

## REMARKS

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### Alcohol Policy XI Plenary Session III

#### **SLIDE 1: Economic Perspectives on Alcohol Taxation**

This morning, I'm going to discuss the economic research examining the impact of alcoholic beverage taxes and prices on the demand for alcohol and related outcomes, as well as issues related to the optimal level of alcohol taxation. Much of this discussion will focus on research conducted by my colleagues, including Michael Grossman, Henry Saffer, Henry Wechsler, and several others, and myself.

#### **SLIDE 2: Motives for Alcohol Taxation**

One can think of three primary motives for taxing alcoholic beverages. The first, and perhaps the most straightforward, is the use of these taxes to generate revenues that can be used for other activities. A second rationale is the use of increases in beer, wine, and distilled spirits taxes as a way to improve public health by reducing drinking and its consequences. The third motive, and perhaps the most relevant to economic analysis, is to use alcohol taxation to improve market efficiency by setting taxes high enough to cover the social costs associated with alcohol use and abuse.

#### **SLIDE 3: Revenue Generation - Historical Information**

Historically, the primary motivation for alcohol taxation has been to raise revenues. The first Federal tax on alcohol, for example, was a nine cent per gallon tax on whiskey set in 1791 as a way to finance the debt accumulated during the Revolutionary War. The tax was raised to 25 cents per gallon a few years later prompting an armed revolt that has come to be known as the "Whiskey Rebellion." Over the next 150 years, this and other alcoholic beverage taxes were raised, often during wartime, and lowered again during peacetime, given the significant revenues these taxes could easily generate. Similarly, after Prohibition, states also adopted alcohol taxation for a steady stream of revenues.

More recently, however, alcohol taxes, particularly at the Federal level, have changed infrequently. During the Korean War, Federal taxes were set at \$9 per barrel, the equivalent of 16 cents per six pack, for beer; \$10.50 per proof gallon for distilled spirits, and 17 cents per wine gallon for table wine. The spirits tax was increased to \$12.50 per proof gallon in 1984 as part of a deficit reduction package.

#### **SLIDE 4: Current Federal Alcoholic Beverage Tax Rates**

In 1990, for the first time in nearly 40 years, federal beer and wine taxes were increased as part of the Omnibus Budget Reconciliation Act. As part of the act, the beer tax was doubled, the wine tax was increased more than six-fold, and the spirits tax was raised another \$1 per proof gallon, effective January 1, 1991.

#### **SLIDE 5: Graph of Trends in Federal Alcoholic Beverage Taxes**

One consequence of the infrequent changes in tax rates is that the inflation adjusted values of these taxes have fallen sharply over time, as shown in the graph. This graph charts the Federal taxes per ounce of ethanol contained in beer, table wine, and distilled spirits. As the graph clearly shows, the alcohol in distilled spirits has historically been taxed at a much higher rate than that in beer and wine, with wine receiving the most favorable treatment. The same differential treatment generally applies at the state level as well. While the 1991 increases significantly reduced the differentials, they did not eliminate them.

A second point to note on the graph is that the 1991 tax increases on beer and distilled spirits were well below the increases that would have been needed to restore these taxes to their inflation adjusted values in 1951.

One result of the relatively stable nominal tax rates is that the inflation adjusted prices of alcoholic beverages have also fallen sharply over time. For example, from 1975 through 1990, real spirits prices fell by 32 percent, wine prices fell by 28 percent, and beer prices fell by 20 percent. Inflation adjusted prices, in part due to state tax increases and industry initiated price increases, have remained relatively stable throughout the 1990s.

#### **SLIDE 6: Revenue Generation and Price Elasticity of Demand**

The responsiveness of alcohol demand to changes in price is a key factor in determining the revenue generating potential of alcoholic beverage taxes. Economists use the term price elasticity of demand to reflect the affect of changes in price on consumption. The price elasticity of demand is defined as the percentage change in alcohol consumption resulting from a one percent increase in price. For example, a price elasticity of alcohol demand of  $-0.5$  implies that a 10 percent increase in the price of alcoholic beverages would reduce alcohol consumption by five percent.

#### **SLIDE 7: Estimates of the Price Elasticity of Alcohol Demand**

In their comprehensive review of the economic literature on alcohol demand, based largely on studies using aggregate data, Leung and Phelps concluded that the price elasticities of demand for beer, wine, and distilled spirits are  $-0.3$ ,  $-1.0$ , and  $-1.5$ , respectively. This implies that a 10 percent increase in the price of each would reduce beer consumption by about 3 percent, wine consumption by 10 percent, and distilled spirits consumption by about 15 percent. Recent studies using data on individuals taken from various national surveys suggest that alcohol demand may be even more responsive to price than these estimates indicate. Moreover, recent research by Mike Grossman, Ismail Sirtalan and I, which estimates the demand for alcohol in the context of an economic model of addictive behavior suggests that because of the addictive nature of drinking, the long-run effect of price on alcohol demand will exceed the short-run effect.

Given the relatively small share of taxes in the prices of alcoholic beverages, and the estimated price elasticities of demand, increases in alcoholic beverage taxes will not only produce significant reductions in drinking, but will also generate substantial revenues. For example, given the estimates for price responsiveness, a doubling of federal alcohol taxes would be likely to raise Federal tax revenues by 50-75 percent or more.

#### **SLIDE 8: Using Alcohol Taxes to Promote Public Health**

While revenue generation has historically been the primary motivation for alcohol taxation, the potential for improving public health by raising alcohol taxes has gained increased attention in recent years. This potential depends on whether or not alcohol use and, more importantly, alcohol abuse is affected by the changes in alcoholic beverage prices that could be achieved by raising taxes.

Over the past 15 years, there have been a number of studies by economists that estimate the impact of alcohol prices and taxes on many of the consequences of alcohol use and abuse, including motor vehicle and other accidents, violence and other crime related to alcohol, liver cirrhosis and other health problems, illicit drug use, and more. I'll briefly highlight the findings from several of these studies.

### **SLIDE 9: Drinking, Driving, and Motor Vehicle Accidents**

Numerous econometric analyses have estimated the impact of alcoholic beverage taxes and prices on drinking, driving, and alcohol-related motor vehicle accidents. These studies have employed a variety of data, including aggregate motor vehicle accident fatality rates, including those based on alcohol involvement, as well as self-reported information on driving after drinking and involvement in non-fatal accidents. Using a variety of empirical methods, these studies produce generally consistent evidence that higher alcohol taxes and prices lead to less drinking and driving and to fewer non-fatal and fatal motor vehicle accidents.

For example, Don Kenkel used data from the 1985 National Health Interview survey to look at the impact of alcohol prices on self-reported drinking and driving. His estimates imply that a 10 percent increase in the price of alcoholic beverages would reduce the probability of drinking and driving by over 7 percent among men and by over 8 percent among women. Moreover, he predicts even larger reductions in drinking and driving among youth and young adults, with the 10 percent rise predicted to reduce the probability of drunk driving by almost 13 percent among young men and by over 21 percent among young women.

### **SLIDE 10: Drinking and Driving Continued**

Mike Grossman, Henry Saffer, and I looked at this issue using annual state level data from the 1980s on motor vehicle accident fatality rates, including several alcohol-related fatality rates. We conclude that increases in alcoholic beverage taxes are among the most effective policies in reducing drinking and driving. Based on our estimates, we predict that a policy that would have maintained the real value of the federal beer tax at its 1951 level would have reduced annual motor vehicle fatalities by over 11 percent. Like Kenkel, we find even larger effects on youth. Similarly, Adit Laixuthai and I, using data on self-reported involvement in accidents taken from the Monitoring the Future surveys, found that the same applied to non-fatal motor vehicle accidents among youth.

### **SLIDE 11: Other Accidents - Workplace Accidents**

In contrast, there are relatively few studies of the effects of alcohol taxes and prices on other accidents. However, the findings from these studies are generally consistent with those from the studies of accidents related to drinking and driving.

The most recently published study, by Ohsfeldt and Morrissey, examined the impact of alcohol taxes on non-fatal workplace accidents. Using annual state level data from 1975 through 1985, they find a strong inverse relationship between alcohol taxes and workplace accidents. Based on their estimates, they predict that a 25 cent increase in the 1992 federal beer tax would have reduced work loss days from alcohol related workplace accidents by 4.6 million, which translates into a reduction in alcohol related lost productivity of \$491 million.

### **SLIDE 12: Violence and Other Crime**

In recent years, economists have begun studying the impact of prices and other alcohol control policies on the violence and other crime related to alcohol use and abuse. This research is based on the extensive literature documenting the relationship between alcohol abuse and violence and the economic literature on the impact of price on alcohol demand.

Cook and Moore were the first to study this issue. They used annual state level data on violent crime rates from the 1980s to estimate the impact of beer taxes on violence, concluding that higher beer taxes would significantly reduce rapes and robberies. Henry Saffer and I updated and extended this analysis to include other crime rates as well as additional determinants of crime. We conclude that increases in beer taxes would lead to statistically significant reductions in nearly every crime category. For example, we predict that a doubling of the beer tax during the period covered by our data would have reduced homicides by 3 percent, rapes by 2 percent, robberies by 4.7 percent and overall crime rates by 1.3 percent.

### **SLIDE 13: Violence and Other Crime (conclusion)**

More recently, Markowitz and Grossman have used individual level data to examine this issue. Using self-reported data taken from the 1976 and 1985 Survey of Physical Violence in American Families, they conclude that violence towards children is inversely related to alcoholic beverage taxes. For example, they estimate that a 10 percent increase in the beer tax would reduce the probability of child abuse by 2.2 percent and overall violence towards children by 1.1 percent. More recently, they use data from surveys of US college students to look at the impact of alcoholic beverage prices on violence and other problems on college campuses. They find strong and consistent evidence that increases in beer prices would lead to significant reductions in all of the measures of problem behavior they consider.

### **SLIDE 14: Liver Cirrhosis and Other Alcohol-Related Health Consequences**

Similarly, there have been a small number of other studies that look at the impact of alcohol taxes and prices on health problems related to heavy drinking, most notably liver cirrhosis. Cook and Tauchen were the first to look at liver cirrhosis mortality rates as a measure of heavy drinking. Using data from the 1960s and early 1970s, they concluded that a \$1 increase in the distilled spirits tax would reduce cirrhosis deaths by between 5 and 11 percent.

More recently, Mike Grossman, Gary Becker, Kevin Murphy and I updated and extended this analysis, applying an economic model of addictive behavior to liver cirrhosis death rates for the period from 1962 through 1984. We predict that a 10 percent rise in alcoholic beverage prices would reduce liver cirrhosis deaths by up to 13 percent in the long run.

Similarly, Sloan and his colleagues find that higher alcohol taxes would lead to significant reductions in other alcohol-related deaths, including suicides and deaths from diseases in which alcohol is a contributing factor.

### **SLIDE 15: Alcohol Price and Illicit Drug Use**

Most recently, economists have begun to explore polysubstance use. Some of this research examines the impact of alcoholic beverage prices on the use of illicit drugs, including marijuana, cocaine, and heroin. Henry Saffer and I use data from several of the National Household Surveys on Drug Abuse to look at these relationships among adults. We conclude that higher alcohol prices not only reduce the use of alcoholic beverages, but also reduce the use of marijuana, cocaine and heroin. Pacula, using data from the National Longitudinal Survey of Youth, reaches a similar conclusion for marijuana use among young adults. Moreover, consistent with the gateway hypothesis, she finds that increases in current alcohol taxes lead to reductions in future marijuana use.

### **SLIDE 16: Economic Efficiency**

A third rationale for alcohol taxation is based on the idea that alcohol use and abuse impose social costs that are not fully reflected by the prices of alcoholic beverages and that are not adequately considered by drinkers when making their drinking decisions. These include the costs experienced by non-drinkers resulting from alcohol related accidents, violence, and crime, the higher health care and health insurance costs associated with the increased use of medical care to treat alcohol related diseases, and more. Several decades ago, economist Arthur Pigou suggested that excise taxes were an effective means for correcting for the market inefficiencies that result from the presence of these external costs.

For alcohol, the use of taxes to correct for this type of inefficiency is complicated by the fact that many drinkers do not impose costs on others. Moreover, recent evidence suggests that there are health benefits associated with moderate alcohol consumption. Thus, while increases in alcoholic beverage taxes and prices can significantly reduce the social costs associated with alcohol use and abuse, they also impose costs on non-abusive drinkers.

### **SLIDE 17: Pogue and Sgontz/Economic Efficiency**

Given these ideas, economists have attempted to estimate the "optimal" or economically efficient tax on alcoholic beverages. The optimal tax depends on the magnitude of the external costs, the relative numbers of abusive and non-abusive drinkers, and the relative price responsiveness of abusive and non-abuse drinkers. The evidence on relative price responsiveness is mixed. However, as I mentioned earlier, recent research by my colleagues and I suggests that addicted drinkers will be relatively more sensitive to price in the long run than non-addicted drinkers.

### **SLIDE 18 - Estimates of the Optimal Tax on Alcoholic Beverages**

Several studies over the past decade have attempted to estimate the optimal tax on alcoholic beverages. Pogue and Sgontz, Manning and his colleagues, and others estimate that the optimal tax is at least double the existing level of alcoholic beverage taxes. As Kenkel notes, however, if other policies specifically targeting abusive drinking such as stronger laws related to drinking and driving are adopted, then the optimal tax would be lower.

### **SLIDE 19 - Tax Equalization**

Henry Saffer and I extended the basic approach used in several of the studies of optimal alcohol taxation to consider the question of alcohol tax equalization. As shown in the earlier graph, federal and state alcohol taxes have typically taxed the alcohol in beer and wine at a lower rate than the alcohol in distilled spirits. Our analysis was prompted by several proposals in the early 1990s, including those from the distilled spirits industry, the Bush administration and a large number of economists calling for the equalization of the tax rates across beverages.

As with other recent studies, we found that alcohol tax rates in place in 1991 were well below the "optimal" level of these taxes. We estimated that the economically efficient tax was about 2.3 times higher than the existing weighted average tax rate in 1991. Moreover, we found no support for a relative tax structure that favored beer and wine over distilled spirits. Instead, our estimates generally support a tax system closer to equalization.

### **SLIDE 20 - Summary**

I've quickly reviewed a small fraction of the large and growing literature from economics that examines the relationships between alcohol taxes, prices, drinking, and related outcomes. Several clear conclusions emerge from this literature: First, increases in alcoholic beverage prices, that can be achieved by increases in taxes, lead to significant reductions in the consumption of alcoholic beverages while also increasing tax revenues. Moreover, these reductions are not limited to light or infrequent drinkers, but also reduce heavy or abusive drinking, with the effect of a permanent price increase on addictive consumption growing over time. In addition, increases in alcoholic beverage prices have a larger impact on youth and young adult drinkers than on adult drinkers.

### **SLIDE 21 - Summary (continued)**

Similarly, given the inverse relationship between price and alcohol use and abuse, increases in alcoholic beverage prices lead to significant reductions in many of the consequences drinking, including accidents, violence and other crime, alcohol-related morbidity and mortality, illicit drug use, and more.

Alcoholic beverage excise taxes can be used to correct for the market inefficiencies associated with the social costs of alcohol use and abuse. Current alcohol taxes, however, are well below the economically efficient level of these taxes.

### **SLIDE 22: Policy Options**

Given the evidence, there are strong public health and economic reasons for adopting significant increases in alcoholic beverage taxes. In addition to increasing these taxes, tax rates could be indexed to the rate of inflation in order to prevent inflation from eroding the value of the tax over time as occurred in the past when nominal tax rates were raised infrequently.

In addition, the very limited evidence suggests that the equalization of taxes on the alcohol contained in different alcoholic beverages is an appropriate policy for reducing the problems associated with alcohol use and abuse.

Finally, increases in alcoholic beverage taxes should be included as part of a comprehensive program aimed at reducing alcohol abuse. More focused policies effective in reducing the consequences of alcohol abuse would reduce the need for very large increases alcohol taxes to improve economic efficiency. Thank You.