup>342</sup> Second, and more importantly, a rating system would give tobacco companies a greater incentive to produce safer cigarettes and pseudo-cigarettes.<sup>343</sup> The government currently discourages these products by restricting advertising and threatening sanctions, which impedes tobacco companies from competing on the basis of safety.<sup>344</sup> This policy apparently stems from the belief that people should "just say no" to smoking. But competition based on safety would potentially prolong lives. And a government rating system would ensure that tobacco companies could not mislead consumers through false advertising.

Reducing the harm associated with smoking has the potential to benefit all smokers, whether they are rational or not. Safer cigarettes, for example, would allow rational smokers to enjoy what they perceive as the benefits of smoking while avoiding some of the health costs. At the same time, those who suffer from failures of rationality would be better off to the extent that the cigarettes that they smoke are less harmful.

## V. YOUTH SMOKING

Because they may be shortsighted or fail to appreciate how addictive cigarettes are, most people can agree that children should not be trusted with the decision to smoke. So paternalistic intervention to reduce youth smoking is relatively uncontroversial. Even those who believe that adults should be free to smoke have little reason to oppose narrowly targeted regulation of youth smoking, which at most, delays the initiation decision to adulthood. As a result, antismoking advocates often argue for higher cigarette taxes on the grounds that they will

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341. VISCUSI, SMOKE-FILLED ROOMS, *supra* note 106, at 195. Since the rating system would benefit smokers, the program should be funded by cigarette taxes.

342. *Id.* Currently, cigarette companies disclose tar and nicotine levels on cigarette packages. *Id.* at 198. But this information is incomplete and inconclusive. *Id.* at 200. For example, people may inhale low-tar cigarettes more deeply, which could offset the health benefits of the lower tar level. *Id.* A comprehensive rating system would take into account the different ways in which people smoke different types of cigarettes. *Id.*

343. *Id.* at 195-96.

344. *Id.* at 206-09.

prevent children from smoking.<sup>345</sup> But the use of cigarette taxes for this purpose is subject to three criticisms.

The first criticism is that cigarette taxes are an extremely blunt tool for combating youth smoking.<sup>346</sup> Adults smoke 98% of all cigarettes,<sup>347</sup> so they pay a significant price, particularly given how regressive cigarette taxes are.

The second criticism is that cigarette taxes may not be as effective at reducing youth smoking as is sometimes claimed. Early studies suggested a youth price participation elasticity of -0.7, which means that a 10% increase in price reduces smoking participation among youths by 7%.<sup>348</sup> But more recent studies have produced mixed results, with some researchers finding significantly less sensitivity to price.<sup>349</sup> For example, Christopher Carpenter and Philip Cook published a study in 2008 that finds youth participation elasticities between -0.25 and -0.56.<sup>350</sup> Several other studies reach a similar conclusion or find even less responsiveness.<sup>351</sup> As a result, one recent study states that “there exists conflicting evidence on the efficacy of cigarette taxes with respect to youth smoking participation.”<sup>352</sup> Another study states that “it is fair to say that there is still no consensus on whether taxes have a true causal effect on youth participation in smoking.”<sup>353</sup>

One reason that recent studies find less price sensitivity may be that

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345. See, e.g., Harry Esteve, *Cigarette Tax Proposals Pit Anti-Smokers against Tobacco Lobby*, OREGONIAN, Mar. 24, 2011.

346. Viscusi, *Paternalism*, *supra* note 150, at 64.

347. CONG. BUDGET OFFICE, THE PROPOSED TOBACCO SETTLEMENT 9 (1998).

348. Philip DeCicca et al., *Putting Out the Fires: Will Higher Taxes Reduce the Onset of Youth Smoking?*, 110 J. POL. ECON. 144, 145 (2002) [hereinafter DeCicca et al., *Fires*].

349. For recent reviews of the literature, see Anindya Sen et al., *Do Changes in Cigarette Taxes Impact Youth Smoking? Evidence from Canadian Provinces*, 13 FORUM HEALTH ECON. & POL'Y 1, 2–4 (2010), and Christopher Carpenter & Philip Cook, *Cigarette Taxes and Youth Smoking: New Evidence from National, State, and Local Youth Risk Behavior Surveys*, 27 J. HEALTH ECON. 287, 287–91 (2008).

350. Carpenter & Cook, *supra* note 349, at 297.

351. See, e.g., DeCicca et al., *Fires*, *supra* note 348, at 164 (“When we estimate models of smoking onset between eighth and twelfth grades, the results suggest that cigarette taxes and smoking onset are not strongly related.”); Anindya Sen & Tony Wirjanto, *Estimating the Impacts of Cigarette Taxes on Youth Smoking Participation, Initiation, and Persistence: Empirical Evidence from Canada*, 19 HEALTH ECON. 1264, 1279 (2010) (using Canadian data and finding “that while taxes do impact youth smoking, the effects are somewhat modest”). Similarly, Philip DeCicca and his colleagues find that “the price of cigarettes has a weak and statistically insignificant influence on [youth] smoking participation,” but find that taxes may reduce the number of cigarettes smoked by young adult smokers. Philip DeCicca et al., *Youth Smoking, Cigarette Prices, and Anti-Smoking Sentiment*, 17 HEALTH ECON. 733, 739–40, 745 (2008) [hereinafter DeCicca et al., *Sentiment*]. Additionally, a study using data from Canada finds participation elasticities between -0.1 and -0.3 for 15 to 19 year olds and -1.5 to -2 for 10 to 14 year olds, which suggests the possibility that “higher taxes may delay smoking participation among younger teens until they become older and are able to participate more freely in the labour force.” Sen et al., *supra* note 349, at 11.

352. Sen et al., *supra* note 349, at 4.

353. Carpenter & Cook, *supra* note 349, at 290.



many early studies did not adequately control for variation among states regarding antismoking sentiment and nontax tobacco control policies.<sup>354</sup> States that have high cigarette taxes tend also to have high antismoking sentiment and to have adopted antismoking policies other than cigarette taxes.<sup>355</sup> So the lower youth smoking rate in those states may be largely attributable to factors other than taxes, including social and cultural influences.<sup>356</sup> Several studies by Philip DeCicca and his colleagues demonstrate that controlling for antismoking sentiment can dramatically reduce the measured responsiveness of smoking to cigarette taxes.<sup>357</sup> DeCicca concludes that “[t]he evidence is consistent with the argument that unobservable heterogeneity across states in antismoking sentiment leads to a bias [in many early studies] toward finding strong tax effects.”<sup>358</sup>

The third criticism is that, for many potential smokers, cigarette taxes may simply delay smoking to adulthood, when cigarettes become more affordable. Since the health consequences of smoking generally result from smoking over a long period, the primary goal of antismoking policies is not to reduce youth smoking per se, but to reduce adult smoking by avoiding initiation during adolescence.<sup>359</sup> Many antismoking advocates argue that because most smokers smoke their first cigarette during adolescence, eliminating youth smoking via cigarette taxes will eventually eliminate adult smoking.<sup>360</sup> But this view may not be correct. As an initial matter, DeCicca and his colleagues find that “nearly half of smokers at around age 26 were not daily smokers as high school seniors,” which suggests that many people initiate daily smoking as young adults.<sup>361</sup> (In fact, most adolescent smokers are experimenters who have smoked less than 100 cigarettes in

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354. DeCicca et al., *Sentiment*, *supra* note 351, at 745 (“We also find that indirect proxies for anti-smoking sentiment used in several previous cross-sectional studies do not seem to adequately control for differences in anti-smoking sentiment across states.”); DeCicca et al., *Transition*, *supra* note 57, at 909–11; DeCicca et al., *Fires*, *supra* note 348, at 153–54.

355. DeCicca et al., *Sentiment*, *supra* note 351, at 734–37.

356. *Id.* at 734; DeCicca et al., *Transition*, *supra* note 57, at 909; DeCicca et al., *Fires*, *supra* note 348, at 159–61.

357. DeCicca et al., *Sentiment*, *supra* note 351, at 739–40; DeCicca et al., *Transition*, *supra* note 57, at 911–13; DeCicca et al., *Fires*, *supra* note 348, at 148–49; *see also* Carpenter & Cook, *supra* note 349, at 296 (drawing a similar conclusion).

358. DeCicca et al., *Fires*, *supra* note 348, at 164.

359. Sherry Glied, *Youth Tobacco Control: Reconciling Theory and Empirical Evidence*, 21 J. HEALTH ECON. 117, 118 (2002).

360. *See, e.g.*, AM. LEGACY FOUND., LEGACY FIRST REPORT 3, 6 (2000) (“Clearly, if adolescents can be dissuaded from starting to smoke, there is evidence that they will likely never become smokers.”).

361. DeCicca et al., *Transition*, *supra* note 57, at 905; *see also* AM. LEGACY FOUND., *supra* note 360, at 6–7 (presenting survey evidence that about 48% of smokers who were between 30- and 39-years old in 1998 reported having begun daily smoking after age 17).

their lifetimes.)<sup>362</sup>

Moreover, several studies of the relationship between youth and adult smoking challenge the conventional wisdom that preventing childhood initiation permanently deters people from smoking.<sup>363</sup> One of these studies was conducted by Sherry Glied, who analyzed a dataset involving a panel of people followed from 1979 (when they were 14- to 24-years old) through 1994 (when they were 29- to 39-years old). She finds that cigarette taxes reduce youth smoking, but that the effect is substantially attenuated over time.<sup>364</sup> In fact, taxes faced during youth appear to have little effect on smoking by age 39.<sup>365</sup> Glied suggests that this is a consequence of delayed initiation.<sup>366</sup> Her “results suggest that high cigarette prices may have a more limited long-term deterrent effect than previously believed.”<sup>367</sup> As a result, “[R]educing smoking among teens through tax policy may not be sufficient to substantially reduce smoking in adulthood.”<sup>368</sup>

Given that cigarette taxes are overbroad and may not be as effective as previously thought, a better and more narrowly targeted approach to youth smoking is rigorous enforcement of youth access restrictions.<sup>369</sup> There is evidence that this will substantially reduce cigarette purchases by children.<sup>370</sup>

Aside from lax enforcement, the major problem with youth access restrictions, particularly age-of-sale laws, is that some children respond by obtaining their cigarettes through adults. Due to more rigorous

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362. AM. LEGACY FOUND., *supra* note 360, at 3.

363. For a review of this literature, see M. Christopher Auld & Mahmood Zarrabi, Long-Term Effects of Tobacco Prices Faced by Adolescents 3 (2010) (unpublished manuscript) (on file with author). Auld and Zarrabi review studies that investigate whether reducing youth initiation deters people from smoking as adults and studies that investigate whether smoking while young causes smoking later in life. *Id.* They state that “the small body of literature to date on long smoking dynamics unanimously suggests that prior smoking does not substantially cause current smoking over the medium to long run.” *Id.*

364. Glied, *supra* note 359, at 117.

365. *Id.* at 126.

366. *Id.* at 117.

367. *Id.* at 132. In a study using Canadian data, Christopher Auld and Mahmood Zarrabi reach conclusions generally consistent with those of Glied. *See generally* Auld & Zarrabi, *supra* note 363. Auld and Zarrabi state, “Our major finding is that high prices faced during adolescence exert a small but detectable effect on smoking patterns later in life: A 10% increase in average cigarette prices faced over ages 12 through 18 leads to a one percentage point reduction in probability of daily smoking in adulthood.” *Id.* at 1. They conclude that “these estimates suggest the effect of youth price on adult smoking behavior is almost certainly very small.” *Id.* at 16.

368. Glied, *supra* note 359, at 117.

369. The costs of enforcement can be covered by cigarette taxes and by fines imposed on noncompliant sellers.

370. Paula M. Lantz et al., *Investing in Youth Tobacco Control: A Review of Smoking Prevention and Control Strategies*, 9 TOBACCO CONTROL 47, 53–54 (1999); Jean L. Forster & Mark Wolfson, *Youth Access to Tobacco: Policies and Politics*, 19 ANN. REV. PUB. HEALTH 203, 225–28 (1998).

enforcement of age-of-sale laws, the percentage of underage smokers who usually buy their cigarettes fell from 38.7% to 18.8% between 1995 and 2003.<sup>371</sup> At the same time, the percentage who usually obtained cigarettes by giving someone else money to buy them jumped from 16% to 30%.<sup>372</sup>

Fortunately, there may be a relatively easy solution to this problem. All states prohibit the sale of cigarettes to persons under age 18.<sup>373</sup> The problem is that many minors have regular contact with 18-year olds at school and elsewhere. But their social circles generally do not include those over age 21.<sup>374</sup> This probably explains why one study finds that 90% of adults approached by minors to purchase cigarettes are under age 21.<sup>375</sup> Raising the minimum age for legal sale to 21 would cut off a major supply source and make it difficult for children to become regular smokers.<sup>376</sup>

This proposal is potentially politically feasible. One survey finds that 63% of people are in favor of the age increase.<sup>377</sup> Moreover, the idea has been debated in several states in recent years.<sup>378</sup> Libertarians of course will be reluctant to embrace the proposal. In the words of one California assemblyman, "I think that people are going to wonder whether 18-year olds who can join the armed forces should have the right to smoke and make that choice on their own."<sup>379</sup> But there is a good response to this type of argument. First, the goal of the law is not

371. Sajjad Ahmad & John Billimek, *Limiting Youth Access to Tobacco: Comparing the Long-Term Health Impacts of Increasing Cigarette Excise Taxes and Raising the Legal Smoking Age to 21 in the United States*, 80 HEALTH POL'Y 378, 379 (2007).

372. *Id.*

373. U.S. SURGEON GEN., YOUTH AND TOBACCO: PREVENTING TOBACCO USE AMONG YOUNG PEOPLE 119 (1994).

374. Ahmad & Billimek, *supra* note 371, at 379.

375. Joseph R. DiFranza & Mardia Coleman, *Sources of Tobacco for Youths in Communities with Strong Enforcement of Youth Access Laws*, 10 TOBACCO CONTROL 323, 327 (2001).

376. Ahmad & Billimek, *supra* note 371, at 380. There is some evidence that increasing the minimum age for legal sale of alcohol from 18 to 21 reduced youth drinking. Sajjad Ahmad, *Closing the Youth Access Gap: The Projected Health Benefits and Costs of a National Policy to Raise the Legal Smoking Age to 21 in the United States*, 75 HEALTH POL'Y 74, 75-76 (2005) (reviewing the literature). If the minimum age for legal sale of cigarettes is increased to 21, it may also be necessary to require that those who sell cigarettes be 21. Joseph DiFranza and Mardia Coleman find that "[i]n communities where youths could purchase or steal tobacco from stores, the primary reason was that teenagers were working as store clerks." DiFranza & Coleman, *supra* note 375, at 327.

377. Daniel Merkle, *Too Young to Smoke? Most in New Poll Would Stub Out Cigarette Sales to Teens*, ABCNEWS.COM (2002), [http://a.abcnews.com/sections/business/DailyNews/smokingage\\_poll020613.html](http://a.abcnews.com/sections/business/DailyNews/smokingage_poll020613.html).

378. See, e.g., Janie Har, *Bill Would Raise Smoking Age*, OREGONIAN, Apr. 1, 2009, at B1; Pam Belluck, *Vermont Considers Lowering the Drinking Age to 18*, N.Y. TIMES, Apr. 13, 2005, at A13; John Ritter, *Tobacco War Hits Beaches in California*, USA TODAY, June 21, 2004, at A3.

379. Judy Muller, *Debate Over Boosting the Smoking Age*, ABCNEWS.COM (Feb. 25, 2012), <http://abcnews.go.com/US/story?id=91870&page=1>.

to reduce smoking among 18- to 21-year olds per se, although it might have this effect. Rather, the goal would be to reduce smoking among children, who often obtain cigarettes through young adults. Second, in terms of preserving freedom, raising the minimum age for legal sale is arguably superior to high cigarette taxes, which is perhaps the only viable policy alternative for addressing youth smoking. To the extent that increasing the minimum age for legal sale prevents kids from smoking, one of the primary rationales for the cigarette tax would disappear, as perhaps would much of the political support for further cigarette tax increases.

### CONCLUSION

Although they are popular among legislators, cigarette taxes are difficult to justify using the conventional framework for tax analysis. Smoking's external costs are arguably small, and heavily taxing cigarettes imposes a significant burden on low-income families, raising fairness concerns. This has led some scholars and antismoking advocates to invoke paternalism in support of further cigarette tax increases.

If smoking results from incapacitation or imperfect rationality, perhaps the government should intervene to save smokers from themselves. But this Article has argued that cigarette taxes should not be used for that purpose. Existing evidence suggests that for some people, smoking may be a rational choice. And even if some smokers are incapacitated by addiction, cigarette taxes penalize them for consuming a product that they find difficult to quit. In addition, cigarette taxes are a one-size-fits-all solution. This makes them unsuitable for a smoking population that is likely heterogeneous with respect to rationality. Moreover, smokers respond to cigarette taxes in ways that undercut public health goals.

Given the many problems with cigarette taxes, policy makers should consider alternatives for helping smokers who want to quit or who would prefer a safer nicotine delivery system. This Article has examined several proposals of this type. Advances in our understanding of smoking will make other products and policies possible, creating the potential to improve public health while leaving smokers free to pursue their own goals.

