Fiscal and Economic Impacts of Beverage Excise Taxes Imposed by Maine Public Law 629

Gabe, Todd

University of Maine

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FISCAL AND ECONOMIC IMPACTS OF BEVERAGE
EXCISE TAXES IMPOSED BY MAINE PUBLIC LAW 629 *

Todd Gabe
Associate Professor

School of Economics, University of Maine

Executive Summary:
The purpose of this study is to examine the fiscal and economic impacts of the new and increased taxes on malt liquor (i.e., beer), wine and soft drinks imposed by Public Law 629. By fiscal impacts, we mean the increase in beverage taxes that would be paid by households and businesses. Our analysis suggests that Public Law 629 would lead to an estimated $40.7 million in additional beverage taxes per year. Economic impacts refer to the changes in statewide economic activity (e.g., sales revenue, employment and income) that would occur as a result of the increased beverage taxes. Here, we find that – including multiplier effects – Public Law 629 would lead to an estimated statewide reduction in sales revenue of $26.3 million per year, with an accompanying loss of 395 full- and part-time jobs that provide $8.8 million in income (i.e., wages and salaries). Empirical results presented in this study are based on actual data and, in some cases, figures that are estimated using information from government and beverage industry sources. In addition, findings from published academic studies are used to make assumptions about the extent to which the beverage excise taxes imposed by Public Law 629 will raise retail prices and, in turn, how strongly consumers will respond to these price hikes. Results presented in this report are meant to be one piece of information, considered along with other economic and non-economic issues, used to inform the debate about Public Law 629.

FISCAL AND ECONOMIC IMPACTS OF BEVERAGE
EXCISE TAXES IMPOSED BY MAINE PUBLIC LAW 629

1.   INTRODUCTION

On November 4, 2008, Maine residents will vote on Question 1, a People's Veto

that asks: "*Do you want to reject the parts of a new law that change the method of*

funding Maine's Dirigo Health Program through charging health insurance companies a

fixed fee on paid claims and adding taxes to malt liquor, wine and soft drinks?" The law

referred to in Question 1 is Maine Public Law 629 ("An Act to Continue Maine's

Leadership in Covering the Uninsured"), which imposes new and increased beverage

excise taxes in Maine to fund the Dirigo Health Program.[1]

The purpose of this report is to examine the fiscal and economic impacts of the

taxes on malt liquor (i.e., beer), wine and soft drinks imposed by Public Law 629. By

fiscal impacts, we mean the additional beverage taxes that would be paid by households

and businesses. Our analysis suggests that Public Law 629 would lead to an estimated

$40.7 million in additional beverage taxes. Economic impacts refer to the changes in

statewide economic activity (e.g., sales revenue, employment and income) that would

occur as a result of the increased beverage taxes. Here, we find that – including

multiplier effects – Public Law 629 would lead to an estimated statewide reduction in

sales revenue of $26.3 million per year, with an accompanying loss of 395 full- and part-

time jobs that provide $8.8 million in income (i.e., wages and salaries).

The fiscal impact analysis consists of four parts. In part one, we examine the

current status of the "beverage industry" in Maine. This includes information on the

amounts of beer, wine, soft drinks and sports drinks sold in the state, as well as the tax

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[1]   Public Law 629 also raises taxes on health insurance claims, which is not examined in this report.

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revenue that is generated by the current excise taxes on beer and wine. Data used in this part of the project are obtained from government (e.g., Maine Office of Fiscal and Program Review, U.S. Bureau of Labor Statistics, U.S. Census Bureau) and industry (e.g., American Beverage Association) sources. This analysis will provide a "snapshot" of the Maine beverage industry, as well as a benchmark to assess the impacts of the beverage excise taxes imposed by Public Law 629.

Part two of the fiscal impact analysis focuses on the extent to which the excise taxes on alcoholic beverages (i.e., an increase in the current taxes on beer and wine) and soft/sports drinks (i.e., new taxes) are "passed through" to consumers in the form of higher prices. This part of the analysis relies heavily on published academic studies related to the connection between retail prices and taxes. These studies generally find that beverage taxes are "over shifted" to consumers; in other words, retail prices rise by an amount that is greater than or equal to the size of the tax. With this information in hand, part three of the fiscal impact analysis examines the effects of the increased retail prices on the amounts of alcoholic and nonalcoholic beverages sold in Maine. This part of the project uses estimates from published academic studies on the price "elasticity" of demand for beverages. Price elasticity of demand is a measure of how strongly consumers respond to a price change by purchasing more or less of a good or service.

The final part of the fiscal impact analysis involves estimating the additional beverage taxes that would be paid by households and businesses as a result of Public Law 629. This is determined by subtracting the amount of beverage excise taxes that are currently collected in Maine (using data from the Maine Office of Fiscal and Program Review) from our estimates of the taxes that would be collected under Public Law 629.

Our economic impact analysis consists of two parts. First, we look at the reduction in net (i.e., after taxes) sales revenue associated with the additional beverage taxes imposed by Public Law 629. This lost revenue, calculated using information from the fiscal impact analysis, provides the foundation for our estimates of the statewide job loss and reduction in earnings that would occur as a result of the increased beverage taxes. The second part of the economic impact analysis uses an input-output model (i.e., Maine IMPLAN model) to estimate the broader multiplier effects associated with the reduction in statewide beverage sales.

2.   STUDY CAVEATS

The following issues should be considered when interpreting the study findings. First, this report does not take a position on whether Public Law 629 is "good" or "bad." It simply estimates the effects of the law on beverage taxes, as well as the economic impacts of the statewide reduction in beverage sales revenue associated with the tax hike. Other aspects of the law need to be considered to make a judgment about whether Public Law 629 is "bad" or "good" for Maine.

Second, the study uses information from variety of sources, all of which are publicly available. Some of the information is "actual" data. For example, since the state already imposes excise taxes on alcoholic beverages, we can use tax revenue information from the Maine Office of Fiscal and Program Review to determine reasonably accurate annual sales volume figures (i.e., gallons sold) for beer and wine. On the other hand, some of the information used in this study is estimated. For example, since the sales of nonalcoholic beverages are not precisely tracked in Maine, we use information from a

variety of sources to estimate annual sales volume figures for soft drinks and sports drinks.

Third, due to data limitations, the analysis presented in this report does not examine all of the types of beverages that are subject to the excise taxes imposed by Public Law 629. Along with beer, wine, soft drinks and sports drinks, which are the focus of the study, Public Law 629 calls for new excise taxes on nonalcoholic beverages such as flavored waters, fruit drinks (containing less than 10 percent natural fruit juice), energy drinks and "ready-to-drink" teas (e.g., *Snapple*, *Lipton*). Industry statistics for bottled waters generally combine flavored and "pure" water, which is not subject to the new taxes, into a single category. Thus, information about flavored waters is difficult to obtain. Likewise, industry statistics for fruit beverages do not generally make a distinction based on the percentage of natural fruit juice included in the beverage.

By excluding these "other" nonalcoholic beverages from the analysis, the fiscal and economic impact estimates might be understated. As a way to compensate for the beverages not included in the study, we use a soft drink consumption estimate that is "on the high end" of the available published figures. Our estimate of annual soft drink sales in the northeast region is 52.0 gallons per capita (based on information from the Beverage Marketing Corporation as reported on the American Beverage Association website). By comparison, the 2006 Beverage Market Index (published in *Beverage World* magazine) shows a regional soft drink consumption figure of an estimated 44.5 gallons per capita.[2] So, in effect, our soft drink consumption estimate of 52.0 gallons per capita (compared to a lower published estimate of 44.5 gallons per capita) allows for an excess of 7.5 gallons

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[2] The 2006 Beverage Market Index also shows regional consumption figures for bottled water and fruit drinks (not including juice) of 32.1 gallons and 9.0 gallons per capita, respectively.

per capita to account for other beverage types (e.g., flavored waters, fruit drinks, etc.) that are not explicitly considered in the analysis.[3]

Fourth, the fiscal and economic impact analyses are based on retail price information for a limited selection of beverages. In reality, there is an almost endless number of beverage types (e.g., colas, red wines, light beers) and ways to consume a drink (e.g., in a glass at a bar, from a can purchased through a vending machine, from a 2-liter bottle at a picnic). However, in order to estimate the impacts of the new and increased excise taxes on the volume of beverage sales, we need to examine the tax hikes relative to an average retail price for the four broad beverage categories considered in the analysis.

For the purposes of this study, we calculate these averages using retail price information for nine popular beverages that are sold in Maine.[4] They are *Budweiser* (18-pack of 12-ounce cans), *Miller Lite* (12-pack of 12-ounce bottles), *Carlo Rossi* Chablis (1.5 liter bottle), *Robert Mondavi* Merlot (750 ml bottle), *Yellow Tail* Pinot Noir (750 ml bottle), *Coca Cola* (12-pack of 12-ounce cans), *Pepsi Cola* (8-pack of 12-ounce bottles), *Gatorade* (32-ounce bottle) and *Powerade* (10-pack of 12-ounce bottles). We collected price information for these beverages on September 13, 2008, at the *Hannaford* store located on Union Street in Bangor, Maine.

Fifth, the published academic studies considered in this report are based on data collected at different time periods from places outside of Maine. With respect to the extent to which beverage taxes lead to higher retail prices, there is strong evidence in all

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[3] This excess figure of 7.5 gallons per capita is less than 20 percent of the estimated regional per capita consumption of bottled water and fruit drinks.

[4] These beverages rank high in national sales (in their respective categories) according to the *Beverage World* magazine "State of the Industry Report '08."

of the studies we examined of retail prices that increase by amounts greater than or equal to the tax hike. Thus, as an estimate of the price increase in Maine, we assume that beverage prices will rise by an amount that is equal to the tax. With respect to the extent to which individuals respond to beverage price increases, we find that elasticity estimates from published academic studies vary widely. Thus, to minimize the influence of any single result, we calculate average elasticity figures (after eliminating the "high" and "low" values) that are used in the empirical analysis.

Finally, the extent to which households respond to the beverage price increases (i.e., price elasticity of demand) determines the relative magnitudes of the fiscal and economic impacts. If higher retail prices lead to only a slight reduction in the volume of beverage sales (i.e., demand is "inelastic"), then fiscal impacts will be relatively large compared to economic impacts. This is because, if the volume of beverage sales only dips slightly, the higher excise taxes are applied to a larger amount than would be the case if beverage sales experience a substantial decline. Likewise, the economic impacts are determined by the reduction in the volume of beverage sales, which would be small if households do not respond very much to the tax hikes.

On the other hand, economic impacts will be relatively large compared to fiscal impacts if higher retail prices result in sharp reductions in the volume of beverage sales (i.e., demand is "elastic"). This is because the higher excise taxes are applied to a relatively small quantity of output (that is, if the volume of sales falls by a large amount). However, a sharp reduction in the volume of beverage sales would translate into large economic impacts (e.g., reduced sales revenue, job loss).

3.   FISCAL IMPACT ANALYSIS

3.1   *Current status of the Maine beverage industry*

The first part of the fiscal impact analysis involves estimating annual beverage sales volume in Maine. Table 1 focuses on statewide sales of beer and wine, two of the beverages that are subject to increased excise taxes imposed by Public Law 629. Since the state currently levies excise taxes on alcoholic beverages, we can use information on the amounts of taxes collected and the excise tax rates to estimate the volume of beer and wine sales. In FY 2007, the state collected $7,107,951.50 in malt liquor excise taxes.[5] Based on an excise tax rate for malt liquor of 25 cents per gallon, we estimate annual statewide beer sales of 28.4 million gallons. In FY 2007, the state collected $1,136,688.79 in (table) wine excise taxes.[6] Based on a tax rate of 30 cents per gallon, we estimate annual statewide wine sales of 3.8 million gallons.

Table 2 provides an estimate of annual statewide soft drink and sports drink sales, two nonalcoholic beverages that are subject to new excise taxes imposed by Public Law 629. We estimate statewide soft drink sales of 66.8 million gallons per year. This is calculated as the U.S. per capita annual consumption of soft drinks (54.3 gallons per year), adjusted for regional differences (according to the U.S. Bureau of Labor Statistics, household expenditures in the northeast region are 95.8 percent of the national average). Based on an adjusted average per capita consumption figure of 52.0 gallons of soft drinks per year, we estimate annual statewide soft drink sales of 66.8 million gallons.

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[5]   Alcoholic beverage excise tax information is from the Maine Office of Fiscal and Program Review.

[6]   This is the figure for out-of-state producers. The state also collected less than $10,000 in excise taxes from in-state wineries.

Similarly, we estimate annual statewide sports drink sales of 5.4 million gallons. This is calculated as the U.S. per capita consumption of sports drinks (4.4 gallons per year), once again adjusted to reflect the fact that household expenditures on nonalcoholic beverages are lower in the northeast region compared to the national average. Based on an adjusted average annual consumption figure of 4.2 gallons per person, we estimate statewide sports drink sales of 5.4 million gallons per year.

Information shown in Table 2 suggests that a total of 72.2 million gallons of soft drinks and sports drinks are sold in Maine per year. To provide an idea of the robustness of the approach used to estimate nonalcoholic beverage sales, we use the same method to estimate alcoholic beverage (i.e., beer and wine) sales. These amounts are estimated as the U.S. per capita consumption of beer and wine (24.8 gallons per year), adjusted in this case to reflect the fact that household expenditures on alcoholic beverages are 4.4 percent higher in the northeast region compared to the national average. Based on an adjusted annual per capita consumption figure of 25.9 gallons per capita, we estimate annual statewide beer and wine sales of 33.2 million gallons. Comparing this figure to our original estimate of 32.2 million gallons of beer and wine sold per year, we find that – at least for alcoholic beverages – our method appears to provide a reasonably accurate (i.e., within three percent) estimate of beverage sales.

3.2   *Connection between retail prices and beverage taxes*

Step two of the fiscal impact analysis examines the extent to which the excise taxes on alcoholic beverages (i.e., an increase in the current tax) and nonalcoholic beverages (i.e., new taxes) are "passed on" to consumers in the form of higher retail

prices on beer, wine, soft drinks and sports drinks. While economic theory suggests that numerous factors (e.g., relative price elasticities of demand and supply, competitive nature of the industry) affect whether a producer/distributor absorbs the tax or raises the price of a good, the effects of an excise tax on retail prices is largely an empirical question (Kenkel 2005). Thus, we use results from other published academic studies to guide our analysis.

A study from Alaska, using data collected in 2002 and 2003, found that "alcohol taxes are more than fully passed through to beverage prices" (Kenkel 2005, p. 276). This means that the increase in the price of an alcoholic beverage actually exceeded the amount of the tax. For example, the retail price of a six-pack of *Budweiser* beer increased by an average of $0.87 (adjusted for inflation) in the year following the tax hike in Alaska, which imposed $0.41 of new taxes on that amount of beer. As another example, the average price of a 6-ounce glass of white wine increased by $0.25 (adjusted for inflation) in the year following a tax increase equivalent to $0.08 on that amount of wine. In total, the price increases (in all cases accounting for inflation) exceeded the amounts associated with the taxes in 13 of the 14 cases (related to beer and wine) considered in the paper. The lone exception was a 6-pack of *Miller* beer, which experienced a price increase that was equivalent to only 87 percent of the tax hike.

A study by Young and Bielinska-Kwapisz (2002), which used a geographically diverse data set containing information for U.S. states and Washington D.C., reported similar results. They found that retail prices of alcoholic beverages "rise by significantly more than the rise in excise taxes" (Young and Bielinska-Kwapisz 2002, p. 70). The analysis also shows that prices rise "quickly" in response to excise tax hikes, with an

adjustment period of only three months. In another study that did not focus on alcoholic beverages, Besley and Rosen (1999) found evidence of tax "overshifting" (i.e., price increases that exceeded the amounts implied by the taxes) on everyday items such as bananas, bread, *Crisco* shortening, milk and shampoo. Most relevant to our study, the analysis also shows that soft drink prices (e.g., 1-liter bottle of *Coca Cola*) increased by amounts more than would be predicted by the size of the tax.

To establish a likely connection between retail prices and the excise taxes imposed by Public Law 629, we collected pre-tax price information for several popular beverages that are sold in Maine. Table 3 shows the average retail price per gallon of beer, wine, soft drinks and sports drinks.[7] For each of the beverage categories, the average price per gallon is based on (at least) two brands of different "container" sizes. The average retail price ranges from $3.88 per gallon of soft drink to $36.98 per gallon of wine.[8]

Assuming that the new and increased beverage taxes are fully passed on to consumers (i.e., retail prices rise by the amount of the tax), Table 4 shows the relative magnitudes of the beverage price hikes associated with Public Law 629. It calls for a $0.54 tax per gallon of malt liquor, which exceeds the current $0.25 per gallon excise tax by $0.29 per gallon. This excise tax hike is equivalent to 3.5 percent of the average retail price of beer.[9] Public Law 629 raises the excise tax on wine to $0.65 per gallon, up

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[7]   These retail prices reflect current excise taxes on beer and wine. The average prices of beer and wine, without the existing taxes, would be an estimated $8.06 and $36.68, respectively.

[8]   The 2006 Beverage Market Index, published by *Beverage World* magazine, shows average retail prices in the northeast United States for beer, wine, soft drinks and sports drinks of $13.86, $36.74, $4.28 and $5.08 per gallon, respectively.

[9]   Public Law 629 makes a distinction between small breweries (those that produced less than 100,000 barrels of malt liquor in the previous year) and larger operations. Due to data limitations, we are not able to separate the analysis by producer size.

$0.35 from the current tax of $0.30 per gallon.[10] This increase is equivalent to 0.9 percent of the average retail price of wine. Finally, Public Law 629 calls for new excise taxes on nonalcoholic beverages of $0.42 per gallon of bottled beverage and $4.00 per gallon of syrup used to make "fountain" drinks. Using a 6 to 1 ratio of consumable beverage to syrup and information (from the 2006 Beverage Market Index) that shows fountain drinks make up 16.7 percent of total soft drink sales in the northeast region, we estimate a weighted average excise tax on soft drinks of $0.46 per gallon. The new excise taxes imposed by Public Law 629 are equivalent to about 11.9 percent and 8.1 percent of the average retail prices of soft drinks and sports drinks, respectively.

3.3   *Effects of Public Law 629 on Statewide Beverage Sales*

Step three of the fiscal impact analysis involves determining the extent to which beverage sales in Maine would respond to the price increases from the taxes imposed by Public Law 629. Elasticity is a measure of "by how much" consumers respond to price changes by purchasing more or less of a good or service. Numerous published academic studies have examined the price elasticity of demand for alcoholic and nonalcoholic beverages. Estimates from several relevant studies are summarized in Table 5. Elasticity figures vary due to differences in the time period considered, region of study, assumptions related to consumer demand theory, and the approach used in the empirical analysis. For these reasons, instead of relying on a single elasticity estimate, we use an average elasticity (after omitting the high and low values) based on the results from all of the studies considered.

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[10]   Public Law 629 makes a distinction between small wine producers (i.e., less than 20,000 gallons produced per year) and larger wineries. Due to data limitations, we are not able to separate the analysis by producer size.

The average elasticity figure for beer of -0.45 suggests that a 10-percent increase in the price of beer would lead to a 4.5-percent decrease in the volume of beer sales. As shown in Table 4, the increased excise taxes on malt liquor imposed by Public Law 629 are equivalent to 3.5 percent of the pre-tax price of beer. Applying an elasticity estimate of -0.45 to a 3.5 percent price hike, we show in Table 6 that the volume of beer sales in Maine would fall by an estimated 1.6 percent as a result of Public Law 629. This would be a decrease in sales of 454,909 gallons, relative to a current statewide sales volume of 28.4 million gallons per year.

The average elasticity figure for wine of -0.40 suggests that a 10-percent increase in the price of wine would lead to a 4.0-percent decrease in the volume of wine sales. The increased excise taxes on wine imposed by Public Law 629 are equivalent to 0.9 percent of the pre-tax price. Using an elasticity estimate of -0.40, we estimate that a 0.9-percent increase in the price of wine would lead to a reduction in wine sales of 0.4-percent. This would be a decrease in sales of 15,156 gallons of wine, compared to current statewide sales of 3.8 million gallons per year.

Because elasticity estimates are not generally available for sports drinks, we use soft drink elasticity figures to predict the decrease in sales of both types of nonalcoholic beverages. The new excise taxes are equivalent to 11.9 percent and 8.1 percent of the pre-tax average prices of soft drinks and sports drinks, respectively. Using an elasticity estimate of -0.40, we estimate that the amounts of soft drinks and sports drinks sold in Maine would decrease by 4.8 percent and 3.2 percent, respectively, due to the new excise taxes imposed by Public Law 629. This is equivalent to a 3.2 million gallon reduction in

the volume of annual statewide soft drink sales, and a decrease in sports drink sales of 172,582 gallons per year.

3.4   *Additional Beverage Taxes Associated with Public Law 629*

The final step of the fiscal impact analysis involves estimating the additional taxes that would be paid by households and businesses as a result of Public Law 629. This information is summarized in Table 7. Based on an excise tax imposed by Public Law 629 of $0.54 per gallon of malt liquor, and our estimates of 28.0 million gallons of beer sold at 3.5 percent higher beer prices (reflecting the $0.29 per gallon tax hike), we estimate that the state would collect $15.1 million in beer excise taxes under Public Law 629. This is $8.0 million more than the malt liquor excise taxes that were collected in FY 2007. Similarly, we estimate that households and businesses would pay an additional $1.3 million in wine excise taxes as a result of Public Law 629.

Based on the new $0.46 per gallon and $0.42 per gallon excise taxes on soft drinks and sports drinks sold in Maine, respectively, and our estimates of 63.6 million gallons and 5.2 million gallons of these beverages sold under Public Law 629, we estimate that the state would collect an additional $31.4 million in taxes on nonalcoholic beverages ($29.2 million on soft drinks, $2.2 million on sports drinks). Considering all four beverage types examined in the analysis, we estimate that households and businesses would pay an additional $40.7 million in beverage taxes as a result of Public Law 629.

4.   ECONOMIC IMPACT ANALYSIS

Public Law 629 imposes new and increased beverage excise taxes on beer, wine, soft drinks and sports drinks sold in Maine. These taxes, as they increase the retail prices paid for alcoholic and nonalcoholic beverages, would lead to a reduction in the volume of beverage sales and related economic activity in the state.[11] This section of the report examines the decrease in statewide economic activity (i.e., sales revenue, employment and income) associated with Public Law 629.

Table 8 shows our estimates of the reduction in beverage net sales revenue that would occur as a result of Public Law 629.[12] An estimated 454,909 gallon reduction the volume of beer sales, at an average price of $8.06 per gallon (not including the new or current excise taxes), would lead to an estimated $3.7 million reduction in statewide beer net sales revenue. Likewise, a 15,156 gallon reduction in wine sales, at an average pre-tax price of $36.68 per gallon (not including the new or existing excise taxes), translates into an estimated $555,922 in reduced wine net sales revenue. Of the four beverages considered, soft drink sales would see the largest sales decline as a result of Public Law 629. With an estimated reduction in sales of 3.2 million gallons (at an average retail price of $3.88 per gallon), Maine businesses would experience an estimated $12.4 million decrease in soft drink net sales revenue. Finally, at an average retail price of $5.16 per gallon, the 172,582 gallon drop in sports drink sales would translate into an estimated $890,523 in reduced net revenue.

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[11]   Since the demand for beverages is assumed (based on published academic studies) to be "inelastic," the price hikes from the excise taxes would result in an increase in gross (i.e., including the additional taxes) sales revenue. To estimate the impact of the new taxes on economic activity in the affected industries, we use net sales revenue (that does not include the current or new taxes).

[12]   Net sales revenue estimates are based on beverage prices that do not include the current or new excise taxes.

Considering all four of the beverages shown in Table 8, we estimate that the new and increased excise taxes imposed by Public Law 629 would result in a $17.5 million reduction in annual statewide beverage net sales revenue. This reduction in sales revenue (i.e., economic output) and the accompanying changes in employment and income make up the economic impacts associated with Public Law 629.

We use publicly available studies on the beer, wine and soft drink industries to apportion the $17.5 million in beverage sales revenue across the relevant industry sectors in Maine. For example, a study on the Maine beer industry shows its direct contribution to the state economy of $303.1 million is made up of $44.6 million (14.7 percent), $61.5 million (20.3 percent) and $197.0 million (65 percent) in statewide sales revenue to the brewing, wholesale and retail sectors, respectively.[13] Thus, we assume that the $3.6 million reduction in beer sales revenue associated with Public Law 629 translates into a $538,985, $744,313 and $2.4 million decrease in revenue to the brewing, wholesale and retail sectors, respectively. Across all four beverage types, we assume that the $17.5 million in reduced net sales revenue is made up of a $4.3 million reduction in revenue to producers (e.g., breweries, wineries, bottlers) and wholesalers, and a $13.2 million reduction in revenue to retailers, restaurants and bars.[14]

Table 9 summarizes the economic impacts associated with Public Law 629. As described above, the direct impact on statewide economic output is the reduced net sales revenue of $17.5 million. Direct employment and income figures are estimated, using the

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[13]   This information is from a 2007 report titled "The Beer Institute Economic Contribution Study: Methodology and Documentation," prepared for The Beer Institute by Guerrilla Economics, LLC.

[14]   Information on the wine industry is from a 2007 report titled "The Impact of Wine, Grapes and Grape Products on the American Economy," produced by MKF Research LLC. Information on the soft drink industry is from a 2007 study on the economic impact of the nonalcoholic beverage industry in Maine, prepared by John Durham and Associates.

Maine IMPLAN model, based on average output and earnings per worker in the manufacturing (e.g., breweries, wineries), wholesale, retail and service (e.g., restaurants and bars) sectors that are directly affected by the $17.5 million in lost revenue to the beverage industry. Estimates from the Maine IMPLAN model show that $17.5 million in beverage sales revenue corresponds to 295 full- and part-time jobs, and $5.9 million in wages and salaries that are directly associated with the reduced beverage sales.

Along with a the direct economic impacts described above, Public Law 629 would result in additional lost revenue, employment and income due to a process commonly referred to as "multiplier effects." Multiplier effects, estimated using the Maine IMPLAN model, capture the reduced "indirect" spending of Maine businesses impacted by the $17.5 million decrease in beverage net sales revenue, as well as the reduced "induced" spending of Maine workers. The IMPLAN model tracks the flows of expenditures through the statewide economy with detailed purchase and sales information for over 500 industrial sectors. Counting these estimated multiplier effects, we estimate that the new taxes imposed by Public Law 629 would lead to a total reduction in statewide sales revenue of $26.3 million, and a loss of 395 full- and part-time jobs that provide $8.8 million in income.

The ratio of total output ($26.3 million) relative to the direct impact of $17.5 million translates into an output multiplier of 1.5. This means that every $1.00 of reduced beverage net sales revenue associated with Public Law 629 results in a total reduction in statewide output of $1.50. The employment multiplier is 1.34, which means that every worker directly involved in the production and sales of beverages in Maine supports an additional 0.34 workers in other sectors.

To put the economic impact estimates into perspective, Table 10 shows IMPLAN multipliers for the sectors that make up the Maine beverage industry. As noted above, the direct reduction in beverage net sales revenue of $17.5 million is made up of a $4.3 million reduction in revenue to breweries, wineries, soft drink manufacturers and wholesalers, and a $13.2 million reduction in revenue to food and beverage stores, and food services and drinking places. For this reason, the beverage industry multipliers are heavily weighted by the multipliers for food and beverage stores, and food services and drinking places. Employment multipliers in these industries are low, particularly compared to the beverage manufacturing sectors, due to the part-time and seasonal nature of employment in restaurants, bars and retail stores.

5.   SUMMARY

The purpose of this report was to examine the fiscal (i.e., tax) and economic (i.e., sales output, employment and income) impacts of the new and increased excise taxes on beer, wine and soft drinks imposed by Public Law 629. Our analysis shows that these taxes, when passed on to consumers in the form of higher retail prices, would lead to an estimated 3.8 million gallon (3.7 percent, compared to current sales) reduction in the volume of annual statewide beverage sales. Focusing on fiscal impacts, we find that the new and increased beverage excise taxes would generate an estimated $40.7 million in tax revenue per year. This amount, which largely reflects an estimated $31.4 million in new taxes on soft/sports drinks, is equivalent to an almost 5-fold increase in the current excise taxes on beer and wine.

Looking at the economic impacts associated with Public Law 629, we find that the increased excise taxes would lead to a $17.5 million reduction in beverage net sales revenue. This represents lost revenue to Maine beverage producers (e.g., breweries, wineries, bottlers), wholesalers, retailers and service (e.g., restaurants and bars) businesses, which would lead to the direct reduction of an estimated 295 full- and part-time jobs, and $5.9 million in wages and salaries in these industries. Including multiplier effects, we estimate that the decrease in beverage sales associated with Public Law 629 would lead to a $26.3 million reduction in statewide sales revenue, a loss of 395 full- and part-time jobs, and an $8.8 million decrease in wages and salaries.

The empirical analysis presented above is subject to the following caveats, discussed in section 2 of the report. Our results are based on actual data and, in some cases, figures that are estimated using information from government and beverage industry sources. In addition, the analysis presented in this report does not examine all of the types of beverages that are subject to the excise taxes imposed by Public Law 629. The fiscal and economic impact analyses use findings from published academic studies to make assumptions about the extent to which the beverage excise taxes imposed by Public Law 629 would affect retail prices and, in turn, how consumers would respond to these price hikes. Finally, the results presented in this report are meant to be one piece of information, considered along with other economic and non-economic issues, used to inform the debate about Public Law 629.

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Table 1. Estimated Volume of Annual Beer and Wine Sales in Maine

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Estimated Beer Sales

    $7,107,951.50   Malt liquor excise taxes, FY 2007
             divided by
       $0.25   Excise tax per gallon of malt liquor, FY 2007

28,431,806 gallons	Estimated annual malt beverage sales

Estimated Wine Sales

    $1,136,688.79   Wine excise taxes, FY 2007
             divided by
       $0.30   Excise tax per gallon of wine, FY 2007

3,788,963 gallons	Estimated annual wine sales

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Sources: Maine Office of Fiscal and Program Review, and author's calculations.

Table 2. Estimated Volume of Annual Soft Drink and Sports Drink Sales in Maine

Estimated Soft Drink Sales

54.3 gallons		Annual U.S. per capita soft drink consumption
	$318	Annual household nonalcoholic beverage expenditures in northeast United States
	$332	Annual U.S. household nonalcoholic beverage expenditures
95.8 percent		Expenditures in northeast states relative to U.S. average
52.0 gallons		Annual per capita consumption in northeast United States
1,284,090		Maine population
66,772,680 gallons		Estimated annual soft drink sales

Estimated Sports Drink Sales

4.4 gallons		Annual U.S. per capita sports drink consumption
	$318	Annual household nonalcoholic beverage expenditures in northeast United States
	$332	Annual U.S. household nonalcoholic beverage expenditures
95.8 percent		Expenditures in northeast states relative to U.S. average
4.2 gallons		Annual per capita consumption in northeast United States
1,284,090		Maine population
5,393,178 gallons		Estimated annual sports drink sales

Sources: American Beverage Association, U.S. Bureau of Labor Statistics, U.S. Census Bureau, and author's calculations.

Table 3. Beverage Price Information

Beverage	Container Size	Total Ounces	Price	Price Per Gallon
Beer				
Budweiser	18-pack of 12-ounce cans	216	$11.99	$7.11
Miller Lite	12-pack of 12-ounce bottles	144	$10.69	$9.50
			average	$8.31
Wine				
Carlo Rossi, Chablis	1.5 liter bottle	50.7	$5.99	$15.12
Robert Mondavi, Merlot	750 ml bottle	25.35	$9.99	$50.44
Yellow Tail, Pinot Noir	750 ml bottle	25.35	$8.99	$45.39
			average	$36.98
Soft Drinks				
Coca Cola	12-pack of 12-ounce cans	144	$3.33	$2.96
Pepsi Cola	8-pack of 12-ounce bottles	96	$3.59	$4.79
			average	$3.88
Sports Drinks				
Gatorade	32-ounce bottle	32	$1.25	$5.00
Powerade	10-pack of 12-ounce bottles	120	$4.99	$5.32
			average	$5.16

Source: Author's calculations using price information collected on September 13, 2008, at the Union Street *Hannaford* in Bangor, Maine.

Table 4. Connection between Beverage Taxes and Retail Prices

Beverage	Price Per Gallon	Original Tax Per Gallon	New Tax Per Gallon	Change in Tax Per Gallon	Tax Hike as a % of Beverage Price
Beer	$8.31	$0.25	$0.54	$0.29	3.5 percent
Wine	$36.98	$0.30	$0.65	$0.35	0.9 percent
Soft Drinks	$3.88	$0.00	$0.46	$0.46	11.9 percent
Sports Drinks	$5.16	$0.00	$0.42	$0.42	8.1 percent

Sources: Maine Office of Fiscal and Program Review, Public Law 629, and author's calculations.

Table 5. Elasticities of Demand for Alcoholic and Nonalcoholic Beverages

Beverage	Elasticity	Study
Beer	-0.23	Gao, Wailes and Cramer (1995)
Beer	-0.84	Heien and Pompelli (1989)
Beer	-0.16	Nelson (1997)
Beer	-0.37	Nelson and Moran (1995)
Beer	-0.45	Nelson and Moran (1995)
Beer	-0.41	Nelson and Moran (1995)
Beer	-0.41	Nelson and Moran (1995)
Beer	-1.07	Uri (1986)
average	-0.45	
Wine	-0.40	Gao, Wailes and Cramer (1995)
Wine	-0.55	Heien and Pompelli (1989)
Wine	-0.52	Nelson (1997)
Wine	-0.18	Nelson and Moran (1995)
Wine	-0.36	Nelson and Moran (1995)
Wine	-0.15	Nelson and Moran (1995)
Wine	-0.38	Nelson and Moran (1995)
Wine	-0.88	Uri (1986)
average	-0.40	
Soft Drinks	-0.70	Heien and Pompelli (1989)
Soft Drinks	-3.18	Hoch et al. (1995)
Soft Drinks	-0.14	Kinnucan et al. (2001)
Soft Drinks	-0.17	Selvanathan and Selvanathan (2006)
Soft Drinks	-0.90	Uri (1986)
Soft Drinks	-0.52	Yen et al. (2004)
Soft Drinks	-0.23	Zheng and Kaiser (2008a)
Soft Drinks	-0.15	Zheng and Kaiser (2008b)
Soft Drinks	-0.16	Zheng and Kaiser (2008b)
average	-0.40	

Notes: We omitted the high and low estimates from each category before calculating average elasticity values. Some of the studies reported multiple elasticity figures because they estimated more than one type of consumer demand model.

Table 6. Estimated Effects of Public Law 629 on the Volume of Annual Beverage Sales in Maine

Beverage	Annual Sales	New Taxes as a % of Beverage Price	Price Elasticity	% Reduction In Sales	Reduction In Sales	Annual Sales (w/ Public Law 629)
Beer	28,431,806 gallons	3.5 percent	-0.45	1.6 percent	454,909 gallons	27,976,897 gallons
Wine	3,788,963 gallons	0.9 percent	-0.40	0.4 percent	15,156 gallons	3,773,807 gallons
Soft Drinks	66,772,680 gallons	11.9 percent	-0.40	4.8 percent	3,205,089 gallons	63,567,591 gallons
Sports Drinks	5,393,178 gallons	8.1 percent	-0.40	3.2 percent	172,582 gallons	5,220,596 gallons
total:	104,386,627 gallons			total:	3,847,736 gallons	100,538,891 gallons

Note: Elasticity figures are not available for sports drinks. Thus, we use elasticity estimates for soft drinks as a proxy for the price elasticity of demand for sports drinks

Table 7. Estimated Effects of Public Law 629 on Beverage Taxes in Maine

Beverage	Annual Sales	Original Tax Per Gallon	Annual Taxes	Annual Sales (w/ Public Law 629)	New Tax Per Gallon	Annual Taxes (w/ Public Law 629)	Increase in Taxes
Beer	28,431,806 gallons	$0.25	$7,107,952	27,976,897 gallons	$0.54	$15,107,524	$7,999,572
Wine	3,788,963 gallons	$0.30	$1,136,689	3,773,807 gallons	$0.65	$2,452,975	$1,316,286
Soft Drinks	66,772,680 gallons	$0.00	$0.00	63,567,591 gallons	$0.46	$29,241,092	$29,241,092
Sports Drinks	5,393,178 gallons	$0.00	$0.00	5,220,596 gallons	$0.42	$2,192,650	$2,192,650
						total:	$40,749,600

Table 8. Estimated Effects of Public Law 629 on Beverage Sales Revenue in Maine

Beverage	Annual Sales	Annual Sales (w/ Public Law 629)	Reduction in Sales	Price Per Gallon	Reduction in Sales Revenue
Beer	28,431,806 gallons	27,976,897 gallons	454,909 gallons	$8.06	$3,666,567
Wine	3,788,963 gallons	3,773,807 gallons	15,156 gallons	$36.68	$555,922
Soft Drinks	66,772,680 gallons	63,567,591 gallons	3,205,089 gallons	$3.88	$12,435,745
Sports Drinks	5,393,178 gallons	5,220,596 gallons	172,582 gallons	$5.16	$890,523
				total:	$17,548,757

Table 9. Economic Impacts of Reduced Beverage Sales Associated with Public Law 629

	Direct Effects	Multiplier Effects	Total Impact
Output	$17,548,757	$8,769,587	$26,318,344
Employment	295	100	395
Income	$5,931,680	$2,879,356	$8,811,036

Table 10. IMPLAN Multipliers for Selected Industrial Sectors

IMPLAN Sector	Output Multiplier	Employment Multiplier	Income Multiplier
Soft Drink and Ice Manufacturing	1.43	2.59	1.57
Breweries	1.30	2.29	1.65
Wineries	1.47	2.73	2.21
Wholesale Trade	1.49	1.69	1.43
Food and Beverage Stores	1.52	1.28	1.38
Food Services and Drinking Places	1.69	1.30	1.58

Source: IMPLAN