Regulating for Public Health: Motivations for and Efficacy of State Alcohol Regulations

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Economics has two predominant theories concerning regulation. On one side public interest theory contends that to improve social welfare the government will regulate markets that have failed or created externalities detrimental to social welfare. On the other side, private interest theory (Stigler 1971) contends the government will regulate in response to the private interests of groups able to wield political influence. Criticism of the public interest theory of regulation currently exists, but while most people accept the private interest theory as the theory applicable to a variety of economic regulations today, one might expect that if an economic theory of regulation were relevant to the regulation surrounding public health, it would be the public interest theory.

The alcohol industry has long been an industry surrounded by controversy, and one with a long history of regulation. In United States' colonial times alcohol was considered by groups an immoral substance; in modern times alcohol has been shown a contributor to public health concerns. Moral concerns have been historically cited as the motivation behind regulation encompassing the industry and the Prohibition Movement in the U.S. during the 1920's, although public health is often the cited reason in modern times. Numerous medical organizations like the American Medical Association and the National Institute on Alcohol Abuse and Alcoholism have published research showing the correlation between increased alcohol consumption and deteriorating public health. Concern for public health associated with drunken driving casualties, particularly among teens and young adults, incidence of liver disease and other illnesses imposing costs on public health services, and alcohol-related incidence of abuse are the more common public health concerns highlighted in calls for increased regulation of alcohol. Economists add to the debate with conflicting research determining how regulatory policies and

economic factors such as personal income and elasticity of alcoholic products affect the demand for and consumption of alcohol. Given the controversy surrounding the industry, it may not be surprising that alcohol is one of the most highly regulated consumer product industries in the U.S., and given the correlation between alcohol consumption and public health, we should expect the motivation behind improving public health and therefore regulation to curb consumption of alcohol industry products to be motivated by public interest. This article attempts to test if the variation between states regulatory policies of the alcohol industry can be explained by the public interest theory of regulation.

Health Effects of Alcohol Consumption

Numerous medical studies have determined that consumption of alcohol can have varying health effects including both short- and long-term effects and both positive and negative. Reported positive short-term effects include desirable social outcomes and relaxation; while negative short-term effects include impaired judgment, hangovers, black-outs, drunken driving violations, violence, family problems, and absence or loss of productivity at work (USDHHS 2004). Although long-term positive health effects of moderate alcohol consumption may include a possible reduction in heart disease, gallstones and type-two diabetes, for most consumers the negative health effects can outweigh the positive. Direct negative long-term health effects can include alcoholism, alcohol abuse, liver disease, heart disease, cancer, and pancreatis for all drinkers, and possible alcohol related birth defects for women drinkers (USDHHS 2004). Other social and legal negative long-term effects may include early death, divorce, family problems, loss of employment, increased crime, and increased medical expenses (Cook and Moore 2000).

The various health effects of alcohol consumption afford many measures of public health used by researchers. Typical measures of public health used in economic studies include mortality, vehicle fatalities and accidents (Chaloupka, Grossman and Saffer 1998; Ruhm 1995; Saffer 1997), binge-drinking (Williams, Chaloupka, and Wechsler 2002; Kuo et al 2003), adolescent alcohol consumption (Saffer and Dave 2003; Cook and Moore 2000), crime, alcoholism and alcohol abuse (Pogue and Sgontz 1989), and other physical effects such as liver cirrhosis or risky teen sexual activity (Dills and Miron 2002; Carpenter 2005; Markowitz, Grossman, and Kaestner 2005). These measures of public health tend to be modeled as the dependent variable when testing for the marginal impact of government policy and regulation.

Almost all public health measures are developed from aggregate data, although some are modeled from individual data, and many face endogeniety, autocorrelation, and measurement issues. Using any of these measures as explanatory variables for state regulatory level can lead to endogeniety issues, as level of public health and level of state regulation are simultaneously determined. Also, any of the public health measures that are typical externalities of heavy drinking (vehicle fatalities and accidents, alcoholism and alcohol abuse, and liver cirrhosis) might exclude explanatory power for regulation that equally applies to all types of alcohol consumers.

Alcohol Regulatory Effect on Public Health

The government has four policy measures to regulate alcohol: it sets limitations on the sale of alcohol, including requiring special retail licenses and determining when, where and how alcoholic beverages may be sold and their prices advertised; it sets the MLDA; it sets penalties

for drunk-driving; and it sets and collects excise taxes on alcoholic products (McGowan 1997; Cook and Moore 2000; Cook and Moore 2002).

Since each of the government's policy measures is directly or indirectly aimed at curbing alcohol consumption by influencing demand for the products, it is important to understand the demand. Cook and Moore (2000) review an extensive body of economic literature that focuses on modeling and testing specific regulations on the demand for alcoholic beverages. Cook and Moore determine a consensus in which a number of studies estimating the demand for alcoholic beverages find the own-price elasticity for each beer, wine and distilled spirits, to be negative and elastic for the general population of alcohol consumers (Cook and Moore 2000; Cook and Moore 2002; Chaloupka, Grossman and Saffer 1998; Johnson and Oksanen 1977). Since beer is the most elastic (in terms of absolute value), the demand for beer should be the most responsive to price changes, while distilled spirits tend to be the least responsive to price (Cook and Moore 2002). This negative elasticity, calculated with both aggregate and individual data, implies that alcohol is consumed as a non-Giffen good, or that when other factors remain equal and the price of alcohol rises, consumers will demand less alcohol. Major policy implications result from these elasticity estimates, which imply that raising alcohol prices can lower alcohol consumption. Although when consumers demand less alcohol, they may not be necessarily demanding less quantity of alcohol products, but may be substituting higher-priced quality for lower-priced quantity of the same alcoholic product (Kenkel, et al 1994). Because a standard drink can be uniformly defined as one 12-ounce bottle of beer, one 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits, substituting quality of product may not result in a decrease of alcohol consumed (USDHHS 2004).

Taxes and Increased Beverage Prices on Consumption

One of the most common findings and policy recommendations in the alcohol public health literature is related to excise taxes on alcohol. Most studies recommend the excise tax on alcohol be raised, as a means to discourage public consumption, especially consumption by youths. Pogue and Sgontz (1989) determined that average excise tax levels, for all government levels, would have had to double in 1989, to keep up with inflation and equal the previous 1951 excise tax level. Even though the government raised the excise taxes on alcohol in 1991, and taxes on beer doubled and distilled spirits increased, the raise still did not offset inflation, and real prices of alcohol have continued to decline over time (Chaloupka, Grossman and Saffer 1998).

Increased excise taxes would feasibly increase the direct price paid for alcoholic products, which should decrease the quantity of alcohol consumed, as per the law of demand. Decreased consumption through increased excise taxes can be directly attributed to the negative elastic nature of alcoholic products, and improved health effects are hypothesized to result from that decreased consumption.

Opponents of an increased excise tax is typically the beer industry which markets and sells most of its product, by volume, to young adults that have lower disposable income levels. Because of the regressive nature of an increased excise tax, the demand for and sales of beer products would be most affected by an excise increase. The wine and distilled spirits industries would not be as affected, primarily because the typical wine consumer is older and has a higher disposable income, and the excise tax on distilled spirits is already more than double that of beer and wine. Although the beer industry is against the increased excise tax because of its regressive nature, proponents use the regressive nature of the tax to their advantage. Because a high number of binge and heavy drinkers are young adults or underage adolescents with lower or

fixed incomes, an increased tax would directly affect their ability to consume alcohol, which could have an impact on public health measures such as drunk driving or risky teen sexual activity.

One criticism of the current tax regime is that all types of drinkers are taxed at the same rate, when heavy drinkers and alcoholics are assumed to consume the highest proportion of alcohol, and could have different demand drivers and elasticity for alcoholic products than the general population. Pogue and Sgontz (1989) propose a framework that would determine alcohol tax rates using efficiency criteria to modify standard welfare theory. They find that the optimal tax rate will increase when the relative demand elasticity's of both typical and heavy drinkers are taken into account, and specifically determine the average tax rate in 1989 should have been at least double the 25% rate that it was.

Literature on taxes and increased beverage prices also concludes an increase in excise taxes could lead to improved economic and socioeconomic factors. Kenkel's, et al (1994) article using human capital models of the determinants of earnings shows that alcohol consumption by young adults affects their labor productivity, earnings, and family life.

Legal Age Restrictions on Consumption

The primary legal age restriction on consumption is the minimum legal drinking age (MLDA), enacted by all states by 1988. The law, which raised the legal drinking age from18 or 19 depending on the state, to 21 for all states, was a restriction specifically targeted to younger drinkers, which typically have a higher incidence of alcohol related problems. The NHTSA has estimated the raising of the MLDA to 21 has prevented between 700-1000 annual deaths from

youth traffic accidents, although they do not speculate how many of those deaths have been saved as a direct result of reduced impaired driving from alcohol consumption (USDOT 2000).

Restrictions of Retail Sites on Consumption

There are numerous limitations that states can place on establishments that sell alcohol, either for on-premise or off-premise consumption, which can all reduce the ability of consumers to purchase and consume alcoholic beverages. State limitations can include requiring specific licenses to sell, limitations or prohibiting advertising of prices, limiting or prohibiting "happy hours", MLDA, and "dram shop laws", which could make the retailer liable for any damage done by a drinker, that drank too much while at that retailer. A recent article by Kuo, et al (2003) looked at the proximity of bars close to college campuses, and the effects that bars' proximity to campus, advertising, and "happy hour" drink specials had on the binge drinking (defined as 5 or more drinks in one setting for men and four or more drinks in one setting for women) of college students. Their results showed that the frequency of promotions by bars, and the volume of alcohol available during those promotions, caused higher levels of binge drinking on college campuses.

Other articles focus on the advertising limitations placed upon the general industry and retail establishments, because as Saffer (1997, p. 431) points out, the "central issue in this debate over alcohol advertising is whether the effect of alcohol advertising is limited to brand choice or whether alcohol advertising also increases total alcohol consumption". The implications that advertising has effects on amount of actual consumption is very important to studies that focus on youth consumption, as many alcoholic advertisements are found in magazines that are read by youths, although youths are not the target demographic of that magazine (Nelson 2005). Many

advertising studies do find that although there are restrictions on alcohol advertising to prevent adolescents from reacting, many adolescents are exposed to the advertising anyway and develop brand loyalties to alcoholic beverages before they reach the legal drinking age.

Drunk-Driving Laws

One of the most noticeable externalities associated with alcohol consumption is drunk-driving. Drunk-driving is determined by the drivers Blood Alcohol Content and is determined routinely when drivers are stopped by the police for suspected alcoholic intoxication. For those 21 or older, intoxicated is formally considered a BAC of 0.08 grams per deciliter (USDOT 2000), but national "Zero tolerance" laws make it illegal for youths under 21 to drive with any positive BAC level (USDOT 2000).

Penalties of drunk-driving are typically factored into the "full price" of alcoholic beverages, instead of the direct price like excise taxes (Chaloupka, Grossman and Saffer 1998), although NHTSA has estimated the direct savings per driver that lowering the BAC, and implementing "zero tolerance" laws for youths, have had (USDOT 2000). Drunk-driving measures such as vehicle fatalities or accidents also tend to be modeled as the dependent variable when empirical studies are performed on the effects of advertising on consumption (Saffer 1997), but little research on the direct impact of drunken driving laws on alcoholic consumption is available.

The most common conclusions that emerges from the literature that tests regulation's effect on alcohol consumption is that regulation does have an impact on alcohol consumption. Because the demand for alcoholic beverages has been shown to be the same pattern as the demand for other normal goods, the regulation most cited to have an impact on consumption is

excise taxes. Specifically cited is an increase in the excise tax on alcohol will lead to higher prices and reduce alcohol consumption. Other conclusions in the literature generally show that restricting access to alcohol, either through site, age or advertising restrictions, can reduce consumption.

Threads within Economic Literature

As just shown, there are numerous papers that study the regulatory effects on public health. These studies taken together form two of the three research threads within the economic literature on the alcohol industry: research focused on factors affecting consumer demand for the product and research focused on effects related to consumption of the product. The third thread, research focused on industry structure and logistics, is not typically considered in the context of alcohol and public health. Economists focused on the first two veins have typically researched the effects of specific policies and regulations on consumption, as we saw in above. The purposes of many of these studies can be grouped into three broad areas: the demand for and consumption of alcoholic beverages (Johnson and Oksanen 1977); the effects of regulatory policies on public health measures, such as price on consumption (Chaloupka, Grossman and Saffer 1998) and taxes as a means of curbing consumption (Pogue and Sgontz 1989; Tremblay and Okuyama 2001); and the effects of limitations on the sale and distribution of alcohol, such as advertising on consumption (Kuo et al 2003).

Cook and Moore (2000) review an extensive body of economic literature that focuses on modeling and testing specific regulations on the demand for alcoholic beverages, while Johnson and Osanken (1977) performed one of the first studies to empirically test for the significance of price and socioeconomic factors on consumption rates. Articles in the demand and consumption

thread broadly confirm the elasticity of alcohol's status as a non-Giffen good, and the underlying

motivation of articles in the thread is not a concern for public health, but a general inquiry into

the product's market demand.

Effects of Regulatory Policies on Public Health Measures

The four government regulatory policies are typically tested with respect to their effectiveness on

public health measures. Research testing the effects of regulatory policies on health measures

typically models a type of regulatory policy as the independent variable with a public health

measure as the dependent variable. Ruhm (1995), Carpenter (2005) and Markowitz, Grossman,

and Kaestner (2005) all researched the effects of one or two of the general types of government

regulation on different public health measures, while Chaloupka, Grossman and Saffer (1998)

reviewed many empirical studies that looked at the effects of the "full price" of alcohol on

drinking and driving. Ruhm (1995) found that macroeconomic factors of the economy affect the

consumption of alcohol and vehicle fatalities related to alcohol, but only indirectly through

consumption. He also found that certain regulatory policies like MLDA and the excise tax

affected consumption, which in turn reduced the motor vehicle fatality rate. Carpenter (2005)

found the adoption of zero tolerance laws was associated with a significant reduction in youth

male sexually transmitted diseases, while Markowitz, Grossman, and Kaestner (2005), looked at

the effect of alcohol consumption on risky teen sexual behavior.

The results of any one of these articles is not necessarily striking, but combined, the

research shows consumption impacts public health and specific regulations do have an impact on

curbing alcohol consumption and/or reducing some of the harmful externalities alcohol

consumption can have. Researching the effectiveness of specific alcohol regulations can help determine which regulations have the greatest benefit and are the most cost beneficial.

Limitations on Sale and Distribution of Alcohol

Most of the articles researching limitations on sale and distribution focus on the effects that limiting the sale of alcohol through restrictions on advertising and/or distribution can have on measures of public health (ability of consumers to consume). Many articles test the restriction on the sale of alcohol by primary testing the restrictions on advertising, although some do focus on distribution restrictions.

Other research on advertising effects include Milyo and Waldfogel (1999) and Wiseman and Ellig (2005). Both papers provide a different analysis on advertising restrictions through their focuses on the effects of advertising on retail prices and direct shipping (respectively), with no underlying motivation tied to public health. Their articles are also a bit different, in that both sets of authors look at the differences in retail prices when restrictions on advertising and direct shipping are relaxed.

Implications

The literature in these three broad areas shows researchers study the effects of regulatory policies aimed at curbing demand and consumption, and implicitly accept the idea of public health as the motivation behind alcohol industry regulations. When testing for alcohol consumption and the effects of various regulatory policies on public health, researchers take regulatory policies surrounding the industry as exogenous; when really an argument could be made the regulatory regime is endogenously determined as the level of public health and level of state regulation are

simultaneously determined. Also, few consider the possible significance that different public health arguments could have varying impacts on the regulatory policies implemented across states. Given the conflict between the two economic theories of regulation, it is surprising that little economic research exists to test this idea of public health (and therefore public interest theory) as the true motivator behind regulatory policies surrounding the industry; although determining if public health concern is the true motivator should be a noteworthy question to economists and policy makers alike.

Since states are given the right to regulate production, distribution and sale of alcohol by the 21st Amendment, testing the differences in state's public, economic and political health and state beer excise taxes over time is a natural experiment to determine the motivation behind the regulations. As previously mentioned, researchers typically fail to control for the endogeniety of state regulations, and also biasness or omitted variable problems can arise when using cross-sectional data if there are underlying latent variables correlated with both the manifest dependent and independent variables. Using a state-level fixed effects model to test nine years of cross-sectional data can help to control for some of that bias and will allow for control of factors that may vary across states but remain fixed within states across time.

Determining the true motivation of alcohol regulation can have specific impacts for policy makers responsible for regulating the industry, and the results can be generalizable to any industry that has public health concerns and consequences. Sin industries such as gambling and tobacco can benefit from this research, as can regulations affecting the environment. The research also has implications for other public health and social welfare policy debates such as the fatty food tax debate.

Theory

The underlying theory for testing the motivation behind alcohol industry regulation is the public interest theory of regulation. Because the public interest theory predicts regulation to occur in markets that have failed or created externalities detrimental to social welfare, we should expect to see regulation of an industry that's products contribute to harmful externalities, motivated by public interest.

Harmful social externalities resulting from alcohol consumption could result from any of the negative effects associated with consumption. Reported negative short-term effects include impaired judgment, hangovers, black-outs, drunken driving violations, violence, family problems, and absence or loss of productivity at work. Direct negative long-term health effects can include alcoholism, alcohol abuse, liver disease, heart disease, cancer, and pancreatis for all drinkers, and possible alcohol related birth defects for women drinkers (USDHHS 2004). Other social and legal negative long-term effects may include early death, divorce, family problems, loss of employment, increased crime, and increased medical expenses (Cook and Moore 2000). If concern for public health and the negative externalities caused by alcohol consumption is the motivation behind alcohol regulation, then when testing for motivation, should expect to find support for the public interest theory.

It should be noted that although most economic research focused on alcohol policy does implicitly accept public health as the motivator behind industry regulation, there are some studies that explore alcohol industry applications to test the idea of regulation as a function of private interests. The focus of most of these studies is not on public theory of regulation versus private theory as motivators for alcoholic regulations, but on other subjects (Wolfson (1995) focuses on the impact of social movement organizations on legislative actions, while Kubik, Milyo and

Moran (2006) focus is campaign finance). Only Reikof and Sykuta (2005) have the explicit purpose of testing Stigler's private theory of regulation as it related to alcohol industry logistics and distribution, and they found that private interests played a role in the ability of some state's wineries to legally ship wine direct to consumers.

Model

The economic model for this article is the fixed effects model utilized by Ruhm (1995) in his "Economic Conditions and Alcohol Problems" paper. Ruhm tested for the effects of macroeconomic conditions on alcohol-related outcomes using pooled state-level data over a 14 year time period, and he used a fixed-effects model to control for within states' macroeconomic conditions. Similarly, this article uses a fixed effects model, but to account for the differences between states alcohol excise taxes.

Specifically this article uses the fixed-effects model:

$$Yit = \alpha t + Vit\theta + Xit\beta + Zit\gamma + Wit\delta + Si + \lambda it$$

where Y_{it} is the value of the dependent variable for state i at time t, V is consumption per state per time, X is the measure of socioeconomic conditions; Z is the measure of political conditions, including both current and lagged variables; W is the measure of public health conditions, including some current and lagged variables; and λ is an error term. The intercept, α, is a time-specific value that accounts for time-varying characteristics that influence state beer excise tax rate. The state-fixed effect, S, is a vector of dummy variables that controls for factors that vary across states but remain fixed within states across time.

The dependent variable in the full model is state beer excise tax rates for each of the 50 states, collected over the nine-year period, 1995-2003. The data is collected over the time period

to account for any exogenous changes faced by all states, not for variation within a state across time. The V-variable is total per capita beer consumption, and the X-variables measuring socioeconomic conditions include state unemployment rates, change in state GDP, the state Poverty Rate, and state per capita Personal Income. The Z-variables measuring political factors include a lagged dummy variable controlling for the control of a political party over both a state's legislature and governor's office, a dummy variable accounting for a state's direct control over sale and total state campaign contributions by firms and employees of the alcohol industry. The W-variables measuring state public health conditions include a lagged measure of the state driver vehicle fatality rate involving alcohol and a lagged measure of the state aggravated assault violence rate. Table 1 below describes variables to be included in the analysis and the predicted effects for each independent variable. Most of the political and public health variables are lagged to account for the correlation between the variables.

Hypotheses

Expecting to find support for the public interest theory of regulation can lead us to hypothesize the effects that political and public health variables will have on alcohol tax rates as a proxy for alcohol regulation.

Scenario A: Public health theory is the true motivator behind alcoholic regulations.

Hypothesis 1a: The variables proxying public health will be significantly different from zero.

Hypothesis 2a: The greater a state's public health problem (with relation to alcohol consumption) and therefore public interest, the larger the state's beer excise tax.

Table 1. Definitions and Predicted Variable Signs

Variable Category	Variable Name	Definition	Predicted sign[a]
Y	Tax	Excise tax rate on a gallon of beer	Dep. variable
	Unemployment	Rate of unemployment rate of in the state	NP
X	GDP	Change in a state's GDP from the previous year	NP
	Poverty	State's poverty rate	NP
	Income	State's per capita income	NP
	Political	Dummy variable set to one if a state's legislative and governor's office are controlled by the same political party; 1 if both are Republican	NP
Z	Control	Dummy variable set to one if a state controls its own alcohol retail stores	NP
	Contributions	Total campaign contributions by businesses and employees of the alcohol industry	- or no change
V	Consumption	State per capita alcohol consumption of beer	-
	Vehicle	Rate of drivers involved in vehicle fatalities with a BAC = 0.01+	+
W	Assault	State Aggravated Assault Rate per 100,000 people	+

[a]NP, no prediction

Scenario B: Private interest theory is the true motivator behind alcoholic regulations.

Hypothesis 1b: The variables proxying private interest will be significantly different from zero.

Hypothesis 2b: The greater the private interests in the state, the smaller the state's beer excise tax.

Although the above hypotheses have been set up in an either-or fashion, it could be true that both public and private interests jointly influence alcohol regulatory policy, and therefore a third scenario can arise:

Scenario C: Both public and private interest theory motivate alcohol regulations.

Hypothesis 1c: The variables proxying public and private interest will be significantly different from zero.

Data

For those variables that have been lagged, data has been collected for the corresponding time period. Unemployment and poverty rates were collected from the U.S. Census Bureau, while GDP and per capital income were collected from the U.S Bureau of Economic Analysis and aggravated assault violence rates were collected from the U.S. Department of Justice. Also historical partisan control of states' legislatures and governor's offices were collected from the U.S. Census Bureau's *Statistical Abstract of the United States.* State alcohol excise tax rates and per capita alcohol consumption were collected from the *Brewer's Almanac,* published by the U.S. Beer Institute, while state campaign contributions were collected from The Institute on Money in State Politics. Finally, the driver vehicle fatality rate associated with alcohol is available from the *State Alcohol Related Fatality Rates* report, published by the U.S. Department of Transportation's National Highway Traffic Safety Administration.

Results and Conclusions

Table 2 presents results that are not striking, but do lend support for the hypotheses. Viewed individually, campaign contributions and aggravated assault are both statistically significant at the 10% level across the majority of tests. Hypotheses 1a, 1b, and 1c are both supported, in that at least one of the variables proxying public health and private interests are significantly different from zero when tested separately and when jointly tested. But, although the hypotheses have

support and the variables are statistically significant, their values are not economically significant and both variables seem to have negligible influence on a states' beer excise tax rate. Hypothesis 1a, that public interest theory is the true motivator behind alcohol regulations, is not supported if all of the public health proxies are jointly tested, as the vehicle fatality rate is not significant. Similarly Hypothesis 1b, that private interest theory is the true motivator behind alcohol regulations, is not supported if all of the private interest proxies are jointly tested, as the indicator of dominant partisan control of a state's executive and legislature is not significant. Hypothesis 1c, that both public and private interest theories could be jointly motivating alcohol regulation, is supported if the assault rate and campaign contributions are jointly tested, but if all the public health and private interest proxies are tested together, is not supported.

It should also be noted that both variables resulted in the opposite sign than predicted. Aggravated assault had a negative sign which implies that as assault increases, the tax rate would decrease, although from a health prospective, that doesn't seem plausible. Per capita consumption did result with the anticipated sign, although it was only significant when tested as a lone indicator of a states' beer excise tax rate.

Although Hypothesis 1a were not proven significant, Hypothesis 2a, the greater a state's public health problem (with relation to alcohol consumption) and therefore public interest, the larger the state's beer excise tax, can also be tested. Comparing the means of the states' beer excise tax with the mean of the states' consumption rates shows that on average states with higher consumption rates (24+ gallons consumed per capita) tend to have higher excise tax rates. Although this is shown on average, there are notable exceptions. North Dakota has an average consumption of 27.78 gallons consumed per capita and a tax rate of only $0.16/gallon and Nevada has an average consumption of 32.16 gallons per person and a tax rate of only

$0.09/gallon. Similarly, Utah has one of the lowest consumption rates at 12.73 gallons per capita and one of the highest tax rates of $0.41/gallon.

Although this article may not be conclusive in determining which theory of economic regulation is the true motivation behind alcohol regulation it does take steps to narrow and test if either theory is the predominate motivator, an issue not previously addressed. This article also raises interesting questions about the motivation behind certain alcohol regulations and offers avenues for future research through those questions. Consumers and regulatory policy can only benefit from knowing the true motivator behind alcohol regulation, and this article has presented one foray into answering that question.

Table 2. Fixed Effects Estimates of Relationship Between Beer Excise Tax and Public and Private Interest Measures

Regressor	(a)	(b)	(c)	(d)	(e)	(f)
Dependent Variable = Beer Excise Tax Rate						
Unemployment rate	0.28600	-0.65016				
Change in GDP	-0.00024385	0.000225				
Poverty rate	-0.07956	1.087564				
Per capita income	-0.00028164	-0.00008				
Consumption	-0.03399	-0.37024				**-1.60511** **(-1.74)**
Political Control of Governor and Legislature t-1	**-7.05611** **(-1.64)**	**-6.76273** **(3.57)**	-7.35572		3.201324	
Total Campaign Contributions	**0.00001538** **(3.54)**	0.000018	**0.000017** **(4.02)**		**0.000015** **(3.36)**	
State control, sale of products	**7.30543** **(1.72)**	0			0	
Alcohol involved Vehicle Fatalities at t-1	0.16111	-0.17145		-0.1089	0.013217	
Aggravated Assault at t-1	**0.02994** **(2.22)**	**-0.06182** **(-1.95)**		**-0.0632** **(-4.55)**	**-0.06601** **(-2.59)**	
Dummy variables included	None	State	State	State	State	State

Notes: The first panel estimates the model by ordinary least squares. The other panels estimate the model using generalized least squares. Significant values at the 10% level are presented with their t-statistics.

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