

bout model focuses our attention on some powerful economic and social forces that must be addressed in the design of public policy (see Hamilton 1987 for a more technical treatment of the Tiebout model).

There are some interesting parallels between Tiebout's paper and Coase's classic 1960 paper on externalities. Both were written four decades ago. Research in economics has a notoriously short half-life, yet both remain seminal contributions to public economics literature today. As one small indicator, Tiebout's paper was cited in economics journals roughly 300 times over the past four years. Both papers are deceptively simple, and neither is filled with the pages and pages of equations we now expect to find in journal articles. Both offered new, fundamental insights that set the field off in important new directions. Perhaps the most important lesson we can learn from Tiebout and Coase is that mathematical elegance is rarely a substitute for important ideas.

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*Cross references:* education financing, state and local; tax competition; tax price; zoning, property taxes, and exactions.

## Tobacco taxes

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*Tobacco products are subject to a variety of special federal, state, and local taxes.*

Tobacco products such as cigarettes, like other consumer products, are subject to sales taxes. However, they are also subject to excise taxes at the federal, state, and local levels. These taxes have been of substantial economic interest both because of the economic functions the taxes serve and because of the moneys raised through these taxes.

### Economic rationales for tobacco taxes

In addition to raising money, cigarette taxes may serve other economic functions. Cigarette taxes and alcohol taxes are the two most prominent "sin" taxes now imposed on consumer goods. (See Alcoholic beverage taxes, federal.) The rationale for tobacco taxes, though, stems not necessarily from religious or ethical beliefs but rather from economic aspects of smoking behavior, including the social costs. Excise taxes will raise the price of smoking to consumers, thus potentially discouraging smoking. Deterring smoking in this manner may be viewed as socially desirable if cigarette smokers are making mistaken consumption decisions. For example, if cigarette smokers underestimate the risks associated with smoking or do not fully internalize the costs imposed on society, there would be a rationale for discouraging this behavior through a tax.

Much of the recent impetus for cigarette taxes has stemmed from a concern with the social costs associated with smoking. If smoking cigarettes and other tobacco consumption activities generate social costs, such as higher medical care expenditures,

then cigarette taxes can serve as a mechanism for recouping this social cost. In effect, cigarette smokers will pay with each purchase for the cost inflicted by their smoking activity. A variety of proposals relating to the first Clinton administration's health insurance plans sought to finance these efforts in part through tobacco taxes because of a belief that the social costs were substantial.

Evidence regarding the rationality of smoking decisions for the smoker remains much debated. Several decades of government warnings and annual reports by the Surgeon General have publicized the risks associated with smoking. Survey evidence suggests that smokers are now not only aware of the risk, but may in fact overestimate the hazards. Evidence regarding habituation or addiction problems associated with smoking remains controversial as well. Quitting smoking is clearly difficult, but some economists have hypothesized that addictions of this type may be the result of rational individual choices.

The potential role for government intervention is greater with respect to societal costs if net damages are inflicted. There are, however, many conflicting aspects of net damages. Smoking shortens life, which reduces retirement benefit costs, but it leads to ill health, which increases medical care costs. The overall effect on society hinges on the net influence of these and other competing factors.

### Profile of tobacco taxes

Tobacco taxes are among the most prominent excise taxes levied on consumer products. Estimates by Fullerton and Rodgers (1993) suggest that as a percentage of the purchase price, the implied tax rate on tobacco products is higher than it is for alcoholic beverages, gasoline, automobiles, or utilities.

The federal government and the states tax cigarettes roughly equally. For fiscal year 1996, federal cigarette taxes were \$0.24 per pack and state taxes averaged \$0.317 per pack. These values ranged from a low tax of \$0.25 per pack from the tobacco-producing state of Virginia to a high of \$0.815 per pack in Washington state. Municipalities in eight states have imposed taxes as well, ranging from \$0.01 to \$0.35 per pack. (The federal tax was increased in 1997 to \$0.34 per pack in 2000-01 and \$0.39 per pack thereafter.)

The dollar magnitude of these tobacco taxes is substantial. In fiscal year 1996, federal tobacco tax revenues were \$5.7 billion and state tax revenues were \$7.3 billion. The total value of all excise taxes on cigarettes was \$13.5 billion.

Tobacco taxes are generally set at tax rates per package, which are revised periodically through legislation. Until the most recent changes enacted in 1997, federal cigarette taxes have had only five levels over the past half century, rising from \$0.07 per pack in 1942 to \$0.24 per pack in 1993. The incidence of

tobacco taxes is highly regressive. Smoking rates increase as the income level of the group declines, so that the poor segment of the population tends to be hit particularly hard by cigarette taxes. The population group whose annual earnings are below \$10,000 pay cigarette taxes of 1.5 percent more per person than the group with incomes of \$50,000 or more. The average taxes paid per person in 1990 were \$81 for this poorest group and \$49 for the most affluent group. Thus, cigarette taxes are regressive in absolute terms and even more regressive as a percentage of income.

### Cigarette taxes and smoking behavior

Like raising the price of any good, raising cigarette taxes reduces consumer demand for the product. What this effect on demand will be depends on the estimated elasticity of demand with respect to the total price of cigarettes.

Dozens of studies have estimated cigarette demand functions. Most of the demand elasticities are clustered in the range from  $-0.4$  to  $-1.0$ , meaning that for every cigarette tax that raises the price of smoking by 10 percent there should be a 4 to 10 percent decrease in the consumption of cigarettes.

This price responsiveness will not be uniform for all population segments. Some estimates suggest that teenagers are particularly price-sensitive, with a demand elasticity that is perhaps as high as  $-1.4$ . If so, a 10 percent increase in the purchase price would consequently reduce teenage smoking by 14 percent.

Cigarette taxes also reduce cigarette consumption in much the same way that heightened perceptions of the risk would. Estimates presented in Viscusi (1992) indicate that the average national excise tax for cigarettes has the same effect in discouraging smoking behavior as would a belief that there was a 27 percent chance that smoking would cause lung cancer, assuming a price elasticity of demand of  $-0.7$ .

### Estimates of the social costs of smoking

Most of the economic analyses of tobacco taxes have been concerned with how these taxes relate to the financial costs associated with smoking. The justification for such taxes hinges, however, on the presence of net positive social costs.

The empirical evidence suggests that the net effects may be surprising. The study by Shoven et al. (1989) found that smoking leads to a reduction in Social Security costs through the premature mortality of smokers. This analysis was extended by Manning et al. (1991) to consider not only pension effects but also the effects on medical insurance, nursing home expenditures, and related financial costs. Their study found that at low discount rates

of about 3 percent or less, cigarette smoking generated net financial savings, even excluding the role of excise taxes, and that at very high discount rates, there would be a net social cost of smoking. Gravelle and Zimmerman (1994) extended this analysis both to update it and to include a sensitivity analysis with respect to the role of environmental tobacco smoke (ETS), or "second-hand smoke." The basic conclusions regarding the self-financing aspect of cigarette smoking remained unchanged.

The most recent extension is that by Viscusi (1995), who updated the earlier results and also recognized the influence of the changing riskiness of cigarettes. This analysis, using a 3 percent discount rate, suggested that cigarette smoking imposed a medical care cost per pack of \$0.50, a sick leave cost per pack of \$0.01, a group life insurance cost per pack of \$0.13, and a cost per pack of fires of \$0.02. The offsetting savings were nursing home care cost savings of -\$0.22 and retirement pension savings of -\$1.10. On balance, then, cigarette smoking saves society -\$0.32 per pack, even excluding the role of excise taxes.

These cost figures, however, exclude the potential societal costs associated with ETS. Depending on the risk assumptions that are employed and the lag time between smoking and the health effects, these much-debated ETS risks can potentially alter the desirability of an offsetting excise tax. For all but the most extreme risk assumptions, however, the current level of excise tax is sufficient to offset the total value of the health risks to society, where these calculations assume an implicit value of life of \$5 million. The extent to which excise taxes are needed to offset the financial costs on society will hinge in large part on how the assessment of ETS risks is resolved.

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*Cross references:* alcoholic beverage taxes, federal; retail sales tax; sumptuary taxes.

## Transfer pricing, federal

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*Taxes are often measured by the price attached to the transfer of goods, foods, services, and/or funds across national borders; however, when multinationals make transfers "within company," prices must be estimated.*

Transfer prices are the prices established for transfers of goods or intangibles, the lending of money, or the provision of services from one company to a related company or from one part of a company to another part located in a different tax jurisdiction. Transfer prices are used by the U.S. government and by most other countries in determining the income, for tax purposes, of companies engaging in such transfers.

### Role of transfer prices in the firm

Transfer pricing is most relevant in the context of the transfer within a multinational firm of goods, intangibles, services, or funds across national borders. Such transactions may occur between a parent company and a foreign subsidiary, between two subsidiary companies that have a common parent, or between a branch office of a company and another part of the company. The prices established for such transactions are important for tax purposes because they affect the amount of taxable income reported in each of the countries in which the multinational firm operates. For example, a higher price on a sale of goods from a parent company to a foreign subsidiary generally means that more revenue is reported in the tax jurisdiction of the parent and greater deductions are reported in the tax jurisdiction of the subsidiary. Where tax rates differ across countries, an incentive exists for multinational firms to set their transfer prices to shift income from high-tax jurisdictions to low-tax jurisdictions.

An incentive to use transfer prices to shift income between related companies can exist even

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