# Knowledge Brief

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# BUSINESS, EMPLOYMENT, AND PRODUCTIVITY IMPACTS OF SSB TAXES

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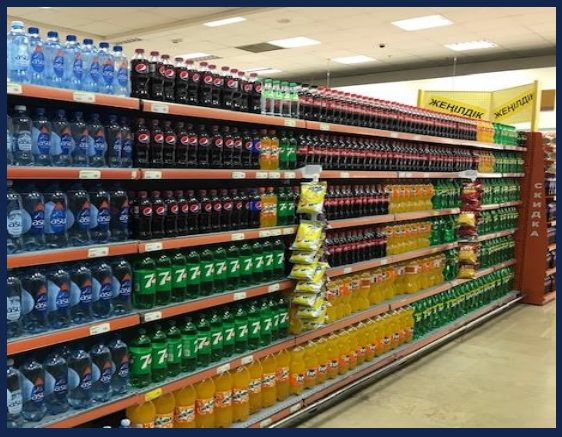

## KEY MESSAGES:

- Industry-sponsored studies reporting negative effects of SSB taxes on businesses, employment, and economic growth have been used very effectively to support arguments against SSB taxes and influence health-related policy.
- These studies tend to be based on questionable assumptions and provide only a partial picture of economic impacts.
- Emerging evidence from independent evaluation and modelling studies consistently identifies net positive economic impacts from SSB taxes, including overall employment and productivity gains, and increased government spending.

## Introduction

A common argument against taxes on sugar-sweetened beverages **(**SSBs)[1] is that reduced demand for SSBs will harm businesses, lead to job losses, and slow economic growth. Most of the limited evidence available on the economic impacts of SSB taxes comes from industry-sponsored reports, which have been used very effectively to support arguments against SSB taxes and influence health-related policy (Fooks et al 2019; Mounsey et al 2020).

However, these studies often report only selected outcomes that provide a partial picture of economic impacts within directly-affected sectors[2]. These studies are also frequently based on questionable assumptions, such as the products included in the analysis or the pass-through rate of the tax (Mounsey et al 2010).

Moreover, these studies do not take account of important effects such as:

- substitution effects (increased demand for untaxed products);
- reallocation of consumer spending to other goods and services;
- displacement of economic activity[3] to other parts of the economy;
- gains in productivity; and,
- increased government expenditure based on additional tax revenue (Powell et al 2014).

We reviewed available evidence from independent (i.e. non-industry funded) studies. This brief summarizes the impact of SSB taxes on business, employment, productivity, and government revenue generation.

## Findings

### IMPACTS ON BUSINESS

International experiences with implemented SSB taxes show that reduced demand for SSBs in response to a tax tends to be at least partially offset by increased demand for other packaged beverages, particularly diet drinks[4] and bottled water, as consumers switch to these untaxed products. In many countries, the same companies that produce SSBs also manufacture bottled water and diet drinks (Duckett and Swerissen 2016). Therefore, reduced total demand for packaged beverages produced by these companies is likely to be modest.

In addition, companies can (and have) responded to changes in consumer demand by reformulating products, renovating portfolios, and adapting marketing strategies. Interrupted time series analysis of the UK Soft Drinks Industry Levy (SDIL) found evidence of significant reformulation (to lower sugar content) and portfolio renovation (replacement of drinks with lower sugar varieties) in the three years following announcement of the tax (Scarborough et al 2020). The proportion of SSBs with sugar levels above the lower levy threshold (>5g per 100ml) fell by 34 percentage points between September 2015 and February 2019, from an expected level of 49% to 15%. There was little change in product sizes or the number of SSB products available to consumers.

Similarly SSB retailers typically sell a range of other food and beverage products. Therefore, the impact of an SSB tax on sales revenue is expected to be minimal, or may even be positive as consumers reallocate their spending to other food and beverage products. This has been reported in Berkeley, California (where a 1 cent per ounce tax on SSBs became effective in March 2015), with sales tax revenue in the food sector increasing 15% between July 2014 and December 2016: more than in any other sector (Silver 2017). Only about 5% of this increase could be attributed to sales taxes on the value of the soda tax passed through to beverage prices.

Impacts of SSB taxes on other sectors, including inputs (particularly sugar cane/beet), transport, and services, are likely to be context-specific. Modelling evidence from Brazil and Australia points to minimal or net zero impacts in these countries.

In Brazil, modelling of a hypothetical 10% increase in the production cost of SSBs due to a tax increase predicted minimal net negative economic impact, with a contraction of 4% in the SSB sector and a decrease of 0.02% in the total output of the economy (Balbinotto and Cardoso 2016). This study predicted a small drop in production of other beverages (-0.22%), and small declines in food services (-0.21%) and accommodation services (-0.04%). The tax would increase the retail price of SSBs by an average of 4% and would generate substantial revenue (BR$ 810 million).

In Australia, modelling of a sugar-based excise tax on SSBs of AU$ 0.40 per 100 grams of sugar (translating to a 20% increase in retail prices and generating a 15% reduction in consumption) predicted minimal impacts on the country´s sugar industry (Duckett and Swerissen 2016). Between 75-80% of Australian sugar production is exported as bulk raw sugar. A 15% reduction in SSB consumption in response to the tax would reduce domestic sugar demand by roughly 50,000 tonnes (1% of all sugar produced in Australia). Any localised transition costs associated with diverting this production to export markets could be minimised with a small government transition package.

### IMPACTS ON EMPLOYMENT

Emerging evaluations of implemented SSB taxes report no evidence of job losses in the beverage industry or retail sectors, and even gains.

Two years after the introduction of a 1 peso per litre (approximately 10%) excise tax on SSBs in Mexico in January 2014, interrupted time series analysis identified no impact on employment levels in the country´s beverage industry (Guerrero-López et al 2017). There was a very small, but statistically significant, positive trend in employment in commercial (retail) stores over the first 12 months post-tax (monthly average increase of 0.3%), and a small, but statistically significant, decreasing trend in the national unemployment rate in the first three years post-tax (average monthly reduction of 2%) (Guerrero-López et al 2017).

Similarly, an early evaluation of the 1.5 cents per ounce excise tax on SSBs and diet drinks implemented in Philadelphia in January 2017 found no statistically significant changes in monthly unemployment claim filings in supermarkets, soft drink manufacturers, all potentially-affected industries (including grocery and other retail stores, and restaurants), or total industries in Philadelphia compared to neighbouring counties in the first 14 months post-tax (Lawman et al 2019).

In Berkeley, California, employment in the food sector increased 7% between July 2014 and June 2016 (15 months post-tax), with a 19% increase in employment in limited service restaurants (Silver 2017).

Modelling of a 10% SSB tax in Brazil predicted a loss of nearly 15,000 jobs, the majority of which (62%) would be in the food services sector (Balbinotto and Cardoso 2016). Approximately one quarter (23%) of job losses

would be in the SSB manufacturing sector. However, this study did not account for potential job gains in other sectors due to reallocation of consumer spending and government expenditure of new tax revenue.

SSB taxes can increase employment elsewhere in the economy as consumers reallocate spending, thereby increasing demand for goods and services in other sectors, and through government spending of new tax revenue (Powell et al 2014). Modelling of a 20% SSB tax in two US states - Illinois and California - predicted that the tax would result in a close to zero net change in state-level employment (0.06% increase in jobs in Illinois, 0.03% in California), with declines in the number of employees in the beverage industry offset by new employment created in the non-beverage industry (due to increased demand for other goods and services), and in state and local government sectors (through government spending of new tax revenues) (Powell et al 2014).

## IMPACTS ON PRODUCTIVITY

Productivity is a measure of how efficiently inputs, such as labor, are being used in an economy to create a given level of output. The overall productivity of an economy is reduced when individuals of working age are not able to be as productive as they would be in full health due to illness, or for as long as possible due to an early death.

There is strong, consistent evidence linking SSB consumption to weight gain, obesity (Te Morenga et al 2012; Malik et al 2013; Trumbo and Rivers 2014; Bleich and Vercammen 2018), type 2 diabetes (Malik et al 2010a; Immamura et al 2015), and dental caries (Bleich and Vercammen 2018). There is also growing evidence linking SSB consumption to metabolic syndrome (Malik et al 2010a; Malik and Hu 2019), a number of cardiovascular disease (CVD) risk factors (including raised blood pressure and dyslipidaemia) (Fung et al 2009; de Koning et al 2012; Te Morenga et al, 2014; Xi et al 2015; Malik et al 2010b; Malik and Hu 2019), non-alcoholic fatty liver disease (Nseir et al 2010), and several cancers (Mueller et al 2010; Chazelas et al 2019).

In addition to their significant health burden, these chronic, non-communicable diseases (NCDs) have enormous social and economic costs, including reduced employment, higher absenteeism, lower productivity (due to premature mortality or morbidity), reduced tax revenue, and higher public expenditure on health and welfare (Duckett and Swerissen 2016). These diseases often have a considerable impact on the health of individuals and can reduce productivity through lower employment, higher absenteeism, early retirement, and premature deaths. In addition, the cost of treating these diseases is enormous, reducing disposable income to spend on other goods and/or services when borne by individuals (reducing disposable income available to spend on other goods and/or services) and government budget for other sectors when borne by the state.

While evidence on the longer-term outcomes of SSB taxes is not as robust as for shorter-term outcome (such as reduced SSB sales and consumption), there are now numerous studies that have modelled the potential impacts of SSB taxes on avoidable disease and premature death. While not perfect (the strength of evidence from simulation studies is strongly influenced by the data and assumptions incorporated into the models), these studies have consistently shown that SSB taxes can lead to significant reductions in the prevalence and incidence of associated diseases, provided the tax rate is sufficiently large.

The burden of avoidable disease and early deaths in a population is commonly measured in terms of health-adjusted life years (HALYs), with two measures being the disability-adjusted life year (DALY) (which can be thought of as one lost year of healthy life) and the quality-adjusted life year (QALY) (which can be thought of as one year lived in full/perfect health). In 2010, an estimated 184,000 deaths and 8.5 million disability-adjusted life years (DALYs) worldwide were attributable to SSB consumption (Singh et al 2015).

Modelling of SSB taxes around the world have predicted considerable gains in HALY. In the US, a nation-wide 1 cent per ounce (roughly 10%) SSB tax is predicted to avert roughly 100,000 DALY´s and gain 871,000 QALYs over 10 years (Long et al 2015). Over the life-time of the population, 3.4 million QALYs may be gained from such a tax (Wilde et al 2019). Modelling of a 20% tax on SSBs in Australia has predicted a gain of roughly 170,000 lifetime HALY´s (Veerman et al 2016; Lal et al 2017).

When reductions in disease and premature deaths are combined with labor indicators (such as labour force participation, illness-related absenteeism, full-time equivalent working years, or present value of life-time income (PVLI)), gains in productivity can be expressed in financial terms.

Modelling of a 20% excise tax on SSBs in Australia estimated that reduction in diseases and deaths associated with SSB consumption would lead to potential lifetime productivity gains in the paid sector of AU$751 million, and AU$1172 million in the unpaid sector (including caring, household work, and volunteer and community work gains) (Nomaguchi et al 2017). This was equal to 1.9% of total annual health expenditure in Australia, or 0.2% of gross domestic product (GDP) in

2010 (Nomaguchi et al 2017).

Modelling of a 10% tax on SSBs and unhealthy foods in Australia predicted that over 2,000 premature deaths would be averted over the first 25 years of the tax, resulting in a cumulative productivity gain of 8,656 additional full-time equivalent working years and a AU$307 million increase in present-value of lifetime income (PLVI) (Carter et al 2019). This study did not account for productivity impacts associated with unpaid labour, or with reduced obesity-related morbidity.

### IMPACT ON GOVERNMENT REVENUE

Independent modelling and empirical studies consistently report substantial revenue generation from SSB taxes (Mounsey et al 2020). Although this may represent only a small proportion of total government tax revenues (particularly at the low tax rates applied in most currently implemented SSB taxes), this revenue can be used to compensate for any transitional costs or short-term displacement of productivity in affected sectors.

Modelling of a 30 cents per litre tax on SSBs in Indonesia predicted a revenue gain of $920 million in the first year and $27.3 billion over 25 years (Basu et al 2014). A 6 peso/litre (roughly 13%) SSB tax in the Philippines is predicted to raise 41.0 billion Philippine pesos (US$ 813 million) in revenue per annum (Saxena et al 2019), while a 20% SSB tax in Australia is predicted to generate tax revenue gains of between AU$400-650million annually (Veerman et al 2016; Lal et al 2017).

Experiences with implemented SSB taxes show that revenue generation is difficult to predict with any precision, particularly if the tax successfully incentivises product reformulation.

Revenue collected from the UK Soft Drink Industry Levy (a tiered, volume-based SSB tax) in the first six months was reportedly less than half what had been forecast due to the extent of reformulation that took place before the tax had even been implemented (Vandevijvere and Vanderlee 2019).

Revenue generated by a tiered sugar-based SSB tax in South Africa, on the other hand, exceeded forecasts despite evidence that it has incentivised significant reformulation, generating ZAR 2 billion (US$140 million) in the first year (approximately 0.15% of South Africa's total tax revenue for the 2018/19 fiscal year) (Stacey et al 2019).

Portugal´s tiered volume-based tax, which also appears to have incentivised significant reformulation, generated EUR 80 million (US$90 million) in its first year (Goiana-da-Silva 2018a,b), while Hungary´s PHPT generated a more modest HUF 61.3 billion (USD 200 million) over the first four years (WHO/National Institute for Food and Nutrition Science 2015).

## Conclusion

The results of this study contradict the common argument used by opponents of SSB taxes that reduced demand for SSBs will harm businesses, lead to job losses, and slow economic growth. Emerging evidence from independent evaluation and modelling studies consistently identifies net positive economic impacts from SSB taxes, including overall employment and productivity gains, and increased government spending from additional revenue.

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## End Notes

1 Any beverage that contains added caloric sweeteners, such as sucrose (sugar), high fructose corn syrup, or fruit-juice concentrates. The main categories of SSBs are carbonated soft drinks, energy drinks, sports drinks, less than 100% fruit or vegetable juices, ready-to-drink teas and coffees, sweetened waters, and milk-based drinks.

2 Sectors that may be affected by a SSB tax through reduced demand for specific products and services, sales volumes, and industry revenue, include: inputs/suppliers (e.g. sugar cane/beet), manufacturing, retail, and transport services.

3 Economic activity includes the manufacture, provision, purchase, or sale of goods and/or services.

4 Low-calorie versions of SSBs that are sweetened with intensely-sweet, low/zero calorie sweeteners (such as aspartame, sucralose, saccharin, and stevia) in place of caloric sweeteners (such as sugar and high fructose corn syrup). Also referred to as artificially-sweetened beverages (ASBs) and non-nutritive sweetened beverages (NNSBs).

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