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BACKGROUND PAPER

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A Critique of the National Research Council and Institute of Medicine's Recommendation to Raise Alcohol Excises to Curb Underage Drinking

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Executive Summary

In September of 2003 the National Research Council and Institute of Medicine (NRC/IM) released a report titled *Reducing Underage Drinking: A Collective Responsibility*. It called for a comprehensive national strategy to combat the underage consumption of alcohol and, among other recommendations, called for large increases in excise taxes on alcoholic beverages.

Without specifying exactly how high alcohol taxes should be, the NRC/IM report said they should be raised "substantially" and cited the findings of studies that argue for taxes as high as five times their current level. If this were to occur, a family with two adults who consume average amounts of alcohol could expect their tax bill to rise by more than $500 annually, even after accounting for a dampening effect the tax hike would have on consumption.

The NRC/IM makes two assertions in defense of its recommendation: "Underage drinking imposes particularly high average social costs," and secondly, "Raising excise tax rates, and hence prices, is a strategy that has strong and well documented prevention effects on underage drinking."

This paper examines the economic issues surrounding the recommended tax hike and finds that neither assertion is well supported. On the issue of social costs, the evidence cited by the NRC/IM in its report simply does not support its claim that underage drinking imposes particularly high average social costs. Similarly, the idea that taxes markedly reduce teenage consumption of alcohol isn't supported by the empirical literature.

Increased alcohol excises would, however, place significant burdens on legal consumers of alcohol and worsen existing inequities in the tax system. Moreover, alcohol taxes have been found to be one of the most economically inefficient ways of raising government revenue. Regulatory approaches tailored to the underage population, such as increased enforcement of minimum age and drunk driving laws, offer much more promise of reducing underage drinking and related problems without such undesirable side effects.

I. Introduction

In September of 2003 the National Research Council and Institute of Medicine (NRC/IM) released *Reducing Underage Drinking: A Collective Responsibility*.[1] This report called for a comprehensive national strategy to combat the underage consumption of alcohol and contained a number of recommendations for achieving this goal. Among the more controversial was a call for large increases in excise taxes on alcoholic beverages.

The NRC/IM report does not specify an amount that alcohol taxes should be increased. It does, however, recommend that they be raised substantially and cites the findings of a number studies that argue these taxes should be hiked by as much as five-fold. If this were to occur, a family with two adults who consume average amounts of alcoholic beverages could expect its tax bill to rise by more than $500 annually, even after accounting for the likely effect of the tax hike on consumption.

This paper examines the economic issues surrounding the NRC/IM proposal to hike alcohol taxes. It first looks at existing alcohol excises and highlights some of the problems they cause. Against that background, it examines alcohol consumption patterns in the United States and the issue of underage drinking. Next, it discusses the report's recommendation to raise excise taxes and examines relevant studies. This is followed by an explicit critique of the NRC/IM proposal.

A policy of major tax hikes is found to be inequitable and unlikely to significantly reduce the harm caused by the abuse and illegal use of alcohol. Assertions that tax hikes would be effective are found to be based on questionable economics. Some final thoughts are provided in the conclusion.

Table 1
Federal and State Excise Taxes on Alcoholic Beverages, Per Gallon, As of October 1, 2003

State	Beer	Wine	Spirits	State	Beer	Wine	Spirits
Combined	$ 0.83	$ 1.78	$ 14.95				
Federal	$ 0.58	$ 1.07	$ 11.10				
Weighted State Average	$ 0.25	$ 0.71	$ 3.85				
Alabama (a)	$ 1.05	$ 1.70	*	Montana	$ 0.14	$ 1.06	*
Alaska	1.07	2.50	$ 12.80	Nebraska	0.31	0.95	$ 3.75
Arizona	0.16	0.84	3.00	Nevada	0.16	0.70	3.60
Arkansas	0.23	0.75	2.50	New Hampshire	0.30	*	*
California	0.20	0.20	3.30	New Jersey	0.12	0.70	4.40
Colorado	$ 0.08	$ 0.28	$ 2.28	New Mexico	$ 0.41	$ 1.70	$ 6.06
Connecticut	0.19	0.60	4.50	New York	0.13	0.19	6.44
Delaware	0.16	0.97	3.75	North Carolina	0.48	0.79	*
Florida	0.48	2.25	6.50	North Dakota	0.16	0.50	2.50
Georgia (a)	1.01	2.34	4.62	Ohio	0.18	0.30	2.25
Hawaii	$ 0.93	$ 1.38	$ 5.92	Oklahoma	$ 0.40	$ 0.72	$ 5.56
Idaho	0.15	0.45	*	Oregon	0.08	0.67	*
Illinois	0.19	0.73	4.50	Pennsylvania	0.08	*	*
Indiana	0.12	0.47	2.68	Rhode Island (b)	0.10	0.60	3.75
Iowa	0.19	1.75	*	South Carolina	0.77	1.08	2.72
Kansas	$ 0.18	$ 0.30	$ 2.50	South Dakota (b)	$ 0.27	$ 0.93	$ 3.93
Kentucky (b)	0.08	0.50	1.92	Tennessee (b)	0.14	1.21	4.40
Louisiana (a)	0.37	0.11	2.50	Texas	0.20	0.20	2.40
Maine	0.35	0.60	*	Utah	0.41*		*
Maryland	0.09	0.40	1.50	Vermont	0.27	0.55	*
Massachusetts	$ 0.11	$ 0.55	$ 4.05	Virginia	$ 0.26	$ 1.51	*
Michigan	0.20	0.51	*	Washington	0.15	0.78	*
Minnesota	0.15	0.30	5.03	West Virginia	0.18	1.00	*
Mississippi	0.43	0.35	*	Wisconsin	0.07	0.25	$ 3.25
Missouri	0.06	0.30	2.00	Wyoming	0.02	*	*
				District of Columbia	$ 0.09	$ 0.30	$ 1.50

*States where the state government or its agent is the seller.
(a) Listed beer excise for Alabama includes statewide 52-cent-per-gallon local tax. Listed beer excise for Georgia includes statewide 53-cent-per-gallon local tax. Listed liquor and wine excises for Georgia include statewide 83-cent-per-gallon local taxes. Listed beer excise for Louisiana includes a statewide 4.8-cent-per-gallon wholesale tax on beer.
(b) Kentucky leavies an additional 9 percent wholesale tax on beer, wine and spirits. Rhode Island levies an additional 4 cent per case wholesale tax on beer. South Dakota levies an additional 2 percent wholesale tax on wine and spirits. Tennessee levies an additional 17 percent wholesale tax on beer.

Source: Tax Foundation and Fiscal Economics, Inc.

II. Background

Alcohol excises are generally flat, per unit taxes levied on alcoholic beverages. The federal government currently levies a tax of $18.00 on each 31-gallon barrel of beer sold in the United States, $1.07 on each gallon of wine, and $13.50 on each proof gallon of distilled spirits.[2] All state governments, as well as some local governments, also tax alcoholic beverages.

Table 1 makes these alcohol taxes comparable by converting beer and spirits taxes to a per-gallon measure.[3] Under current law federal and state alcohol excises average 83 cents per gallon for beer, $1.78 for wine, and $14.95 per gallon for distilled spirits. Expressed in the units that customers are familiar with, these taxes equate to approximately $1.87 per case of 24 bottles or cans of beer, 35 cents per 750 ml of wine, and $2.97 per fifth (750ml) of distilled spirits.

In most states, the bulk of the tax burden on alcoholic beverages stems from federal levies. Table 1 shows that, on a per gallon basis, such taxes total 58 cents for beer; $1.07 for wine; and $11.10 for spirits. Many state governments strictly regulate the sale and distribution of alcoholic beverages within their borders through measures such as setting prices and operating liquor stores.[4] While such activities complicate comparisons somewhat, Alaska, Florida and Georgia generally levy the highest effective taxes on alcoholic beverages while Louisiana, Texas and Missouri have some of the lowest alcohol taxes. On average, Americans face per gallon state tax rates of roughly 25 cents per gallon for beer, 71 cents per gallon for wine, and $3.85 per gallon for spirits.

In 2002 governments in the United States collected $12.4 billion from excises on alcoholic beverages, about 0.4 percent of total receipts.[5] As a result of its higher overall tax rates, the federal government collected nearly two-thirds of these funds, $7.8 billion. Meanwhile, state and local governments collected $4.3 billion and $300 million respectively.

The Economics of Excises

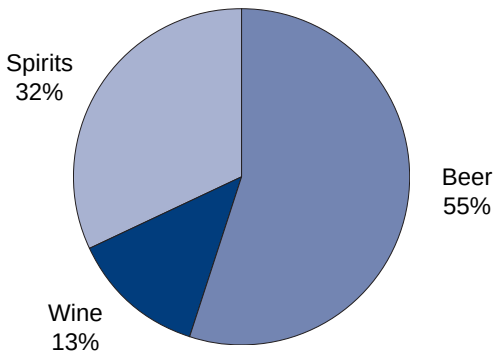
Traditionally, economists have looked with disfavor on the use of product-specific excises because they distort prices, leading to a sub-optimal allocation of resources and diminished prosperity. Instead, they have generally favored broad-based levies such as income or consumption taxes that minimize distortions in prices. Highlighting this point, an economic simulation study conducted in 2002 by Brinner and Brinner showed that per dollar of revenue raised, hikes in state sales and excise taxes are much more costly to states' economies than comparable increases in broad-based income taxes.[6]

Alaska, Florida and Georgia generally levy the highest effective taxes on alcoholic beverages while Louisiana, Texas and Missouri have some of the lowest.

Equity concerns have also been raised over the use of product-specific excises. Economists generally use two criteria to judge the equity of a tax system. The first is known as horizontal equity, or the view that tax loads should be spread evenly within income groups. This notion is justified on the grounds that since public services presumably provide general benefits, their costs should be spread evenly within income classes. Alcohol excises tend to fare rather poorly under this criterion since they fall entirely on a fraction of the public that happens to consume certain goods.[7]

The second criterion that economists use to judge the equity of a tax system is known as vertical equity. It states that it may be desirable

Figure 1
Alcohol Consumption by Type of Beverage, 2002



Source: Fiscal Economics, Inc.

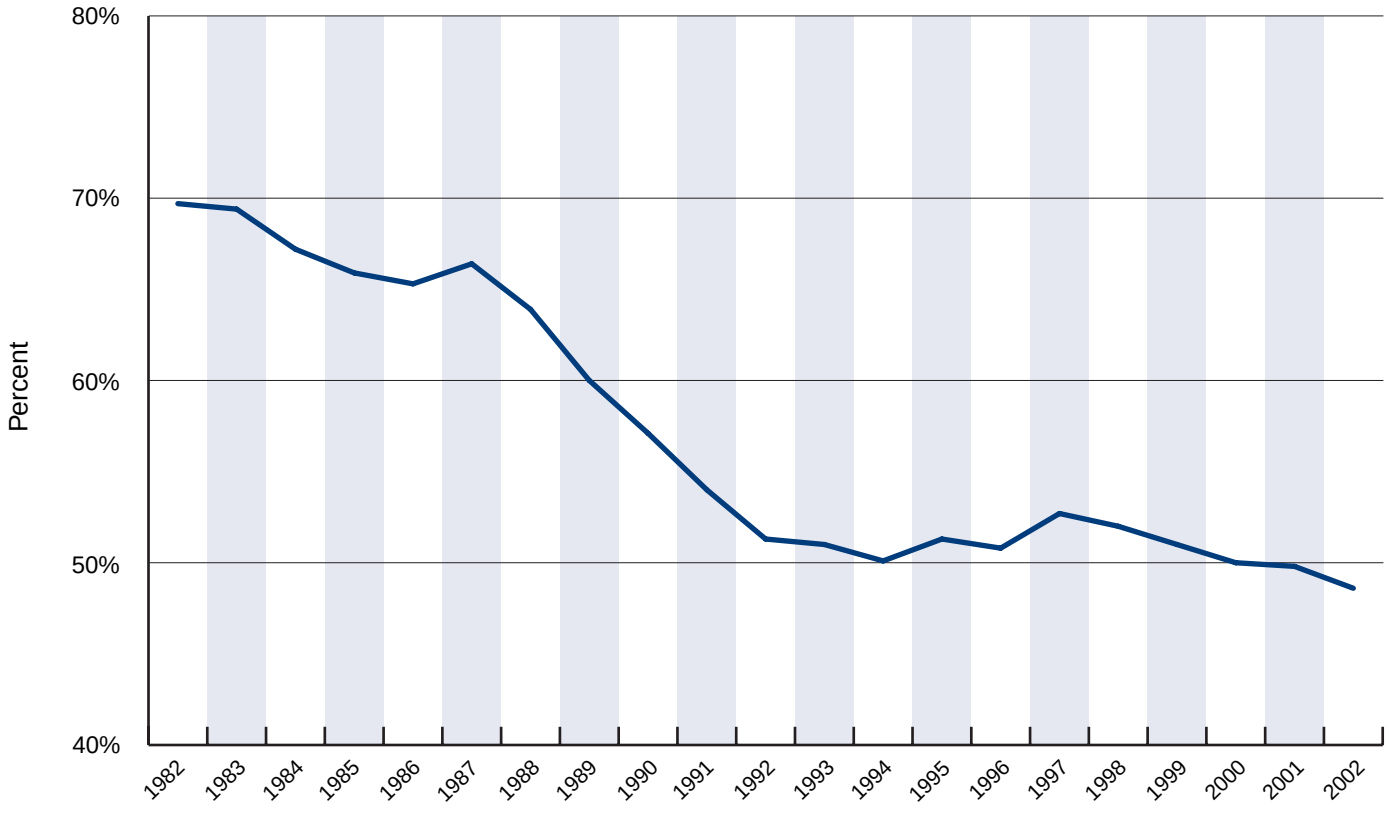
Under the NRC/IM proposal, a family with two adults who consume average amounts of alcoholic beverages could expect its tax bill to rise by more than $500 annually.

to have tax burdens rise by some degree as individuals' incomes increase. While this notion is somewhat controversial, relatively few would argue that tax burdens should be regressive, or decrease as income rises. Yet existing alcohol taxes are highly regressive. Under current law individuals making less than $20,000 per year face federal alcohol tax burdens that are more than 18 times higher than individuals making in excess of $200,000.[8] By comparison, the largest of federal excise taxes, those levies on gasoline, are only one-seventh as regressive.

Alcoholic Beverage Consumption In the United States

Americans consumed more than 7 billion gallons of alcoholic beverages in 2002, or about 26 gallons per capita. Beer, wine and distilled spirits all contain widely varying amounts of alcohol. A gallon of spirits typically contains more than three times as much alcohol as a gallon of wine, which in turn contains nearly three times as much alcohol by volume as beer. In order to make comparisons more meaningful, the various types of alcoholic beverages are frequently compared on the basis of the amount of alcohol they contain. By this measure, Figure 1 shows that the 6.3 billion gallons of beer Americans drank in 2002 contained more than half of the total alcohol consumed. Meanwhile, the 365 million gallons of spirits consumed accounted for 32 percent of the alcohol, and the 556 million gallons of wine consumed that year accounted for 15 percent.

Figure 2
High School Seniors Who Report Drinking in the Last 30 Days
1982–2002



Source: University of Michigan Monitoring the Future Survey

Trends in Youth Drinking

Over the last two decades significant progress has been made curbing both underage drinking and related problems such as drunk driving. Targeted laws, such as harsher penalties for attempting to violate minimum purchase age laws and lower blood alcohol thresholds for young drivers, have made it more difficult for minors to acquire alcohol and stiffened penalties for alcohol-related offences. Evolving social norms have also made it easier for young people to resist alcohol and for those that drink to take precautions against harmful consequences, such as by designating a driver.

> ***Under current law individuals making less than $20,000 per year face federal alcohol tax burdens that are more than 18 times higher than individuals making in excess of $200,000.***

Such actions have lowered both the prevalence of underage drinking and the resulting harm. Figure 2 illustrates the findings of a major federally sponsored survey. It shows that past-month alcohol consumption by high school seniors dropped more than 21 percentage points from 1982 to 2002.[9] During this time much of the harm arising from underage drinking has also declined. Traffic fatalities involving teenage drunk drivers, for example, have fallen dramatically over the past 20 years, from 4,214 fatalities in 1982 to 1,651 in 2002.[10]

III. The NRC/IM Report

In spite of the progress that has been made curbing underage alcohol use, the NRC/IM states that it is time for a "national wakeup call" on underage drinking and cites a litany of acute and long-term problems stemming from underage alcohol use in its report.[11] Among its recommendations for reducing these problems is an increase in alcohol excises. Once these taxes have been hiked, the NRC/IM urges that they be pegged to the Consumer Price Index so that they will automatically rise each year and offset the effects of inflation. The report recommends that a portion of the funds received as a result of a tax hike be earmarked for programs aimed at curbing underage drinking.[12]

The NRC/IM defends its recommendation to raise alcohol excises with two arguments. "Underage drinking imposes particularly high average social costs," the report asserts. It also argues, "Raising excise tax rates, and hence prices, is a strategy that has strong and well-documented prevention effects on underage drinking."[13] While a general excise tax hike would also affect legal consumers of alcohol, the report's authors contend that all consumers of alcohol are currently able to shift some of the costs of their drinking onto third parties.[14] This, they claim, creates the situation where drinkers are able to enjoy all of the benefits of consuming alcohol but pay only some of its costs, giving them an incentive to over-consume alcoholic beverages. In order to encourage drinkers to strike a more optimal balance, the NRC/IM report argues that the government should raise excise taxes on alcoholic beverages so that prices also reflect external costs of alcohol use, i.e., those costs shifted to third parties. This, the report claims, would force drinkers to consider more of the costs of alcohol consumption and encourage them to drink less.[15]

The NRC/IM report does not state how high the external costs of alcohol use currently are or by how much excise taxes should be raised. Instead, it points to the findings of two studies that purport to show very high external costs of alcohol use. One is an oft-cited study by a team of researchers led by Willard Manning for the Rand Corporation that attempted to estimate the external cost of heavy drinking during the mid-1980s.[16] This study found that the external costs associated with heavy drinking were about 48 cents per ounce of ethanol consumed

Table 2
Effects of Tax Hikes on Consumers

Study	Estimated Excise Needed to Offset External Costs (Current Dollars)	Estimated Excise Needed to Offset External Costs (2003 Dollars)	Average Tax Burden Per Drinker (2003 Dollars)
Current Law	$ 0.18	$ 0.18	$ 96
Manning et al.	0.48	0.80	316
Miller and Blincoe	0.63	1.06	356

Source: Studies cited and Fiscal Economics, Inc.

(approximately the amount ethyl alcohol in 2.2 drinks), roughly double the combined federal and average state tax on alcohol at the time. The vast majority of these costs, about 90 percent, resulted from the loss of innocent lives and property damage caused by drunk-driving accidents as well as the costs associated with other crimes committed while the perpetrators were intoxicated. Today excise taxes would have to be hiked to around 80 cents per ounce of ethanol to equal that level in real terms.

The NRC/IM report also cites a follow-up study by Miller and Blincoe which points out that the Manning estimates failed to account for the external costs associated with nonfatal traffic accidents caused by drunk drivers.[17] When these costs were considered the authors claimed that the external costs of alcohol use rose to 63 cents per ounce of ethanol, or about $1.06 in today's dollars.

When calculating their estimates of the overall external costs of heavy drinking both the team of researchers led by Manning as well as Miller and Blincoe used the well established practice of just considering those costs that fall on third parties. So-called internal costs, or those borne by drinkers themselves, are ignored since they are presumably taken into account when an individual make a decision to consume alcohol.

After using the findings of Manning et al. and Miller and Blincoe to show the overall external costs of heavy drinking, the authors of the NRC/IM report cite the results of a 1999 Pacific Institute for Research and Evaluation (PIRE) study in an apparent attempt to support their first argument in support of higher alcohol taxes, i.e., that underage drinking imposes particularly high average social costs.[18] The PIRE study claimed that the total social costs—both internal and external costs—of underage drinking totaled $53 billion in 1996. The NRC/IM then uses this figure to show that if it were somehow possible to tax just the alcoholic beverages consumed by minors, a tax of 91 cents ($1.07 in today's dollars) per ounce of ethanol would be necessary to offset these costs.

There are several problems with this analysis. First, as the authors of the NRC/IM report concede in a footnote, the external cost estimates of Manning et al. and Miller and Blincoe are not comparable with those derived from the PIRE estimates since the latter include internal costs. Nevertheless, they go on to defend their analysis by arguing that the usual assumption about alcohol consumption—that individuals can appropriately balance the internal costs and benefits—is "less applicable to adolescents than adults."[19] While there may be some validity to this claim, it does not justify including all of the internal costs of underage drinking in their analysis. This is especially true since many underage drinkers—18, 19 and 20 year olds—are, in fact, adults who are generally assumed to be capable of making such decisions. Yet even with these inflated cost figures, it is worth noting that the studies cited in the NRC/IM report do not support its claim that underage drinking results in particularly high average social costs. After adjusting for inflation, the report's estimate of social costs per ounce of ethanol consumed by minors is only a penny higher ($1.07 versus $1.06) than Miller and Blincoe's estimate of just external costs per ounce of ethanol consumed for the entire population.

The policy suggested by the NRC/IM would penalize all consumers of alcoholic beverages because of the actions of a relatively small number of drinkers. This is akin to trying to reduce the external costs of reckless driving by raising gasoline excises.

Table 2 shows the effects that tax hikes of the magnitude suggested by Manning et al. and Miller and Blincoe would have on the average consumer of alcoholic beverages today after adjusting for inflation and the likely impact that such hikes would have on consumption.[20] It shows that under current law consumers of alcoholic beverages pay around $96 annually, on average, in federal, state and local alcohol excises. Under the tax hike suggested by Manning, this figure would more than triple to $316. Under the amount suggested by Miller and Blincoe it climb still higher to $359 annually.

IV. Problems with the NRC/IM's Proposed Tax Hike

From a tax policy perspective there are at least three problems with the NRC/IM recommendation to hike alcohol taxes. First, it is inappropriate to tax all consumers of alcohol to try controlling the largely criminal activity of a few. Secondly, the external cost estimates cited in the NRC/IM report are insufficiently accurate to be the basis for public policy. Finally, the empirical literature does not support the NRC/IM's second argument in support of raising alcohol excises, that "raising excise tax rates, and hence prices, is a strategy that has strong and well-documented prevention effects on underage drinking."

Using Excises to Mitigate External Costs

Economists have long advanced the idea of using excise taxes to control external costs in certain situations. The textbook example is an industry that in the course of manufacturing a product, say widgets, spews pollution into the air harming the welfare of the greater community. When sold in the marketplace the price of widgets is assumed to reflect all of the costs of producing them except the harm resulting from the pollution. Because they do not have to bear the full cost of the product's use, consumers of widgets will tend to overconsume them from a social perspective.

Economist A.C. Pigou suggested one solution to this type of problem in the early part of the last century.[21] He stated that an efficient outcome would occur if the government estimated the damage done to the community from the pollution caused by widget production and levied a tax equal to this amount on them. This would increase the price of widgets and reduce consumption to the point where the value that consumers placed on widgets was at least equal to the total cost of producing them. At this level of output the market will be operating efficiently. Today a number of excises are used to try and achieve this type of result. The proceeds of the federal gasoline tax, for example, are used to fund highway construction and maintenance. Such a system tries to ensure that those who benefit from the existence of the highways bear the cost of building and maintaining them.

Estimating the Effects of Alcoholic Beverage Price Changes On Underage Drinking and Related Harmful Behavior

Over the last three decades a number of researchers have attempted to estimate the effect of changes in the price of alcoholic beverages on underage drinking and related problems such as traffic accidents involving alcohol impaired minors.[1] Performing this type of analysis is complicated by the fact that a variety of factors affect these variables. Peer influences and disposable income, for example, both affect individuals' decisions to consume alcohol.

Most of the research examining the effect of price changes has employed a common methodology. Researchers first build a mathematical model where a so-called dependent variable (i.e., either the prevalence of underage drinking or related problem) is hypothesized to be a function of a number of independent variables. Some of these independent variables are of specific interest to the researcher (i.e., the price of alcoholic beverages) while the others attempt to control for additional influences that may affect the dependent variable (e.g., peer influences or disposable income). Once the model has been built, the researcher collects empirical, or real world, data and attempts to use it to estimate the effects of each of the independent variables while holding the influence of the others constant.

A problem that can adversely affect this type of analysis and call into question its findings occurs when a variable not accounted for in a model affects both the dependent and one or more of the independent variables. This can make it appear as though there is a relationship between variables when, in fact, it is spurious. In recent years considerable controversy has swirled over whether many of the models which have shown there to be a relatively strong inverse relationship between the price of alcoholic beverages and the incidence of underage drinking and related harms have this flaw. These models are often tested using cross-sectional data collected by state. Critics have postulated that the general public sentiment toward alcohol use in a state may play a large role in determining both alcohol use and tax rates. In states where the general public sentiment is opposed to alcohol use, this may be reflected in less underage drinking and related problems as well as high levels of taxation on a product that the public tends to look with disfavor on. Conversely, in those states where there is generally favorable public sentiment toward alcohol use this may be reflected both in more underage drinking and relatively low taxes on alcohol products.

Critics have argued that the failure to account for general public sentiments toward alcohol use may cause researchers to incorrectly conclude that there is a stronger relationship between the price of alcoholic beverages and underage drinking then there actually is. When Dee, for example, estimated the demand for beer with a model that attempted to control for differences in state sentiments toward drinking, he found that "beer taxes have a relatively small and statistically insignificant effect on teen drinking."[2] He also argued that models that had shown a strong inverse relationship between state beer taxes and youth traffic fatalities produced nonsensical results when variables were added which attempted to control for general public sentiments toward alcohol. Others have reported similar findings. These findings imply that the price of alcoholic beverages may play an even weaker role in determining the prevalence of underage drinking and related harms than previously thought.

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[1] See Chaloupka, F.J. and H. Wechsler, "Binge Drinking in College: The Impact of Price, Availability, and Alcohol Control Policies," *Contemporary Economic Policy* 14(4):112–124, 1996; Coate, D. and M. Grossman, "Effects of Alcoholic Beverage Prices and Legal Drinking Ages on Youth Alcohol Use," *Journal of Law and Economics* 31(1):145–171, 1988; Cook, P.J. and M.J. Moore, "Environment and Persistence in Youthful Drinking Patterns" in J. Gruber (ed.), *Risky Behavior Among Youth: An Economic Analysis*, (Chicago: University of Chicago Press, 2001), 375–437; Dee, T.S., "State Alcohol Policies, Teen Drinking and Traffic Fatalities," *Journal of Public Economics*, 72(2): 289–315, 1999; Grossman, M., D. Coate, and G.M. Arluck, "Price Sensitivity of Alcoholic Beverages in the United States: Youth Alcohol Consumption" in M.H. Moore and D.R. Gerstein eds. *Control Issues in Alcohol Abuse Prevention: Strategies for States and Communities.* (Greenwich, CT: JAI Press, 1987), 169–98; Grossman, M., F.J. Chaloupka, and J. Sirtalan, "An Empirical Analysis of Alcohol Addiction: Results from the Monitoring the Future Panels," *Economic Inquiry* 36(1):39–48, 1998; and Laixuthai, A. and F.J. Chaloupka, "Youth Alcohol Use and Public Policy," *Contemporary Policy Issues* 11(4):70–81, 1993.

[2] Dee, p. 289.

The NRC/IM report essentially argues that a similar regime should be established where alcohol excises would be used to force drinkers to bear the external costs of alcohol use.[22] However, this view overlooks an important difference. In the classic textbook case, consumption of each widget implicitly entailed the generation of a given amount of pollution. This is not the case with alcohol. Most consumers of alcoholic beverages do not impose costs on the larger society. Instead, virtually all of what are labeled as external costs in the studies cited by the NRC/IM report arise as a result of crimes committed by a minority of drinkers while they were intoxicated. As stated above, 90 percent of the external costs identified by Manning et al. stem from some type of criminal activity. Likewise, 94 percent of the external costs identified by Miller and Blincoe and all of the social costs listed in the PIRE study resulted from the abuse and/or illegal use of alcohol.

Policymakers typically address external cost problems arising from the misuse of an otherwise legal product by increasing the criminal sanctions. This has the advantage of discouraging the misuse of the product while leaving legal users largely unaffected. The policy suggested by the NRC/IM would take a different tack, penalizing all consumers of alcoholic beverages because of the actions of a relatively small number of drinkers. This is akin to trying to reduce the external costs of reckless driving by raising gasoline excises. Few would argue that such a policy is fair in any sense. Moreover, a general hike in alcohol excises would increase both horizontal and vertical inequities in the existing tax system.

Social cost accounting is far from an exact science. ...The National Conference of State Legislatures, for example, urges caution when using it for policy purposes. In its **Tax Policy Handbook for State Legislators** *the group notes, "Some economists find social cost studies more interesting than useful in guiding public policy."*

Defenders of the proposed tax may respond that while the impact of the tax on responsible drinkers is unfortunate, it is nevertheless justified because it would significantly lower the harm done by irresponsible drinking. It is important to emphasize that this is unlikely to happen. If alcohol excises were hiked to levels such as those suggested in the studies cited in the NRC/IM report, a likely outcome would be that the government revenue would rise, alcohol consumption would decline somewhat, and yet the harm arising from the irresponsible use of alcohol would remain high. The reason for this is quite simple: under a general excise tax hike, problem drinkers would still not be forced to bear all of the costs of their actions. Instead, the burden of these taxes would be borne by all drinkers, who constitute a large fraction of the U.S. population. Furthermore, research indicates that the drinking habits of heavy drinkers, who are responsible for much of the external costs of alcohol use, are largely unaffected by changes in price. Consequently, tax increases are not likely to significantly lower the harm done by irresponsible drinkers.[23]

In order to lower these costs, much more targeted policies, such as those aimed at drunk driving, are needed to alter the incentives of problem drinkers. Indeed, many traffic safety experts argue that the most effective way of curbing the toll caused by drunk drivers is to focus limited public safety resources on individuals who habitually drink and drive. Though relatively small in number, such individuals are responsible for much of the carnage on the nation's highways.[24]

Social Cost Accounting

The external cost estimates listed in Table 2 were calculated using a process known as social cost accounting. Researchers conducting this type of analysis attempt to compare the lifetime payments for and usage of collectively financed services such as medical care, sick leave, and pensions by different groups of people (smokers, drinkers, the obese, etc.) and try to ascertain the degree to which any costs are shifted between these groups and the general population. Differences in lifetime payments to federal, state and local tax systems are also compared. In addition, researchers tally other costs that may be shifted, such as those that arise from accidents and criminal activity.

Alcohol Excises and Crime

The NRC/IM report laments the fact that alcohol excises have declined since the early 1950s when adjusted for inflation. It points out that "beverages are far cheaper today than they were in the 1960s and 1970s."[1] It fails to mention, however, that one of the reasons legislators have been reluctant to raise these levies is their effect of promoting illegal activity.

Excessive alcohol taxes encourage two varieties of crime. The first are the direct crimes of illicit manufacture ("moonshining") and distribution of alcoholic beverages. While often thought of as a problem of the past, the illicit liquor industry is alive and well in many high-tax jurisdictions. In Georgia, the state with the third-highest overall alcohol taxes in the nation, for example, a study published in the September 2003 *Annals of Emergency Medicine* found that nearly 9 percent of the respondents to a survey of emergency room patients in one Atlanta hospital admitted to knowingly consuming illicitly produced liquor in the prior five years.[2] Of those individuals, 29 percent said that they had consumed moonshine in the prior week. One of the problems associated with illicit liquor production of alcoholic beverages is that moonshiners may inadvertently or intentionally produce a dangerous product. The Atlanta study, for example, found that many of the individuals who routinely drank illicitly produced alcohol had high levels of lead in their blood, a common problem with liquor that is distilled using old automobile radiators.[3] Once produced, illicit alcohol is then transported, or "bootlegged," and distributed to consumers around the country. Criminals also sometimes purchase legally produced alcoholic beverages in low-tax jurisdictions and then resell it in high tax areas in an effort to expropriate the tax differential between the two locations.

In addition to boosting crime rates directly by encouraging tax evasion, high alcohol taxes also promote criminal activity by spawning the litany of offenses associated with the creation of a black market and by increasing incentives to steal alcoholic beverages. These indirect crimes—which have included murder, armed robbery and a host of other violent crimes—are often much more serious than moonshining and bootlegging. In ordinary markets the legal system prohibits participants from using force to gain advantage. It also enforces contracts and requires that disputes be resolved peacefully. These safeguards are not present in illegal markets. Consequently, participants often battle with each other for the ability to sell illegal alcohol in a given location and agreements are often enforced (or broken) with violence. Indeed, one of the most famous crimes in U.S. history, the St. Valentine's Day Massacre, occurred when Al "Scarface" Capone and his gang attempted to control the illegal liquor market in Chicago during Prohibition by killing members of a rival gang led by "Bugs" Moran.

Somewhat paradoxically, one problem that would likely be exacerbated by a tax-induced expansion of the illegal market for alcoholic beverages is underage access to alcohol. In the existing legal market individuals under the age of 21 are prohibited from purchasing these products. Given their nature, such age limits are not present in illegal markets for alcoholic beverages. Consequently, if this market were to expand as a result of increased excises, one result is that many minors would likely find easier access to alcohol.

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[1] National Research Council and Institute of Medicine of the National Academies, p. 243.

[2] B.W. Morgan, L. Barnes, C.S. Parramore, and R.B. Kaufmann, "Elevated Blood Lead Levels Associated With the Consumption of Moonshine Among Emergency Department Patients in Atlanta, Georgia," *Annals of Emergency Medicine*, 42(3): 351–58, 2003.

[3] T. Dix and S. Walker, "Elevated Blood Lead Levels Associated With Illicitly Distilled Alcohol – Alabama, 1990–1991," *Morbidity and Mortality Weekly Report*, 41(17):294–5, 1992.

Social cost accounting is far from an exact science. In fact, there is considerable debate within the economics profession about issues as fundamental as exactly what constitutes an external cost and the discount rate that should be used to adjust payments and expenditures that occur in different periods.[25] Consequently, other studies not referenced in the NRC/IM report have reached conclusions contrary to those cited. Heien, for example, found that under current law the excise taxes paid by consumers more than paid for the external costs associated with alcohol consumption.[26] In fact, he went on to note that because drinkers have lower lifetime health care costs than nondrinkers, they may actually produce an "external benefit" for nondrinkers, effectively subsidizing their health insurance premiums by as much as $21.6 billion annually.

Fundamental problems that call into question the ability of researchers to accurately conduct this type of analysis coupled with ambiguous findings have raised serious doubts about the usefulness of social cost accounting. The National Conference of State Legislatures, for example, urges caution when using the results of this type of research for policy purposes. In its *Tax Policy Handbook for State Legislators* the group notes, "Some economists find social cost studies more interesting than useful in guiding public policy."[27]

Excise Tax Hikes and Underage Drinking

The ability of lawmakers to use tax hikes as a policy tool to reduce underage drinking is governed by two factors: the degree to which the new levies are reflected in the prices of alcoholic beverages; and the magnitude of the resulting reduction in underage drinking.

While alcohol excises are commonly assumed to be reflected in the price of alcoholic beverages, there is no reason that this must be the case. Instead, economic theory points out that these taxes will ultimately borne by some combination of three groups of people: consumers of alcoholic beverages who will pay higher prices, workers in the in the beverage industries who will earn lower wages, and the owners of those firms who will earn lower profits.[29] Today, since the price of alcoholic beverages across the country generally vary by amounts equal to excise tax differentials, these levies are usually assumed to be "passed forward" to consumers in the form of higher prices. A large tax hike, however, could alter this situation and result in more of these taxes being borne by workers and shareholders. Under such conditions the ability of policymakers to use tax hikes to boost alcoholic beverage prices and, in turn, underage drinking, would be significantly reduced.

Indeed, many traffic safety experts argue that the most effective way of curbing the toll caused by drunk drivers is to focus limited public safety resources on individuals who habitually drink and drive. Though relatively small in number, such individuals are responsible for much of the carnage on the nation's highways.

The second factor affecting the ability of policymakers to use tax hikes as a tool to curb underage drinking is the magnitude of any change in underage consumption in response to a tax-induced price hike. Economists measure this type of response using a concept known as price elasticity, which measures the percentage change in the quantity of a good that is demanded in response to a one percent increase in its price. A number of problems have prevented researchers from reaching a general consensus on the price elasticity of demand for alcoholic beverages by underage

drinkers (see sidebar on page 8). Instead, they have produced a range of estimates from close to 0 to roughly –0.65. These estimates are in the "inelastic" or relatively unresponsive portion of the elasticity spectrum, and they imply that a 10 percent increase in the price of alcoholic beverages could be expected to reduce underage consumption by somewhere on the order of 3 percent.[30] These findings, which are very similar to overall U.S. and international price elasticity estimates for alcoholic beverages, do not support NRC/IM's claim that "raising excise taxes, and hence prices, is a strategy that has strong and well-documented prevention effects on underage drinking."[31]

Under current law, excise taxes on a gallon of alcoholic beverages average about 15 percent of its price. Assuming any tax hike would be fully passed forward to consumers in prices and a price elasticity of –0.3, a policy goal of reducing underage consumption by a mere 10 percent would require that existing excise taxes be more than tripled. In order to reduce underage consumption by 20 percent, excise taxes would have to be raised more than five-fold. Therefore, even under the optimistic assumption of a full pass forward of the tax and an intermediate elasticity estimate, anything short of a very large increase in alcohol excises is unlikely to have much effect on underage alcohol consumption. If the assumption of a full pass forward of the tax is relaxed, even very large increases in alcohol excises may do little to curb underage drinking. Consequently, excise tax hikes do not appear to be a particularly effective policy tool for reducing underage drinking.

V. Conclusion

It's easy to understand the desire to curb underage drinking. Alcohol abuse by young people causes a number of serious problems. The evidence put forward by the NRC/IM in its report, however, simply does not support its claim that "underage drinking imposes particularly high average social costs." Similarly, its assertion that higher taxes deter underage drinking is not supported by the empirical literature.

A policy of high alcohol excise taxes would place significant burdens on legal consumers of alcohol, increase inequities in the tax system, and encourage various forms of criminal activity. Moreover, taxing alcohol purchases has been found to be one of the most economically inefficient ways of raising government revenue. More tailored approaches, such as increased enforcement of minimum age and drunk driving laws, offer much more promise of reducing underage drinking and related problems without causing undesirable side effects.

Notes

[1] National Research Council and Institute of Medicine of the National Academies, *Reducing Underage Drinking: A Collective Responsibility*, (Washington, DC: The National Academies Press, 2003).

[2] Rates listed are those most widely applicable. Subcategories of these products may be subject to different rates. For a complete listing see http://www.ttb.gov/alcohol/info/atftaxes.htm

[3] These were calculated by normalizing all of the various tax bases and rates used by governments to show the actual tax paid on each gallon sold.

[4] J.P. Nelson, "State Monopolies and Alcoholic Beverage Consumption," *Journal of Regulatory Economics*, March 1990, pp. 83–98.

[5] Estimated by Fiscal Economics, Inc. using data from the U.S. Commerce Department.

[6] R.E. Brinner and J. Brinner, "State Revenue Prospects & Strategies," *Business Economics*, 37(3), pp. 22–33.

[7] This assumes that tax falls forward on consumers (see section titled, Problems). If different incidence assumptions are used, the tax falls on a different subset of the population.

[8] J. Scott Moody, *Federal Excise Tax Collections by Income Class*, Tax Foundation web posting, http://www.taxfoundation.org/excisesbyincomefed.html.

[9] University of Michigan, Monitoring the Future Survey, http://monitoringthefuture.org.

[10] Figures tabulated using data from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System. See http://www-fars.nhtsa.dot.gov.

[11] The National Academies, "Nationwide Strategy to Combat Underage Drinking Requires Shared Responsibility; Action Also Needed to Improve Compliance With Laws," Press Release, September 9, 2003. Also see National Research Council and Institute of Medicine of the National Academies, Chapter 3.

[12] National Research Council and Institute of Medicine of the National Academies, p. 246.

[13] National Research Council and Institute of Medicine of the National Academies, pp. 242–46. The report also makes a third argument in defense of its proposal to hike excises. It is that "a designated portion of the funds generated by the taxes can be earmarked for preventing and reducing underage drinking." The validity of this argument is not questionable.

[14] National Research Council and Institute of Medicine of the National Academies, p. 243.

[15] National Research Council and Institute of Medicine of the National Academies, p. 244.

[16] W. G. Manning, E. B. Keeler, J. P. Newhouse, E. M. Sloss, and J. Wasserman, "The Taxes of Sin, Do Smokers and Drinkers Pay Their Way?," *Journal of the American Medical Association*, March 17, 1989, pp. 1604–09. Also see W. G. Manning, E. B. Keeler, J. P. Newhouse, E. M. Sloss, and J. Wasserman, *The Costs of Poor Health Habits*, (Cambridge, MA: Harvard University Press, 1991).

[17] T. R. Miller and L. J. Blincoe, "Incidence and Cost of Alcohol-Involved Crashes in the United States," *Accident Analysis and Prevention*. 26(5), pp. 583–91.

[18] Pacific Institute for Research and Evaluation, *Costs of Underage Drinking* (updated edition), (Washington, DC: U.S. Department of Justice, 1999).

[19] National Research Council and Institute of Medicine of the National Academies, p. 244.

[20] Analysis assumed that there were 129 million consumers of alcoholic beverages in the United States (see page 23 of NRC/IM report) and a price elasticity of –.5 (see Section IV).

[21] A. C. Pigou, *The Economics of Welfare*, 4th Edition, (London: Macmillan & Co., 1946).

[22] National Research Council and Institute of Medicine of the National Academies, p. 243.

[23] W.G. Manning, L. Blumberg, and L.H. Moulton, "The Demand for Alcohol: The Differential Response to Price," *Journal of Heath Economics*, 14(2), pp. 123–48, 1995. Also see D.S. Kenkel, "New Estimates of the Optimal Tax on Alcohol," *Economic Inquiry*, 34(2), pp. 296–319, 1996.

[24] U.S. Department of Transportation, *Criminal Justice Summit on Impaired Driving: Final Report*, (U.S. Dept of Transportation, National Highway Traffic Safety Administration: 2003).

[25] National Conference of State Legislatures, *Tax Policy Handbook for State Legislators*, (Washington, DC: National Conference of State Legislatures, April 2003), p. 41. Also see R.D. Tollison and R.E. Wagner, *The Economics of Smoking*, (Boston: Kluwer Academic Press, 1992), p. 79.

[26] D.M. Heien, "Are Higher Alcohol Taxes Justified," *Cato Journal*, 15(2-3), pp. 243–257, 1995–96. Also see D.M. Heien, "The Economic Case Against Higher Alcohol Taxes," *Journal of Economic Perspectives*, 9(1), pp. 207–209, 1995.

[27] National Conferences of State Legislatures, p. 41.

[28] National Research Council and Institute of Medicine of the National Academies, p. 244.

[29] For a discussion of tax incidence see Harvey S. Rosen, *Public Finance*, (McGraw-Hill Irwin, 2002) pp. 254–258.

[30] These estimates are similar to those for adults both in the U.S. and abroad. See U.S. Department of Health and Human Services, *Tenth Special Report to the U.S. Congress on Alcohol and Health*, (Washington, DC: U.S. Department of Health and Human Services, June 2000).

[31] National Research Council and Institute of Medicine of the National Academies, p. 242.

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