Preventive Medicine 105 (2017) S50–S55

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Employment impacts of alcohol taxes☆

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ARTICLE INFO

Keywords:
Alcohol taxes
Excise taxes
Sales taxes
Employment

ABSTRACT

There is strong scientific evidence supporting the effectiveness of increasing alcohol taxes for reducing excessive alcohol consumption and related problems. Opponents have argued that alcohol tax increases lead to job losses. However, there has been no comprehensive economic analysis of the impact of alcohol taxes on employment. To fill this gap, a regional macroeconomic simulation model was used to assess the net impact of two hypothetical alcohol tax increases (a 5-cent per drink excise tax increase and a 5% sales tax increase on beer, wine, and distilled spirits, respectively) on employment in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin. The model accounted for changes in alcohol demand, average state income, and substitution effects. The employment impact of spending the new tax revenue on general expenditures versus health care was also assessed. Simulation results showed that a 5-cent per drink additional excise tax on alcoholic beverages with new tax revenues allocated to general expenditures increased net employment in Arkansas (802 jobs); Florida (4583 jobs); Massachusetts (978 jobs); New Mexico (653 jobs); and Wisconsin (1167 jobs). A 5% additional sales tax also increased employment in Arkansas (789 jobs; Florida (4493 jobs); Massachusetts (898 jobs); New Mexico (621 jobs); and Wisconsin (991 jobs). Using new alcohol tax revenues to fund health care services resulted in slightly lower net increases in state employment. The overall economic impact of alcohol tax increases cannot be fully assessed without accounting for the job gains resulting from additional tax revenues.

1. Introduction

Excessive alcohol use is responsible for about 88,000 deaths, almost 10% of deaths among working age adults, and about 2.5 million years of lost potential life in the U.S. each year (Danaei et al., 2009; Elder et al., 2010; Stahre et al., 2014). Excessive drinking, which is defined as any alcohol use by those under the age of 21 or women who are pregnant, and any alcohol use involving 4 or more drinks per occasion by women and 5 or more per occasion by men (Centers for Disease Control and Prevention, 2014), is also associated with a host of health and economic problems, including traffic crashes, liver cirrhosis, suicide, homicide, and lost productivity (Wagenaar et al., 2009). In 2010, the economic cost of excessive drinking in the US was estimated to be $249 billion and the median state-level cost was estimated to be $3.5 billion (Bouchery et al., 2011; Sacks et al., 2015). In 2010, there were 688,574 alcohol-related emergency room visits, of which 189,060 involved underage drinking (Substance Abuse and Mental Health Services Administration CfBHSaQ, 2013). Among US youths, alcohol is the most commonly used illicit substance with prevalence higher than for tobacco and marijuana combined (U.S. Department of Health and Human Services, 2007). Reducing excessive drinking and associated health and economic problems is a national public health priority in the US (U.S. Department of Health and Human Services, 2012).

Raising alcohol prices through increased excise taxes is one of the most effective public policy tools for reducing excessive drinking and its consequences (Elder et al., 2010; Wagenaar et al., 2009; Xu and Chaloupka, 2011; Wagenaar et al., 2010). Evidence suggests that increasing alcohol prices by 10% will reduce consumption of beer, wine, and sprits by 5.0%, 6.4%, and 7.9%, respectively (Elder et al., 2010). Alcohol taxes are significantly associated with reductions in the consequences of excessive drinking, including traffic crashes, liver cirrhosis, and violence (Elder et al., 2010; Xu and Chaloupka, 2011). New revenues from alcohol tax increases can be used for prevention and treatment programs and to help offset societal costs caused by excessive drinking (Elder et al., 2010). The tax burden of higher alcohol taxes would fall disproportionately on excessive drinkers (Naimi et al., 2016).

☆ Declaration of interest: The authors have no conflict of interests to disclose.

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http://dx.doi.org/10.1016/j.ypmed.2017.08.013
Received 14 June 2017; Received in revised form 15 August 2017; Accepted 15 August 2017
Available online 16 August 2017

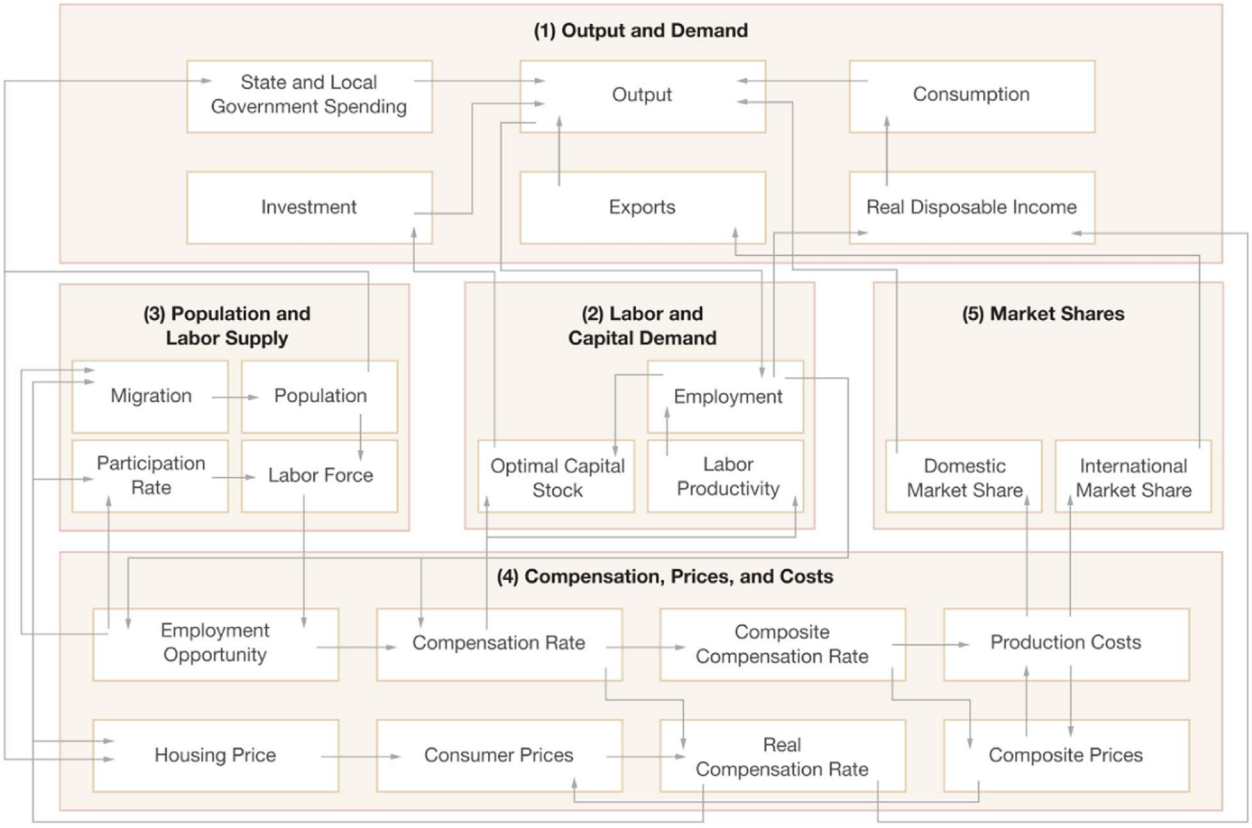

Fig. 1. Remi model.
Source: Gori GF, Paniccia R (2015). A structural multisectoral model with new economic geography linkages for Tuscany. *Paper in Regional Science* 94(S1):S175-S196.

Alcohol excise taxes have not kept pace with inflation over the years and, therefore, have become less effective at reducing excessive drinking (Wagenaar et al., 2009; Xu and Chaloupka, 2011). By June 2017, the federal beer excise tax that was doubled in 1991 essentially lost 45% of its value, as measured by Consumer Price Index. Current federal and state excise taxes typically constitute less than 10% of retail price of alcoholic beverages for beers and wines and less than 25% for distilled spirits (Alcohol Policy Information System, 2012). By comparison, excise taxes account for about 44% of retail price of cigarettes in the US (Orzechowski and Walker, 2013).

A common and influential argument against alcohol tax increases is that there will be significant job losses as a result of reduced alcohol sales (Jernigan et al., 2014; National Institute on Alcohol Abuse and Alcoholism, 2000). For years, similar claims of potential job losses in opposition to tobacco tax increases (Chase Econometrics, 1985; Price Waterhouse, 1992). More recently, the same claims have been used against sugar-sweetened beverage taxes (Hahn, 2009). These claims of job losses, however, were eventually refuted by independent peer-reviewed research showing that employment declines within the affected industry will be more than offset by the employment increases in the rest of economy (Warner et al., 1996; Warner and Fulton, 1994; Powell et al., 2014). The claims of job losses fail to account for migration of jobs to other parts of the economy as consumers switch spending to other goods and services, and the employment effects from government spending of new tax revenue (Warner and Fulton, 1994; Powell et al., 2014). To date, however, no peer-reviewed study using methods comparable to those already validated in the research literature has assessed changes in employment resulting from an alcohol tax increase (Jernigan et al., 2014).

2. Methods

We used a regional macroeconomic simulation model to simultaneously account for reallocated economic activities of consumers, the alcohol industry, and government in response to a new 5-cent per drink excise tax and a 5% sales tax on alcoholic beverages sold for on-premise and off-premise consumption. We assumed standard drink sizes, i.e., 12-oz. beer, 5-oz. wine, and 1.5-oz. distilled spirits for excise tax calculations. We examined the employment impacts of these taxes in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin. These states were chosen to represent quintiles in a spectrum of alcohol-industry employment levels from a state with a relatively low percentage of alcohol-related employment to a state with a relatively high percentage of alcohol-related employment (from Arkansas to Florida, New Mexico, Massachusetts, and Wisconsin), based on employment data from the 2007 Economic Census (U.S. Census Bureau, 2007).

2.1. Regional macroeconomic simulation model

To examine the overall employment impacts of alcohol taxes, we used the Regional Economic Models, Inc. (REMI) model, which is a structural economic forecasting and policy analysis model widely used by state and regional governments for revenue and expenditure forecasting purposes. Previous studies have used the REMI model to calculate employment impacts of tobacco control policies (Warner et al., 1996; Warner and Fulton, 1994) and sugar-sweetened beverage taxes (Powell et al., 2014). Other studies have recently used the REMI model to examine the effect of a tax credit program in Michigan (Bartik and Erickcek, 2010) and the economic impact of the 9/11 disaster in New York (Treyz and Leung, 2009), for example.

Descriptions of the REMI model have been published elsewhere (Powell et al., 2014; Treyz and Treyz, 2004; Treyz, 1993). In brief, it is

a dynamic computational model with secondary and tertiary responses (i.e., feedbacks) between five major economic blocks: 1) Output and demand; 2) Labor and capital demand; 3) Population and labor supply; 4) Compensation, prices, and costs; and 5) Market shares. The five inter-linked economic blocks provide the REMI model with an integrated accounting of regional macroeconomic responses to policy-driven changes in the economy. The model integrates input-output, computable general equilibrium, econometric, and economic geography methods. It is a dynamic model with thousands of simultaneous equations, with simulations reflecting behavioral responses to wages, prices, and other economic factors, and accounting for differences in wages, productivity, and other factors across economic sectors. Fig. 1 provides an illustration of the model.

We utilized the detailed 169-sector version of the REMI model to simulate the employment impacts of alcohol excise and sales tax increases account for changes in alcohol demand, income and substitution effects, and government spending of additional tax revenues in the state economy.

2.2. Key inputs and assumptions used with the REMI model

We assumed alcoholic beverages consisted of beer, wine, and distilled spirits, which were manufactured by breweries (North American Industry Classification System (NAICS) 31,212), wineries (NAICS 31213), and distilleries (NAICS 31214), respectively. The three beverages were assumed to be distributed by wholesalers (NAICS 42) to food services and drinking establishments (NAICS 722) for on-premise consumption, and to retailers (NAICS 44–45) for off-premise consumption. Based on industry sales figures (Beverage Information Group, 2012), we assumed that 24% of all alcoholic beverages by volume were sold for on-premise consumption and 76% for off-premise consumption. We obtained state-level shipment data for beer, wine, and distilled spirits from the Brewers Almanac (2011).

The new alcohol taxes were assumed to apply on top of preexisting taxes. Following the recommendation of the Alcohol Policy Information System (APIS) (2012) we included both excise and sales taxes in our computation of preexisting tax levels. Therefore, our model of the alcohol price faced by consumers is stated as follows,

$$\text{price}_{ijk} = [(\text{net} - \text{of} - \text{tax price}_{ijk}) + \text{federal and state excise taxes}_{ijk}] \times (1 + \text{sales tax rates}_{ijk}), \quad (1)$$

where index i stands for either on-premise or off-premise consumption, index j stands for beer, wine, or distilled spirits, and index k stands for state (Arkansas, Florida, Massachusetts, New Mexico, or Wisconsin). Prices and taxes were expressed per gallon for calculation purposes, although we discuss them in other units in the paper for ease of interpretation. We obtained the national level net-of-tax alcoholic beverage prices from Klitzner (2014) for on-premise consumption ($1.89 per 12 oz. of beer, $2.51 per 4 oz. of wine, and $2.51 per 1.5 oz. of distilled spirits) and for off-premise consumption ($3.14 per six-pack of beer, $4.36 per fifth of wine, and $9.04 per fifth of distilled spirits). Federal excise taxes were $0.58 per gallon for beer, $1.28 per gallon for wine, and $10.80 per gallon for distilled spirits (after adjusting for proof). State excise taxes, including both specific and *ad valorem* excise taxes, were obtained along with information on sales tax exemptions from APIS (Alcohol Policy Information System, 2012). Information on sales tax rates consisting of state sales tax rates and average local tax rates was obtained from the Tax Foundation (State and Local Sales Taxes at Midyear, 2012). Federal excise taxes are collected from producers and importers, while state excise taxes are collected from wholesalers, and state sales taxes are collected from retailers. We made the conservative assumption that all tax increases are fully passed on to consumers, although evidence suggests that alcohol excise taxes tend to be overshifted to drinkers (Besley and Rosen, 1999; Young and Bielinska-Kwapisz, 2002). We also assumed that pre-tax alcohol price levels did not change in response to alcohol tax increases.

Economic theory predicts a reduction in alcohol consumption (i.e., quantity-demanded) by consumers as prices increase. Such relationships are typically described by the price elasticity of demand, which is a commonly used metric that relates a percent change in retail price to percentage changes in quantities. We calculated the estimated changes in the quantities of beer, wine, and distilled spirits purchased following a 5-cent per drink excise tax increase and a 5% sales tax increase, respectively, using published estimates for the price elasticities of demand for beer, wine, and distilled spirits (-0.50, -0.64, and -0.79, respectively) (Elder et al., 2010).

To avoid doubling counting, alcohol sales revenues were partitioned among alcohol industry sectors using gross margins, which add up to 100%. Using gross margins also helped to account for differences in employment practices and labor-capital intensities between industry sectors, i.e., between breweries, wineries, distilleries, wholesalers, retailers, and food services & drinking places. For the off-premise consumption of alcohol, we used the published gross margins for alcohol-retailers and wholesalers from the Census Bureau's 2009 wholesale and retail industry studies (U.S. Census Bureau, 2009a; U.S. Census Bureau, 2009b) to partition alcohol sales among retailers (26.9%), wholesalers (25.9%), and alcohol manufacturers (47.2%, the remainder), i.e., brewers, wineries, and distilleries.

There are no published figures for gross margins for on-premise consumption of alcohol, due to heterogeneity in the food serving industry. A pub, for example, may serve the same drink as a fine-dining restaurant but obtains a different margin by providing a different level of service. In the absence of published figures, because on-premise prices are significantly higher than for off-premise consumption, at the lower extreme we can assume that food services & drinking places receive the revenue that normally goes to retailers (26.9%) at the higher extreme, we can assume that all of the extra revenue from the higher prices paid by consumers goes to on-premise establishments by holding the portion that goes to manufacturers and wholesalers constant (implying about 80 to 84% goes to food services & drinking places). For our modeling, we used the average of these two scenarios to generate the gross margin for food services and drinking places (54.0% for breweries, 54.2% for wineries, and 56.3% for distilleries). Wholesalers and manufacturers were similarly allocated an average margin measure (15% to 17% for wholesalers and 27 to 29% for manufacturers) for on-premise consumption. We conducted sensitivity analyses by estimating the two extreme cases where food services and drinking places received the lower extreme (26.9%) versus the higher extreme (about 80 to 84%).

2.3. Gross and net simulation scenarios and government spending schemes

We simulated and compared the gross and the net employment impacts of alcohol tax increases. The gross employment impacts were obtained by imposing a 5-cent excise tax or a 5% sales tax on beer, wine, and distilled spirits with resulting reductions in alcohol sales. In the gross impact scenario, the disposable income that was previously spent on alcohol that would normally be spent on something else and the newly raised tax revenue were *not* returned to the economy. This would be equivalent to calculating estimates of the employment impact of tax increases by assuming that a job permanently disappears from the economy rather than being replaced with another (National Institute on Alcohol Abuse and Alcoholism, 2000).

In the net employment impact scenario, the income previously spent on alcoholic beverages and the newly raised tax revenues returned to the economy by allowing consumers and government to spend them on alternative goods and services according to preexisting spending patterns. For consumers, his is equivalent to accounting for income and substitution by reducing their income by the amount of alcohol tax revenue but also increasing it by the amount that would have been spent on alcohol in the absence of an alcohol tax increase. This net

Table 1
Estimated impacts of alcoholic beverage tax increases on alcohol sales and tax revenues in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin.[a]

	Arkansas	Florida	Mass.	New Mexico	Wisconsin
Baseline sales (million gallons)					
Beer	55.7	394.1	127.8	48.8	149.8
Wine	15.7	59.4	27.7	3.5	12.8
Distilled spirits	3.8	35.7	11.3	3.2	12.8
Population (millions)	2.9	18.8	6.5	2.1	5.7
5-Cent excise tax[a]					
Change in alcohol sales[b]	− 29.7	− 279.1	− 95.9	− 27.4	− 93.8
Beer	− 14.6	− 106.7	− 34.4	− 13.3	− 40.0
Wine	− 2.5	− 50.2	− 23.2	− 3.0	− 10.6
Distilled spirits	− 12.6	− 122.2	− 38.3	− 11.1	− 43.2
Change in alcohol tax revenue[b]	49.6	451.6	155.4	46.0	153.2
5% sales tax					
Change in alcohol sales	− 32.5	− 308.1	− 105.2	− 28.7	− 98.3
Beer	− 13.4	− 96.5	− 30.2	− 11.9	− 35.2
Wine	− 3.7	− 72.1	− 32.1	− 4.2	− 14.7
Distilled spirits	− 15.5	− 139.5	− 42.9	− 12.6	− 48.4
Change in alcohol tax revenue[b]	52.5	486.3	166.2	46.7	155.9

[a] Excise tax applies to standard alcoholic drink sizes (i.e., 12-oz. beer, 5-oz. wine, 1.5-oz. distilled spirits).
[b] In millions of dollars.

change in income is now available to be spent on goods and services based on existing consumer spending patterns for other goods and services and creating jobs in other sectors of the economy. For government, we modeled increased spending of new tax revenues, also based on existing government spending patterns. The government spending was assumed to occur at the state and local level.

We also modeled an alternative government spending pattern by earmarking the newly raised tax revenue to the health care sector, consisting of health practitioners (NAICS 6211–6213), outpatient, laboratory, and other ambulatory care services (NAICS 6214, 6215, 6219), home health care services (NAICS 6216), hospitals (NAICS 622), and nursing and residential care facilities (NAICS 623). The allocation to each sector was based on preexisting allocation patterns for 2012 within the REMI model.

3. Results

3.1. Impacts on sales and government tax revenues

Table 1 reports the estimated impacts of alcohol taxes on sales of beer, wine, and distilled spirits and alcohol tax revenue generated by these taxes in the five states. A 5-cent per drink excise tax increase is estimated to decrease alcohol sales in all states, with the largest decline occurring in Florida at $279.1 million and the smallest occurring in New Mexico at $27.4 million. A similar pattern holds for a new 5% sales tax on alcoholic beverages, with the largest estimated declines in alcohol sales occurring in Florida at $308.1 million and smallest in New Mexico at $46.7 million. Comparing across alcoholic beverages, the declines from the excise tax increases are the largest among distilled spirits and among beer in Florida, Massachusetts, and Wisconsin, compared to Arkansas or New Mexico. Sales declines for wine are disproportionately larger in Florida and Massachusetts compared to the rest of states (Arkansas, New Mexico, or Wisconsin).

3.2. Impacts on private and government employment

Table 2 reports simulated changes in employment within each state in response to the two alcohol tax increases. Both the gross and the net impacts are reported for each state. The gross impact accounts only for the direct effect of reduced alcohol sales, while the net effect also includes the substitution and income effects among consumers and the effects of governments spending new tax revenues. The gross total employment changes are consistently negative, regardless of state or industry sector. The largest gross total employment change occurs in Florida at − 3281 and − 4042 jobs in response to 5-cent excise and 5% sales tax increases, respectively. The smallest total employment changes occur in New Mexico at − 334 and − 390 jobs, respectively. Examining across individual industry sectors, the negative employment changes occurred in the alcohol industry sectors, including beverage manufacturing, retailers, wholesalers, and food service and drinking places. However, employment declines are larger in the rest of private sector due to the indirect association of other sectors with the alcohol industry through secondary goods and services, such as raw materials, transportation, worker health care, etc., that are provided as inputs into alcohol production. The total gross employment changes are consistently negative but very small in percentage terms, ranging from − 0.007% in New Mexico for a 5-cent excise tax increase to − 0.114% in Massachusetts for a 5% sales tax increase.

In comparison to the gross employment effects, the total net employment changes are consistently positive, ranging from 653 and 621 jobs in New Mexico and 4583 and 4493 jobs for Florida, in response to 5-cent excise and 5% sales tax increases, respectively. Examining individual industry sectors, the employment impacts are negative in the alcohol industry sectors but are positive in the rest of the private sector. The employment gains in the remainder of the private sector are smallest in Massachusetts and Wisconsin, which had the highest percentage of alcohol-related employment among the five states, and therefore would have had greater employment declines in directly associated economic activities. In contrast, the employment impacts are consistently positive for state and local government. In percentage terms, the net employment changes are positive and small, ranging from 0.014% in New Mexico in response to 5-cent excise tax increase to 0.089% in response to 5% sales tax increase in Massachusetts.

Our robustness checks using alternative gross margin assumptions that allocate the lower or the higher extremes of sales revenue to food service and drinking places show that the net total employment may increase or decrease by less than 100 jobs (not shown in the table).

Table 3 reports the simulated gross and net impacts of a 5-cent per drink excise tax increase and a 5% sales tax increase in 5 states by tax revenue allocation. As previously reported in Table 3, the gross employment impacts are consistently negative, but are positive when the substitution and income effects among consumers and the effect of governments spending new tax revenues are included. When the tax revenues are allocated to the health care sectors, the net employment changes are positive albeit smaller compared to the non-targeted allocation to general revenue spending.

4. Discussion

To our knowledge, this is the first comprehensive assessment of the impact of alcohol tax increases on employment, taking into account the substitution and income effects of the tax increase. The regional macroeconomic simulation from this study showed that a 5-cent per drink excise tax increase on alcoholic beverages would result in overall net employment gains of 802, 4583, 978, 653, and 1167 jobs in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin, respectively. Similarly, a 5% sales tax would increase net employment by 789, 4493, 898, 621, and 991 jobs in these five states. These employment changes are out of over 1 million existing jobs in Arkansas and in New Mexico, 3.6 million in Wisconsin, 4.5 million in Massachusetts, and 10.5 million in Florida. Therefore, in percentage terms, the estimated net employment gains represent relatively small increases, from 0.014% of overall employment in New Mexico to 0.08% in Massachusetts.

Table 2
Simulated impacts of alcohol tax increases on employment (number of jobs) with the additional tax revenues allocated to general revenues in selected sectors in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin.

	Arkansas		Florida		Mass.		New Mexico		Wisconsin	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Changes in employment from 5-cent excise tax										
Total employment change	− 323	802	− 3281	4583	− 1009	978	− 334	653	− 1078	1167
Private sector (non-farm)	− 291	− 21	− 3029	− 15	− 940	− 281	− 293	− 13	− 990	− 385
Beverage manufacturing[a]	− 16	− 16	− 155	− 154	− 55	− 55	− 21	− 21	− 45	− 45
Retailers	− 89	− 66	− 818	− 590	− 280	− 245	− 85	− 57	− 303	− 264
Wholesalers	− 45	− 35	− 442	− 327	− 131	− 107	− 48	− 38	− 151	− 126
Food services & drinking places	− 86	− 68	− 667	− 513	− 225	− 192	− 71	− 53	− 282	− 245
Rest of private sector[b]	− 850	596	− 8392	2984	− 2640	98	− 852	471	− 2849	102
State and local government	− 32	822	− 252	4597	− 69	1259	− 41	666	− 89	1551
Percent total employment change	− 0.020	0.050	− 0.031	0.043	− 0.092	0.089	− 0.007	0.014	− 0.030	0.032
Changes in employment from 5% sales tax										
Total employment change	− 408	789	− 4042	4493	− 1248	898	− 390	621	− 1315	991
Private sector (non-farm)	− 374	− 82	− 3769	− 460	− 1173	− 449	− 348	− 57	− 1225	− 589
Beverage manufacturing	− 17	− 17	− 166	− 165	− 58	− 58	− 21	− 21	− 44	− 44
Retailers	− 65	− 39	− 637	− 380	− 209	− 168	− 62	− 32	− 214	− 170
Wholesalers	− 45	− 33	− 444	− 317	− 130	− 103	− 45	− 35	− 142	− 116
Food services & drinking places	− 189	− 169	− 1467	− 1296	− 501	− 465	− 150	− 130	− 608	− 568
Rest of private sector	− 909	618	− 9058	3171	− 2818	120	− 866	476	− 2940	72
State and local government	− 34	871	− 274	4953	− 74	1348	− 42	678	− 91	1581
Percent total employment change	− 0.026	0.050	− 0.038	0.043	− 0.114	0.082	− 0.009	0.014	− 0.037	0.028

[a] Beverage manufacturing consists of wineries, breweries, and distilleries.
[b] Rest of private sector consists of private sector employment other than beverage manufacturing, retailers, wholesalers, and food services & drinking places.

Table 3
Simulated impacts of alcohol tax increases on employment (number of jobs) by government revenue allocation in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin.

		5-Cent excise tax	5% sales tax
Arkansas	Gross	− 323	− 408
	Net (general revenue)	802	789
	Net (health care sector[a])	67	11
Florida	Gross	− 3281	− 4042
	Net (general revenue)	4583	4493
	Net (health care sector)	1048	687
Massachusetts	Gross	− 1009	− 1248
	Net (general revenue)	978	898
	Net (health care sector)	250	121
New Mexico	Gross	− 334	− 390
	Net (general revenue)	653	621
	Net (health care sector)	139	98
Wisconsin	Gross	− 1078	− 1315
	Net (general revenue)	1167	991
	Net (health care sector)	1064	887

[a] Health care sectors consist of health practitioners; outpatient, laboratory, and other ambulatory care services; home health care services; hospitals; and nursing and residential care facilities.

The relatively small changes in overall employment reported in this study are in marked contrast to claims of potentially large job losses - in the tens of thousands - as a result of alcohol tax increases. A recent report claims that abrogating the 1991 federal excise tax on beer "could restore an estimated 50,000 jobs to the US economy."(Beer Institute, 2013) Another recent report asserts that 160,000 hospitality industry jobs may be lost if the alcohol tax policies of the 1990s are repeated (TaxFacts, 2014). The methodologies behind these claimed job losses remain unclear, although it is clear that these estimates do not account for the job gains in other sectors of the economy resulting from changes in consumer spending patterns and government spending of new tax revenues. While it is true that some jobs losses would occur within the alcohol industry and alcohol-serving establishments, they will be more than offset by job gains in the rest of the economy as consumers and producers shift their purchases away from alcoholic beverages to non-alcohol-related goods and services, and governments spend the additional tax revenues raised.

This study has a number of limitations. First, we simulated employment impacts in selected states, although we found that the results were consistent in those states and are likely to be generalizable to other states. Second, we did not attempt to model substitution between different types of alcoholic beverages (beer vs. wine vs. distilled spirits) because of the lack of reliable published estimates of cross-price elasticities of demand. The exclusion of cross-product substitution, however, likely made our results more conservative because substituting beer consumption with wine, for example, would have replaced alcohol-related jobs with other alcohol-related jobs. Third, we examined the effects at the state level, although some cities and municipalities can impose their own alcohol taxes. Thus, our results may speak more to regional than local economies. Fourth, we assumed that price elasticities and the pass-through of the tax to price were the same in the five states, given that there is no evidence on differences in elasticities or tax pass-through among states. Fifth, we did not explicitly model productivity gains due to reductions in alcohol-related illnesses and absenteeism. Sixth, we were limited by the levels of disaggregation found within the REMI simulation and assumed that the alcohol industry was similar regardless of location, although heterogeneity may exist between national breweries, for example, and microbrewers who are typically exempt from state alcohol taxes. Despite these limitations, the use of the REMI model allowed us to calculate the net impacts of alcohol taxes while taking into account income and substitution effects and the stimulative effects of new government revenue spending.

Based on our findings, we conclude that increases in state-level alcohol taxes would not lead to overall net job losses in the respective states. Increased alcoholic beverage taxes would shift jobs from alcohol-related sectors to other sectors of the economy, but the overall impact on the total number of jobs is positive and relatively small. The public health goal of alcohol tax increases is to reduce excessive alcohol consumption and its consequences. Our findings show that this approach would not have the unintended consequence of job losses.

Acknowledgments

This research was funded by Contract Number 200-2011-40800 from the Centers for Disease Control and Prevention. The manuscript

content is solely the responsibility of the authors and does not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services. Mohammad Aymen Waqar provided research assistance.

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