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A typology of beverage taxation: Multiple approaches for obesity prevention and obesity prevention-related revenue generation

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Abstract Obesity is a global problem. Sugar-sweetened beverages (SSB) are a leading contributor of added sugars in individual diets and thus to obesity. Governments have considered taxing SSBs to prevent obesity and generate revenue, but no 'one-size-fits-all' taxation approach exists. We describes three key considerations for governments interested in exploring beverage taxation: (i) what type of tax to apply plus how and where the tax is collected and presented to consumers; (ii) what types of beverages to tax; and (iii) the amount of tax needed to affect consumption and/or obesity prevention-related revenue generation. We offer examples of existing beverage taxes in the United States and internationally. The information will be useful to policymakers at all levels of government, as they continue to consider beverage taxation policies.
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Introduction

Consumption of highly caloric beverages laden with sugars has been linked to obesity and overweight problems worldwide.[1–3] Consumption

of sugar-sweetened beverages (SSBs) serves as the leading source of added sugars and a major energy contributor in the US diet[4,5] and is markedly higher for adolescents as compared with children, and for young adults, as compared with older adults.[6,7] Production and consumption of SSBs continues to increase worldwide. Consumption of *soft drinks* in Latin America and Eastern Europe alone is expected to grow by 15 per cent between 2009 and 2014.[8]

In response to growing concerns about SSB consumption and obesity, governments are pursuing policy options to reduce SSB access and/or increase SSB prices. The access-focused policies have centered on school-based restrictions, with recent evidence indicating that they are associated with reduced in-school access and/or consumption.[9,10] Governments have also begun adopting policies aimed at reducing SSB access in public venues, such as by requiring healthy vending and procurement policies for beverages sold/served in government-owned/operated locations.

On the price side, drawing from the success of tobacco taxation in reducing smoking prevalence among adults and youth, the public health community has called for SSB excise taxes of at least 1 cent / liquid ounce as a way to increase SSB prices significantly, reduce consumption, and reduce obesity rates.[11,12] In the United States, several state and local governments have considered imposing excise or significantly higher sales taxes on SSBs; however, to date, none of these recent efforts has succeeded.[13] Internationally, several European and Pacific countries have reinstated, introduced, or are considering similar taxes.[14–19]

Most of the current tax schemes – which, in the United States, at least, are based on small sales taxes[20] ranging from 1 to 7 per cent as of 1 January 2013 (see Table 1) – generally are too low to have meaningful impacts on overall consumption and weight/obesity.[21–25] A recent review by Powell and colleagues shows that SSB consumption has a price elasticity of −1.2, suggesting that a tax that raises prices by 20 per cent will reduce consumption by 24 per cent.[26] Recognizing this, recent proposals have called for sizeable taxes as a way to reduce caloric intake and consumption.[11] Smith and colleagues estimated that a tax-induced 20 per cent price increase on caloric sweetened beverages would, on average, reduce adult and children's daily caloric intake by 37 and 43 calories, respectively (3.8 and 4.5 pounds, respectively, annually).[27] Andreyeva and colleagues estimated that a 1 cent / ounce SSB tax in the United States could reduce daily caloric intake from 190–200 calories/day currently to 145–150 calories/day, assuming no substitution to other beverages.[28]

Table 1: State sales taxes on selected beverages as of 1 January 2013 (Source: Bridging the Gap Program 2013)

Type of beverage[a]	*Taxing states*			*Mean sales tax, all states*[c]
	Number of states applying a sales tax to beverage	*Mean sales tax, taxing states only*	*Range*[b]	
Regular carbonated soda	35	5.16	1.225–7	3.54
Diet carbonated soda	35	5.16	1.225–7	3.54
Isotonic beverages (sports drinks)	31	5.07	1.225–7	3.08
<50 per cent juice	30	5.04	1.225–7	2.96
RTD-sweetened teas	28	5.00	1.225–7	2.74
Bottled water	18	3.78	1–7	1.33
51–99 per cent juice	16	3.69	1–7	1.16
100 per cent juice	14	3.50	1–7	0.96

[a]Type of beverage assumes beverages available for individual purchase from a retail food outlet for off-premise/home consumption. Taxes on energy drinks were not compiled for this analysis.
[b]Does not include state-wide local taxes applied in three states: California (1 per cent), Virginia (1 per cent), and Utah (1.25 per cent). With the addition of the state-wide local rate, the maximum rate (range) for all beverages listed would increase to 7.25 per cent because of California's 1 per cent state-wide local tax.
[c]All states includes the 50 states and the District of Columbia and includes 0 percent for the states without a tax on the given beverage of interest.

The emerging evidence base and recommendations plus the need for additional revenues means governments worldwide are considering taxing SSBs. Such proposals are often met with extensive opposition – particularly from the beverage industry and from retailers concerned about job losses and/or lost revenue. Denmark recently repealed a 'fat tax' and a 'sugar tax' after the first year. The 'fat tax' had taxed foods high in saturated fat. It was criticized for raising food prices for consumers, making Danish products more expensive than imported foods, increasing administrative costs for food companies, and leading to job losses.[29,30] In a US example, the beverage industry spent US$4.1 million during the November 2012 election cycle to defeat ballot measures in Richmond and El Monte, California. Both measures would have added a penny-per-ounce tax to regular soda with monies to be dedicated to childhood obesity prevention activities. In comparison, supporters of the measures spent only $114 000.[31]

In addition to the political and societal challenges that policymakers face when considering such taxes, they must decide between several

policy approaches to beverage taxation. Recent papers by Thow[19] and Mytton[18] offer useful overviews of the issues and global context for taxing to achieve public health nutrition, and taxing of unhealthy foods and drinks, respectively. We believe that this is the first study to examine beverage taxation globally and to identify factors that decision makers should consider when seeking to tax beverages.

Key Factors to Consider about Beverage Taxes

There are three key factors to consider when contemplating beverage taxes: (i) what type of tax to apply plus how and where the tax is to be collected and presented to consumers; (ii) what types of beverages to tax; and (iii) the amount of tax that will be needed to affect consumption and/or obesity prevention-related revenue generation. While the taxation approach will vary by country, the following discussion reviews the key considerations. Table 2 summarizes key terms used throughout the remainder of this article and Table 3 summarizes the options we present.

(i) What type of tax to apply, how to apply the tax, where to collect the tax, and where the consumer ultimately sees the tax 'incorporated'? (Columns 1–4 of Table 3 summarize the options)

The tax may be in the form of an excise, sales, or a value-added tax (VAT) (see Table 2 for definitions). An *excise tax* would be levied before the *point of purchase,* so it would be presented to the consumer through an increase in the *shelf price* (that is, the point at which purchase decisions are being made). It may be a *specific tax* (for example, 1 cent / ounce, 1 cent / teaspoon of added caloric sweetener, $0.20/liter) or *ad valorem* (for example, 10 per cent of price). Excise taxes are easier to collect as they are typically collected earlier in the distribution process, when there are fewer entities from which to collect taxes. This lowers the administrative costs and the likelihood of tax evasion.

Sales taxes are *ad valorem taxes* applied at the point of purchase (that is, at the cash register), presented to the consumer only on the final cash register receipt, and collected at the point of sale. *VATs* are broad-based consumption taxes assessed on the value added to goods, such as SSBs, at each stage in the production/distribution/retail chain. Governments collect them fractionally, based on a system of partial payments at each

Table 2: Definitions of key terms

Term	*Definition*
Ad valorem tax	Tax imposed as a percentage of a given beverage's value (for example, 20 per cent of price)
ASB	Beverage containing noncaloric, artificial sweeteners (for example, aspartame, sucralose, saccharin)
Excise tax or excise duty	Tax levied on the manufacture, sale, use, or distribution of beverages. May also include a fixed fee or tax levied on an activity or an occupation, such as a privilege fee for selling fountain soda
GST	A VAT (see below) imposed on goods and services in some countries (for example, Australia)
HST	Canadian tax that combines the Canada GST with the provincial sales taxes The Canadian GST operates similar to a sales tax rather than a VAT
Point of purchase	The point at which the consumer purchases the beverage (that is, at the cash register or checkout)
Sales tax	An *ad valorem* tax levied on the sale of goods and services at the point of purchase
Shelf price	The price displayed in the case or on the shelf where the consumer selects the beverage (for example, refrigerated display)
Specific tax	A tax or levy assessed based on beverage volume or, perhaps, sugar volume (for example, $0.66/liter, 1 cent / ounce of sugar)
SSB	A calorically sweetened beverage
VAT	A tax applying to the production and distribution of commercial goods that is charged as a percentage of price at each stage in the production/distribution chain. It is considered a consumption tax because the ultimate 'cost' of paying the tax through each stage of the production/distribution chain is borne by the consumer at the place of purchase

Sources: www.businessdictionary.com/, ec.europa.eu/taxation_customs/taxation/vat/how_vat_works/index_en.htm, and Thow *et al* (2011).

stage in the chain.[32] In most cases, *goods and services taxes* (GST) and *harmonized sales taxes* (HST) are forms of VAT taxes (see Table 2).

Specific taxes offer several advantages over *ad valorem* taxes including, but not limited to, the following: (i) their impact does not fluctuate with the price; thus they reduce relative price gaps when imposed or increased, making it less likely that consumers will substitute down to cheaper beverage options in response to taxes and tax increases (for example, going to cheaper beverages or high volume options that are cheaper per ounce);[33] (ii) they produce more predictable/stable revenues, important if these are to be used to fund obesity prevention efforts. If the tax is high enough, it will induce larger declines in consumption;[27,34] (iii) they are not subject to the same sort of industry price manipulation as *ad valorem* taxes; and (iv) they are easier to administer because the taxes are based solely on volume. Specific taxes, however, have the disadvantage of needing to be regularly adjusted to keep pace with inflation.[34]

Table 3: Beverage taxation considerations

Type of tax to apply	*How tax is applied*	*Where tax is 'presented' to consumer*	*Where in the distribution chain tax is collected*	*Types of beverages to tax*	*Could affect weight outcomes*	*Generates revenue that could be dedicated for obesity prevention programs*
Excise	Specific (for example, 1 cent / ounce, 1 cent / teaspoon of added sugar, $/ liter) **OR** *Ad valorem* (for example, 20 per cent of price)	Shelf price	M, I, W, D, and/or R	SSBs, ASBs, or both	Depends on what beverages are taxed and whether SSB post-tax price is higher than the post-tax/final price for ASBs, 100 per cent juice, and water	Yes if sizeable tax (for example, 1 cent / ounce, 20 per cent of price); special fund could be established for dedicated tax revenues
Sales	*Ad valorem*	Point of purchase (register)	C	SSBs, ASBs, or both		
VAT (including GST and HST)	*Ad valorem*	Shelf price	M, I, W, D, R, C (but ultimately paid for by consumer at the final point of sale)	SSBs, ASBs, or both		

M = manufacturer, I = Importer, W = wholesaler, D = distributor, R = retailer, C = consumer.
Nonsales taxes include excise taxes as well as license/privilege fees/taxes.

In contrast, *ad valorem taxes* yield unstable revenues, as revenue fluctuates with the price (for example, 20 per cent of a $1.00 bottle yields $0.20 in tax revenue; whereas, if the price of the bottle declined to $0.90, a 20 per cent tax would only yield $0.18 in tax revenue).[34] In essence, the government subsidizes industry price cuts (that is, tax revenue declines) but benefits from industry price increases (that is, tax revenue increases). *Ad valorem* taxes are more likely to keep pace with inflation than specific taxes, assuming prices follow inflation trends. *Ad valorem* taxes may also induce 'trading down' to less expensive brands, and thus generate less revenue. Finally, on the basis of experiences with cigarette taxes, *ad valorem* taxes require strong tax administrative systems because of the potential for abusive *transfer pricing* to avoid taxes. (If the tax is imposed at the manufacturer level, manufacturers can set artificially low prices, pay a low tax, and then raise prices later in the distribution chain.)[34]

Like an *excise tax*, the *VAT* is usually built into the *shelf price* seen by consumers, but because the VAT is applied at each stage strong administrative systems are required to ensure that the tax is paid at each stage. *VAT* also is subject to the same limitations as *ad valorem* taxes generally (as described above).

(ii) What types of beverages to tax?

Options to consider when determining what types of beverages to tax – include taxing: (i) only SSBs; (ii) all sweetened beverages; (iii) all/most beverages; or (iv) selected beverages. *SSBs* include all beverages for liquid consumption sweetened with caloric sweeteners including, but not limited to, calorically sweetened carbonated beverages, ready-to-drink (RTD) packaged teas/coffees, isotonic beverages or sports drinks, energy drinks, less than 100 per cent juice and fruit drinks, and calorically sweetened waters.[28] In choosing to tax *only SSBs*, governments may decide to tax *all SSBs* or only *selected SSBs* (for example, only calorically sweetened carbonated beverages).

Or they may choose to tax *all sweetened beverages*, including both SSBs and *artificially sweetened beverages* (ASBs). ASBs are sweetened with noncaloric sweeteners (for example, aspartame, saccharin, or sugar substitutes) and include, but are not limited to, diet/no-calorie beverages and artificially sweetened RTD packaged teas/coffees, 0-calorie isotonic beverages, artificially sweetened less than 100 per cent juice drinks, and no-calorie, sweetened waters.

Alternatively, policymakers may opt to tax *all beverages*, regardless of sweetener, including SSBs, ASBs, 100 per cent juices, and bottled water or *selected beverages* (for example, all carbonated beverages and all juices with <100 per cent juice drinks). A jurisdiction need not tax all beverages at the same rate (see Table 1).

Besides the specific type of beverage, taxes may vary based on the beverage preparation method (for example, syrup, powder/mix). Sales taxes, however, are generally applied based on quantity (for example, gallons of syrup, per teaspoon of added sugar, per ounce, or gallons of beverage produced from the base product/mix).

(iii) What tax rate will affect consumption and obesity prevention-related revenue generation?

Given the link between SSB consumption and caloric intake,[6,7,35] an SSB-specific tax would reduce SSB consumption more than a more broadly based beverage tax, as the SSB-only tax will encourage substitution to no/low calorie options.[28,33] Thus, SSB-specific taxes have the dual benefit of increasing the absolute price, while increasing the price of SSBs relative to no/low calorie beverages. At least one study has suggested that SSB-specific taxes might lead consumers to substitute to other, nontaxed high-calorie beverages (for example, full-fat milk) and, therefore, might have little effect on body weight.[25] Yet, even if SSB-specific taxes had minimal impact on weight, they would reduce consumption of beverages with no nutritional value in favor of more nutritious or less caloric options. This would diminish some consequences of SSB consumption, including dental caries and diabetes.

We know that the larger the tax or relative price increase, the larger the impact on consumption, health-related outcomes and costs, and revenue generation (particularly in the beginning).[12,26] Public health experts have called for a $.01 / ounce tax on SSBs to reduce US consumption.[11] Andreyeva and colleagues estimate that such a tax would reduce US SSB consumption by 24 per cent and generate over $79 billion in new revenue between 2010 and 2015, available for obesity prevention programming.[28] An *ad valorem* tax equal to a 1 cent / ounce specific tax (for example, 20 per cent of the price) would have similar effects. A specific or *ad valorem* tax resulting in lower overall prices would have less of an effect on consumption, health outcomes, and revenues.

Examples of Beverage Taxation Approaches

We highlight here approaches to beverage taxation globally, presenting examples based on the type of tax: excise, sales, or VAT.

Approach 1: Excise or equivalent beverage taxes/fees

To date, no US jurisdiction has enacted an SSB-specific excise tax, although many have attempted to do so. Most proposals have included language that would dedicate a portion of the revenue generated to fund obesity prevention efforts.[13,36,37] Seven states in the United States – Alabama, Arkansas, Rhode Island, Tennessee, Virginia, Washington, and West Virginia – and the cities of Chicago and Baltimore do, however, apply excise and equivalent taxes/fees to a broad spectrum of SSB and ASB beverage bottles, syrups, and powders/mixes at the manufacturer, wholesaler, distributor, and/or retailer levels. No revenues have been dedicated to obesity prevention (see Table 4).[20,38–40]

Several countries, see Table 5, have adopted beverage excise or similar taxes/fees including, but not limited to, Algeria,[41] Samoa,[15,18] Belgium,[14] Denmark,[14] Fiji,[42] Finland,[14] France,[43] French Polynesia,[15,18] Guatemala,[44] Hungary,[41,45] Latvia,[14] Nauru,[15,18] and Norway (Customs Region Oslo and Akershus Information Office, personal communication, 25 October 2012). These taxes vary greatly by what beverages are taxed. Some tax only *soft drinks*, whereas others tax all sweetened beverages. They also vary by the type of tax applied (specific versus *ad valorem*). We do not know whether any country dedicates the revenues for obesity prevention.

Approach 2: Sales taxes on beverages

The second approach applies a sales tax, a percentage of the retail price. We are not aware of any government that applies a sales tax only to SSBs. Sales taxes are generally applied to both SSBs and ASBs as in states in the United States that currently apply small taxes to sodas, soft drinks, and other beverages (see Table 1). These sales taxes use several approaches, including (i) sales taxes applying to all items sold; (ii) by not including soft drinks (or similar beverages) in the sales tax exemption for food products; or (iii) as sales taxes applying to a wide variety of beverages. (Additional information on state taxes and definitions is available at www.bridgingthegapresearch.org/research/sodasnack_taxes/.)

Table 4: Current nonsales taxes on beverages in the United States (as of 1 January 2013)

Jurisdiction and citation(s)	*Taxable item*	*Types of beverages*	*Type of tax*	*Amount of tax*	*Taxable entity*[a]
Alabama (ALA. CODE §§ 40-12-69, -70)	Bottles	Soda water, carbonated drinks, fruit juices, flavored milk, soft drinks	License	Runs from: $40 state and $40 county tax for <16 bottles/min to $500 state and $500 county license tax for 150 bottles + /min $2.50/year	M
	Bottles, cans, or other sealed containers	Carbonated or other soft drinks	License		R
	Tap or dispensing	Soft drinks	License	Less than 5000 inhabitants: $10; 5000–15 000 people: $15; 15 000–25 000: $20; over 25 000: $25. All of these are in addition to another annual $2.50 retailer license tax	R
	N/A	Carbonated or other soft drinks	License	$50/year; does not apply to bottlers who have paid annual bottler license tax for operating plants in the state (see above)	W
Arkansas (ARK. CODE ANN. § 26-57-904)	Bottles powder/ other base product	Soft drinks	Privilege	$0.21/gal	M, W, D, R[b]
	Syrup	Soft drinks	Privilege	$2.00/gal	M, W, D, R[b]
Rhode Island (R.I. GEN. LAWS § 44-44-3)	Case of beverage containers sold	Beverage containers; includes containers for: carbonated soft drinks, soda water, mineral water, and bottled water	Unspecified nonsales tax	$0.04/case (does not apply to reusable or refillable containers)	W
Tennessee (Tenn. Code	Bottles	Bottled soft drinks: all nonalcoholic beverages, whether carbonated or not (for	Privilege	1.9 per cent of gross receipts	M, R, I, D

Ann. §67-5-402)		example, soda water, cola drinks, orangeade, grapeade, gingerale, and the like) and all bottled preparations commonly referred to as soft drinks; excludes fluid milk (with/without flavoring), 100 per cent juice or juice concentrate			
Virginia (VA. CODE ANN. § 58.1-1702)	Bottles	Carbonated soft drinks	Excise	Tax amount ranges from $50 for gross receipts ≤$100 000 to $33 000 for gross receipts > $50 million	W, D
Washington (WASH. REV. CODE ANN. § 82.64.020)	Syrup	Carbonated beverage syrup	Excise	$1/gal (fractional amounts taxed proportionally)	W, R
West Virginia (W. VA. CODE ANN. §§ 11-19-1, -2)	Bottles Syrup Dry mixture	Soft drinks: all nonalcoholic beverages, whether carbonated or not or any and all preparations commonly referred to as 'soft drinks', which are closed and sealed in glass, paper, or any other type of container, envelope, package, or bottle, whether manufactured with or without the use of any syrup. The term 'bottled soft drinks' shall not include fluid milk to which no flavoring has been added, or natural undiluted fruit juice or vegetable juice	Excise	$0.01/16.9 ounce (or fraction thereof) or each ½ liter (or fraction thereof) $0.80/gal or part thereof $0.84/4L or part thereof $0.01/ounce or on each 28.35g	D, M, W, R, I
Baltimore city (Balt. City. Code. 28 § 20-1)	Beverage containers	Fruit juice <10 per cent natural fruit juice content; RTD teas; any soda water, carbonated water, natural or artificial mineral water, or natural or spring water; any soft drink including cola, ginger ale, root beer, sasparilla, or any other carbonated or uncarbonated beverage referred to as a soft drink; excludes dairy products, nondairy milk substitutes,	Unspecified tax	$0.02/nonreusable container	D

Table 4: *Continued*

Jurisdiction and citation(s)	*Taxable item*	*Types of beverages*	*Type of tax*	*Amount of tax*	*Taxable entity*[a]
		anything with >10 per cent fruit juice, and any beverage container ≥2L			
Chicago city (Chicago City Code 3 § 45-01 et seq.)	Soft drinks sold at retail (including vending machines)	Soft drinks: any nonalcoholic beverage containing natural or artificial sweeteners including, but not limited to, soda, sport or energy drinks, sweetened tea, enhanced sweetened or flavored waters, drinks containing ≤50 per cent juice, and all other preparations commonly known as soft drinks; excludes beverages containing milk, milk substitutes, unsweetened teas, drinks with >50 per cent juice by volume, and unsweetened carbonated or uncarbonated water	Retailers' occupation tax	$0.03 of gross receipts	R
	Fountain soft drinks		Fountain soft drink tax	9 per cent of syrup price	Businesses selling syrup to retailers or retailers selling fountain soft drinks

[a]M = manufacturer, W = wholesaler, D = distributor, R = retailer, I = importer into the state

[b]In Arkansas, retailers also are subject to the privilege tax if the items are purchased from an unlicensed distributor, manufacturer, or wholesale dealer.

Table 5: Examples of non-US beverage tax approaches

Country, effective date if newly enacted (superscript numbers are the reference list numbers)	*Type of tax*	*Taxable beverage(s)*	*Ad valorem (in percentage)*	*Specific amount of tax ($ equivalent as of 17 October 2012)*
Algeria[38] *Finance Law 2012*, effective from 1 January 2012	Tax on sales volume of soft drink producers	Soft drinks	0.5	NA
Samoa[15,18]	Excise tax	Soft drinks	NA	0.40 tala/liter ($0.17/liter)
Australia[43]	GST	Soft drinks (carbonated beverages), RTD teas and coffees, <90 per cent juice drinks	10	NA
Belgium[14]	Excise tax on the person who releases the beverage for consumption on the Belgium market	Waters, including mineral and aerated waters, containing added sugars or other added sweeteners or flavorings	NA	3.7184€ per hectoliter ($4.88 per hectoliter or $0.001/liter)
Canada[44]	GST/HST	Carbonated beverages, <25 per cent fruit juice by volume	Ranges from 5 to 15 per cent depending on the province	NA
Denmark[14]	Excise tax	Mineral water, lemonade, and 'similar' nonalcoholic beverages with sugar content of >0.5 g/100 ml Mineral water, lemonade, and 'similar' nonalcoholic beverages with sugar content of <0.5 g/100 ml	NA	>0.5 g of sugar/100ml: DKK 1.58/liter ($0.28/liter) <0.5 g of sugar/100ml: DKK 0.57/ liter ($0.10/liter)
Fiji[39]	Import duty excise tax and VAT	Fruit juices Waters (including mineral and aerated) Containing added sugars or	Fruit juices only: 15 per cent VAT All other beverages listed subject to 15 per cent VAT	

Table 5: *Continued*

Country, effective date if newly enacted (superscript numbers are the reference list numbers)	*Type of tax*	*Taxable beverage(s)*	*Ad valorem (in percentage)*	*Specific amount of tax ($ equivalent as of 17 October 2012)*
		sweeteners or flavorings and other nonalcoholic beverages excluding fruit juices	and 15 per cent import excise duty	
Finland[14]	Excise tax on warehousers, registered consignees and persons importing taxable goods from outside the European Union or receive them in the course of business activity from another member state	Soft drinks, fruit juices, lemonade	NA	0.95€/kg or 0.11€/liter ($1.25/kg or $0.14/liter)
France[40] *Loi de finances pour 2012, Article 26 and 27*, effective from 1 January 2013	Excise tax	Beverages with added sugars and ASBs	NA	7.16€/100 liters ($9.39/100 liters or $0.094 / liter)
French Polynesia[15,18]	Production (excise) tax and consumption (import) taxes	Sweetened drinks	NA	60 fran/liter ($0.66)
Guatemala[41]	Specific tax/fee on the distribution and preparation	Carbonated beverages (including sugar-sweetened and artificially sweetened) and mixes or concentrates used to prepare carbonated beverages Isotonic beverages or sports drinks Fruit juices or nectars and	NA	Carbonated beverages: Q 0.18/liter ($0.02/liter) Isotonics/sports drinks: Q 0.012/liter ($0.015/liter) Fruit juices/nectars: Q 0.10/liter ($0.013/liter) Bottled water: Q 0.08/liter ($0.01/liter)

		yogurt beverages Bottled water (of <4 liters)		
Hungary[38,42] *Act CIII of 2011*, effective from 9 January 2011	Public health product tax (~excise tax)	Soft drinks (>8g sugar/100 ml) Energy drinks (>10 mg caffeine/100 ml) Pre-packaged sugar-sweetened products (>25–40g added sugar/100g depending on product)	NA	Soft drinks: 5 forints/liter ($0.024/liter) Energy drinks: 250 forints ($1.18/liter) Pre-packaged sugar-sweetened products: 100 forints/kg ($0.47/liter)
Ireland[45]	VAT	Soft drinks, fruit juices (including fresh-squeezed) sold in stores, vending machines, and 'take-away' businesses	23 (standard VAT)	NA
Latvia[14]	Excise tax on importers, approved warehousekeepers, registered consignor, registered consignee	Water and mineral water with added sugar or other sweetener or flavoring and other nonalcoholic beverages with added sugars or sweeteners	NA	5.2 LVL/100 liters ($9.80/100 liters or $0.098/liter)
Nauru[15,18]	Sugar 'levy'	Imported carbonated soft drinks, cordials, flavored milks, and drink mixes containing sugar	30	NA
Norway (Customs Region Oslo and Akershus Information Office, personal communication, 25 October 2012)	Excise duty (imports and domestic production)	Nonalcoholic beverages containing added sugar or artificial sweeteners	NA	NOK 2.85/liter ($0.50)
Other European Union countries[46]	VAT	VAT taxes on mineral waters[a], lemonade, and fruit juices	VAT ranges from 3 per cent in Lithuania to 24 per cent in Romania	NA

[a]These other countries may specifically tax soft drinks/carbonated beverages; however, the Europa documentation does not specifically detail the types of beverages subject to the VAT other than mineral waters, lemonade, and fruit juices.

Approach 3: VAT on beverages

We know of no government with a SSB-specific VAT, a VAT, or VAT-like tax (for example, GST or HST), but many tax a broad range of beverages (see Table 5). Australia,[46] Canada[47], Fiji[42] Ireland,[48] and other European Union countries[49] all apply a VAT or VAT-like tax (for example, GST or HST) to beverages. These VAT and VAT-like taxes are applied *ad valorem*, like the excise and sales taxes, but no country currently restricts the VAT to SSBs.

The European Union's VAT Directive requires member states to apply a standard rate of at least 15 per cent, but allows a reduced rate for certain categories of goods and services (for example, nonalcoholic beverages are eligible for a reduced VAT).[50] Data from 1 July 2012 indicate that VAT rates applied to SSBs such as lemonade and fruit juices (unspecified) vary greatly by European Union member countries – ranging from a low of 3 per cent in Luxembourg to a high of 27 per cent in Hungary (with a mean and median VAT of 16 per cent and 20 per cent, respectively).[49] No data exist on whether the VAT applies to other SSBs or ASBs in European Union countries, although mineral waters are taxed at the same rate as lemonade and fruit juices in all member countries except for Cyprus, Poland, and Portugal: Cyprus applies a 17 per cent VAT on mineral water but only a 5 per cent VAT on lemonade and fruit juices; Poland applies a 23 per cent VAT on mineral water and lemonade but only a 8 per cent VAT on fruit juices; and Portugal applies a 6 per cent VAT on mineral water but a 23 per cent VAT on lemonade and fruit juices.[49]

Summary

Governments have several beverage taxation options. In addition to choosing the type and the amount of the tax to apply (both of which will differentially affect price, consumption, health, and revenue outcomes), governments must also decide what types and forms of beverages to tax. From a public health perspective, governments should consider the options that will lead to the greatest overall price increases for SSBs while incentivizing or making healthy options (such as bottled water and 100 per cent juice) more affordable in comparison to SSBs.[11,26,28] Ultimately, the type of tax (specific excise tax), how broadly it is applied (all SSBs rather than just some), and how large it is (enough to raise the

price significantly) will determine its impact. Ideally, the SSB taxes will be large enough to generate substantial initial revenue for obesity prevention programs, reduce SSB consumption, and improve health outcomes.

Of course, the proposals will remain just that (proposals) unless the public health and advocacy communities find ways to counter the stiff political and financial opposition from the beverage industry. (We described above recent actions in Denmark and California.) Two key strategies that may help garner support is to: (i) frame policies as revenue-generating and (ii) identify health care expenditure savings (for example, reduced insurance claims for diabetes) resulting from such taxes.[51] In 2011, France took this approach and passed a beverage tax that was expected to raise 280 million euros ($389 million) in 2012 alone, with one-half of the funds slated for obesity prevention and the remainder to lower social taxes on farm labor.[52] At the same time, 2012 polling data from California indicated that 57 per cent of voters polled said that, if approved by the majority of the state's voters, they would support giving local governments the authority to tax products like alcohol, tobacco, junk foods, or sweetened beverages to help pay for obesity prevention programs.[53] In Vermont, 2011 polling data indicated that 49 per cent of those polled supported a tax on SSBs as one approach to the state's budget deficit.[54] Yet, a 2012 US national poll from Harris Interactive indicated that only 38 per cent of those polled would support a new tax on soft drinks with a high sugar content for improving health and safety.[55] Clearly, the public is divided on its support for this issue.

Research is needed to dispel industry-sponsored claims that there will be substantial regional job losses due to SSB taxes.[56] Tobacco companies made similar misleading arguments in opposition to tobacco taxes, but they were subsequently refuted by independent research.[57]

It is critical that proposals for beverage taxes be carefully crafted and advanced. Without policy proposals on the decisional agenda, the possibility of such taxes and the associated revenue generation and broader public health impacts will diminish to nonexistant.

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Correction

This article has been corrected online due to a small typographical error. No data has been changed.